

Annex 1

Quota Systems in the United States and Europe

The United States

In the United States, Quota Systems are called Renewable Portfolio Standards (RPS). For example, California's RPS requires 20% of electricity for retail sales be produced from renewable sources by 2010, and increases the requirement to 33% by 2020. California Energy Commission web site:

<http://www.energy.ca.gov/renewables/index.html>

Texas's RPS required 2,000 MW of additional energy from renewable sources by 2009. Texas met that goal so the current RPS requires 5,880 MW of electricity from renewable sources by 2015 (of which, 500 MW must come from non-wind resources) and 10,000 MW in renewable energy capacity by 2025. Texas State Energy Conservation Office web site:

http://www.seco.cpa.state.tx.us/re_rps-portfolio.htm.

Europe

In Europe these systems are called Quotas, and are usually combined with a mechanism for trading renewable energy certificates (Tradable Green Certificates). For example, the Renewable Obligation for England and Wales requires all licensed electricity suppliers to provide a percentage of their electricity from renewable sources. It sets an escalating target, increasing to 10% by 2010 and 20% by 2020. Electricity suppliers can buy Renewable Obligation Certificates (ROCs) to meet the required percentage or pay a "buy-out price" for each MWh of non-compliance (£34.30 per MWh for April 1, 2007 to March 31, 2008). The UK's Renewables Obligation:

<http://www.ofgem.gov.uk/Sustainability/Environment/RenewablObl/Pages/RenewablObl.aspx>

Tradable Green Certificates (TGCs) (known as Renewable Energy Certificates or Credits (RECs) in the United States) are a tradable verification that a certain amount of electricity was produced from renewable sources. Renewable electricity producers are given certificates for renewable electricity they produce. Producers sell these certificates separately from the electricity that is produced. Buyers of these certificates most often use them to meet a required target under a Quota System, but can also purchase them to be "green." Read more below about **examples** in the **United States**.

The United States

For example, Texas's RPS provides for a renewable energy credit trading program. Under this program a renewable energy credit represents one MWh of electricity produced from a qualifying renewable source in Texas. The credits are issued quarterly. Energy Conservation Office web site:

http://www.seco.cpa.state.tx.us/re_rps-portfolio.htm.

In 2007, PepsiCo agreed to voluntarily purchase enough RECs to match the electricity used by all its U.S. based facilities which put it at the top of the

Environmental Protection Agency's Top 25 Green Power Partners list. Renewable Energy Access web site:

<http://www.renewableenergyaccess.com/rea/news/story?id=48326>.

FIT laws and Quota Systems are interventions in the market. FITs fix the amount to be paid for the electricity, and allow the market to determine the amount of electricity generated. Quota Systems fix the latter, and allow the market to determine the former. The terms TGC, RPS, and Quota are sometimes used interchangeably in Europe to refer to systems with a quota target and tradable certificates available to help meet that target.

Read about the possible:

[combination of FITs and RSP/Tradable Green Certificates](#)

Tender schemes

Tender schemes (or competitive bidding) are offers (or "tenders") for renewable electricity producers to supply renewable electricity up to a target predefined by the government. Producers put forth bids and those with the lowest prices are awarded long term contracts or power purchase agreements. Tendering can be used to meet any target, such as those under a Quota System or the EU Directive.

Here you can learn more about the possible:

[combination of REFITs and tender schemes](#)

Tax and investment incentives

Tax and investment incentives are country, state, or region-wide programs through which certain types of renewable electricity producers are given specified incentives, which can be based on the number of kilowatt-hours they produce or an upfront payment to help reduce the initial costs of the renewable electricity system. The incentives can be used to avoid taxation by the country, state, or region issuing the incentive. The type of incentive offered and the type of production that qualifies varies widely. At least 32 countries and most U.S. states have some variety of tax incentive. REN21 Global Status Report, <http://www.ren21.net/globalstatusreport/gsr4b.asp>.

Read more below about **examples** in the **United States**.

The United States

For example, the U.S. federal renewable electricity production tax credit currently provides 1 to 1.9 cents per KWh for the first 10 years of a renewable energy facility's operation. See summary of legislation providing these credits on the web site of the Database of State Incentives for Renewables & Efficiency at:

http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=US13F&State=Federal¤tpageid=1

Read more about the possible:

[combination of FITs and tax incentives](#)

combination of FITs and investment incentives

Investment cost recovery

Investment cost recovery laws pay a per KWh amount to renewable electricity producers to help cover the cost of the renewable electricity system. In Washington State, qualifying renewable electricity producers are paid between 12 and 54 cents per KWh, depending on the type of producer, by the light or power business serving their properties for renewable electricity produced and used on site. Qualifying producers are given the investment cost recovery directly or credited on their energy bill, rather than given an incentive to avoid taxation. Participating light and power businesses paying the incentives are given credits on their state public utility taxes equal to the actual amount paid out.

Clean Development Mechanism (CDM)

The clean development mechanism (CDM) was created under the Kyoto Protocol (Article 12) as a mechanism for Annex I Parties to meet Kyoto targets by implementing certain projects in non-Annex I Parties that would result in certified emission reductions (CERs). The CDM allows Annex I Parties to meet their commitments less expensively by funding projects in Non-Annex I countries that will reduce global greenhouse gas emissions rather than reducing emissions at home. To register a CDM project, a project proponent must establish that the project will lead to more emission reductions than would occur without the project (additionality). Small scale projects and afforestation or reforestation projects may also qualify for CERs. See the United Nations Framework Convention on Climate Change, CDM web site:

<http://cdm.unfccc.int/index.html>.

Read more about the possible:

[interaction of FITs with the Clean Development Mechanism](#)

Net metering

"Net metering" has some of the characteristics of a FIT law. It allows (usually small) consumers to produce and be paid for renewable electricity that they supply to the grid. This can be done by using electricity meters that turn backwards when the particular consumer's production is more than their consumption. In short, the producer "receives" the same price for each kWh produced as he would have paid for purchasing it from the local electricity provider. The same effect can be achieved by two meters, measuring consumption and production, though this is not technically net metering and allows different, usually lower, tariffs (or prices) to be paid for the electricity produced compared with the electricity consumed. Currently, 35 States in the U.S. are reported to offer net metering:

<http://www.eere.energy.gov/greenpower/markets/netmetering.shtml>

Ontario allows net metering:

<http://www.energy.gov.on.ca/index.cfm?fuseaction=renewable.netmetering>

Net metering is not backed up by the special rules needed to achieve the price and access objectives of a FIT law.

More information on net metering:

<http://www.awea.org/faq/netbdef.html#Whatisnetmetering>

<http://www.urbanwindenergy.org.uk/index.asp?PageID=49>

Annex 2

DRAFT

BASIC ELEMENTS OF A PROPOSED RENEWABLE ENERGY FEED-IN TARIFF BILL FOR ETHIOPIA

(ONLY FOR MICRO/SMALL HYDRO POWER PLANTS)

29 JUNE 2008

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This document is not suitable for direct 'copying and pasting' into proposed legislation, which should be done in conjunction with local lawyers and/or legislature officials. We expect it to be generally suitable for producing a first, public discussion draft of the main provisions needed to enact a good FIT law.

RENEWABLE ENERGY FEED-IN TARIFF BILL

- **Considering** the urgent need to reduce greenhouse gas emissions in order to prevent dangerous climate change,
- **Noting** the increasing, large-scale contribution that producing electricity from renewable energy sources can make to reducing such emissions, at the same time as helping to meet our energy needs and having other beneficial environmental, social and economic effects,
- **Noting** particularly the importance of a secure and diversified energy supply,
- **Aware of** the benefits in these respects that well-designed renewable energy feed-in tariff laws have brought in, and to, other countries and regions, and
- **Wishing** to enact such legislation in [insert the name of your country or region], the [insert the name of the relevant legislative body] hereby passes the following law:

NOW IT IS HEREBY ENACTED AS FOLLOWS:

1 Purpose

The purposes of this Act (Law) are to promote the production and use of electricity from renewable energy in order to:

- (1) mitigate urgently the causes of climate change;
- (2) reduce local and regional air, soil and water pollution;
- (3) protect the environment and human health;
- (4) contribute to the achievement of sustainable development;
- (5) help poverty eradication;
- (6) create new jobs and improve economic and social well-being in rural and isolated areas;
- (7) secure and diversify the energy supply;
- (8) reduce long-term price volatility of fossil fuels; and
- (9) contribute to the development of the energy technology industry.

2 Scope

The scope of this Act (Law) is to provide for:

- (1) the setting and achievement of targets for the amount of electricity consumed from renewable energy;
- (2) the technologies and plants whose producers will benefit from obligations in respect of transparent, objective and non-discriminatory

connection to the grid, and of payment of a tariff for the electricity produced, guaranteed for a minimum period; and

- (3) progress reports on its operation.

3 Targets

- (1) By 2010 the amount of electricity produced from renewable energy shall be no less than [X] per cent of total electricity consumption [in the relevant country or region].
- (2) By 2015 the amount of electricity generated from renewable energy shall be no less than [X] per cent of total electricity consumption [in the relevant country or region].
- (3) By 2020 the amount of electricity generated from renewable energy shall be no less than [X] per cent of total electricity consumption [in the relevant country or region].
- (4) The [relevant Minist[ers][ries], such as the Minist[er][ry] for Energy and others] shall exercise their powers and duties to achieve such targets.
- (5) For the purposes of this section, "renewable energy" means renewable non-fossil, non-nuclear energy, excluding large hydropower.

4 Eligible technologies and plants

- (1) Each of the following technologies is an Eligible Technology for the purposes of this Act (Law):
 - (a) Micro/Small hydropower.
- (2) In respect of each Eligible Technology, the following plants and categories of plants shall each be known as an Eligible Plant:
 - (a) plants producing electricity from Micro/Small hydropower;
- (3) An Eligible Plant shall meet the safety and technical standards set down by [the relevant standards body, Minist[ers][ries] or other official body] for connecting to, and for supplying electricity into, the grid.

5 Grid connection, reinforcement and costs

- (1) Upon the written request of an Eligible Producer, the Grid Operator shall immediately connect his Eligible Plant to the electricity grid and as a priority at own expenses.
- (2) The Grid Operator shall, at the written request of an Eligible Producer, promptly reinforce the grid at own expenses where this is necessary in order to accept electricity from that producer's Eligible Plant into the grid.

- (3) [You have made no choice for applying the shallow method of connection charging]

6 Transparency

- (1) The Grid Operator shall prepare, publish and apply transparent, objective and non-discriminatory rules for:
- (a) connecting Eligible Plants to the grid, including reinforcement and costs;
 - (b) charging transmission and distribution fees;
 - (c) the sharing of grid system costs between all producers benefiting from them; and
 - (d) determining and allocating grid capacity.
- (2) An Eligible Producer shall be provided with a comprehensive and detailed estimate of the costs associated with connection of his Eligible Plant to the grid.

7 Priority purchase obligation

The Buyer shall purchase, and the Grid Operator shall transmit, as a priority the electricity produced from the Eligible Plant. The Buyer shall not refuse to purchase, and the Grid Operator shall not refuse to transmit, such electricity on the grounds of insufficient grid capacity.

8 Tariff payable for a guaranteed period

- (1) The Buyer shall pay the Eligible Producer the tariff for the relevant units and period.
- (2) The tariff shall be:
- (a) the amount [in cents equivalent] per kWh of electricity produced from each Eligible Plant;
 - (b) for the relevant period in respect of that Eligible Plant, as set out in the Table below:

Eligible Technology	Eligible Plant	Tariff	Guaranteed period
Small hydropower	No capacity or type categories	X.XX	YY years

- (3) The tariff shall be adjusted annually by the annual increase, if any, in the consumer price index [for the relevant country or region], commencing on [insert date].
- (4) The tariff for electricity produced from Eligible Plants commissioned after [insert date] shall be reduced by [X] per cent annually of the tariff set out in sub-section (2) above.
- (5) The tariff for electricity produced from Eligible Plants commissioned after [insert date] may be adjusted after at least two years have elapsed from the date this Act comes into force, and thereafter at intervals of not less than [two] years and not more than [four] years, in the light of the conclusions of progress reports under section 9 below. Such adjustments may be made [by secondary legislation].

9 Progress reports

- (1) [The relevant Minist[ers][ries]] shall publish a progress report on the operation of this Act:
 - (a) before two years have elapsed from the date it comes into force; and
 - (b) thereafter, at intervals of not less than [two] years and not more than [four] years.
- (2) A progress report shall include assessment of:
 - (a) growth rates and average production costs of the Eligible Technologies;
 - (b) progress towards the achievement of targets;
 - (c) economic, social and environmental benefits of the Act (such as the amount of investment and export trade, the number of jobs created and the amount of carbon dioxide emissions avoided);
 - (d) additional costs for the consumer;
 - (e) ecological effects of the use of renewable energy sources on nature and landscapes; and
 - (f) whether in all the circumstances tariff adjustments are necessary.

10 Definitions

In this Act, the following expressions have the following meanings, unless the context requires otherwise:

"Buyer" means the relevant Grid Operator, distribution or transmission company, or such other person authorised in the relevant area to undertake the wholesale purchase of electricity;

"Eligible Plant" has the meaning set out in section 4(2);

"Eligible Producer" means any person, whether as an individual, household, company or business, who owns or operates an Eligible Plant;

"Eligible Technology" has the meaning set out in section 4(1);

"Grid Operator" means the person from time to time who is authorized to operate the electricity transmission or distribution grid, and, where relevant, whose grid is nearest to the Eligible Plant of the Eligible Producer;

"Small hydropower" means hydroelectric power produced from plants with a maximum capacity of [x] MW;

Annex 3

Feed-in Concept for Uganda

Power Purchase Agreement

AGREEMENT FOR THE PURCHASE AND SALE OF ELECTRICITY

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THIS POWER PURCHASE AGREEMENT

is made on the..... day of 200_

BETWEEN

The [XXX COMPANY LIMITED] of P.O. Box [XXX], KAMPALA (hereinafter referred to as "GENCO" which expression shall where the context so admits include its successors in title and assignees) of the one part;

AND

The UGANDA ELECTRICITY TRANSMISSION COMPANY LIMITED, of P.O. Box 7625, KAMPALA (hereinafter referred to as "UETCL" which expression shall where the context so admits include its successors in title and assignees) of the other part;

WHEREAS:

GENCO is empowered under Licence No. [XXX] issued by the Electricity Regulatory Authority under the Electricity Act Chapter 145 of the Laws of Uganda to engage in the business of generation of electrical energy;

UETCL is empowered and legally authorised under Licence No. [XXXX] to purchase electrical energy;

GENCO is desirous of selling electrical energy to UETCL, and UETCL desires to purchase electrical energy from GENCO

NOW THEREFORE THIS CONTRACT WITNESSETH as follows:

1. Definitions and Interpretation

1.1 Definitions

In this Agreement, unless the context otherwise requires, the following words and phrases shall have the meanings given to them below:

"Act": means the Electricity Act Chapter 145 of the Laws of Uganda, as may be amended from time to time.

"Agreement": means this Power Purchase Agreement as it may be amended from time to time.

"Annual Contract Volume": means the volume of energy estimated by GENCO to be delivered to UETCL in the relevant Contract Year.

"Arbitrator": means an arbitrator appointed in accordance with the dispute resolution procedure set out in Clause 0.

"Authorisation": means any approval, consent, licence, permit, authorisation or other permission granted or to be granted by a Government Authority required for the enforcement of rights or performance of obligations under this Agreement by a Party; "Authorised Person": means, in the case of the GENCO or UETCL, the person

nominated from time to time to represent the GENCO or UETCL;

"Billing Period Invoice": means a monthly invoice from GENCO to UETCL setting forth payments due in accordance with Clause 0;

"Business Day": means any Day of the week other than a Saturday or Sunday, or public holiday in Uganda;

"Change in Law": means the occurrence of any of the following after the execution of this Agreement:

- The enactment of a new Ugandan law;
- The repeal or modification or re-enactment of any existing Ugandan law;
- The commencement of any Ugandan law which has not yet entered into effect;
- A change in the interpretation or application of any Ugandan law by any Governmental Authority having direct authority for its interpretation or application;
- e) The imposition by a Governmental Authority of a requirement for any Authorisation which did not exist at the date of this Agreement; which establishes a material increase or material reduction in revenue as a consequence of any requirement for the design, construction, financing, ownership, operation or maintenance of the Project that is materially more restrictive than the most restrictive requirements
 - (i) in effect as of the date of this Agreement
 - (ii) specified in any connection with such application for any Authorisation.

"Check Meter" - means any of the check meters owned, operated and maintained by GENCO at the Interconnection Points to check the Metered Energy. The Check Meter is more specifically identified and described in Schedules 1 and 4.

"Commercial Operation Date": means the date when GENCO commences delivery of Energy to UETCL.

"Consequential Loss": means all losses, costs and financial harm not directly (whether or not foreseeable) resulting from any breach by a Party of its obligations hereunder. "Contract Year": means the period from 1st January in any year until and including 31st December in the same year, provided:

- The first Contract Year shall be for a period from the Commercial Operation Date until and including the next following 31 December;
- The last Contract Year shall be the period from 1st January of the year this Agreement is terminated or expires and including the date on which this Agreement is terminated or expires.

"Day" or "day": means a period of twenty-four (24) Hours beginning at 0000 Hours on a day and ending at 2400 Hours on that day.

"Dispatch Instruction": means an instruction given by UETCL to dispatch the gener-

ating station forming part of the Project.

"Dispatch Schedule": means a schedule showing the amount of Energy expected to be dispatched for each hour from the GENCO power station.

"Effective Date": means the date on which the last of the Conditions Precedents set out under Clause 0 has been satisfied.

"Emergency Conditions": mean conditions giving rise to an emergency as defined in the Grid Code.

"Energy Charge": means the amount due to GENCO from UETCL for the delivery of Metered Energy, as more particularly described in Schedule 3.

"Energy": means electrical energy measured in MWh delivered by GENCO to UETCL.

"ERA": means the Electricity Regulatory Authority of Uganda established under the Act.

"Event of Default" means an event constituting grounds on which a Party may terminate this Agreement, as set out in Clause 0.

"Financial Close": means the date on which the initial disbursement is made by the Lenders.

"Force Majeure Event": means an event constituting Force Majeure as defined under Clause 0.

"GENCO System": means the electric power network, the lines, equipment and associated protective devices, safety and communication equipment owned by GENCO.

"GENCO" means the XXX Company Limited.

"Governmental Authority": means any department, authority, instrumentality, agency or other relevant entity from which an Authorisation is to be obtained from time to time and any authority, body or other person having jurisdiction under the Laws of Uganda with respect to GENCO or the Project.

"Grid Code": means the Electricity (Primary Grid Code) Regulations of 2003, as may be amended from time to time.

"Hour": means each continuous period of sixty (60) minutes commencing with the first minute of each of the twenty-four (24) denominated hours in any Day;

"IEC Standards": means the relevant standards published by the International Electro technical Commission of No. 3, Rue de Varembe, P.O. Box 131, CH-1211 Geneva, Switzerland.

"Interconnection Point": means the location where the GENCO System interconnects with the Umeme System, as shown in Schedule 1.

"Interest Rate": means the rate of LIBOR plus [one and a half per cent (1.5%)] per annum.

"Invoice Dispute Notice": shall have the meaning ascribed thereto in Sub-clause 0.

"kV": means kilovolts or 1,000 volts

"kW": means a kilowatt or 1,000 watts. "kWh": means one (1) kilowatt hour or one unit.

"Laws of Uganda": means the laws of Uganda and all orders, rules, regulations and decrees, judgments and notifications made pursuant thereto as such laws, orders, rules, regulations, decrees, judgments and notifications may be modified, vacated or amended from time to time.

"Legal Requirement": means any requirements established under any statute, law, regulation or other legislation, or any decree, order or directive emanating from any Governmental Authority of the Republic of Uganda, in respect to GENCO and UETCL;

"Lender": means the banks and other financial institutions party to the financing agreements to the Project.

"LIBOR" means the London Inter-Bank Offered Rate of interest for three-month deposits of Euro-Dollars displayed on page "LIBOR01" of the Reuters Money Rates Service (or any other page that replaces "LIBOR01" for the purpose of displaying the British Bankers Association ("BBA") interest settlement rates for such deposits of Euro-Dollars in the London Inter-Bank market) on the date of determination, or in the event that the Reuters Money Rates Service, or any successor thereto, no longer provides such information, such other service as may be agreed by the Buyer and the Seller that provides the BBA interest settlement rates for such deposits of EuroDollars in the London Inter-Bank market and any other information previously provided on the page "LIBOR01".

"Liquidated Damages" means payments determined in accordance with Sub-clause 0. "Main Meter": means main meter and associated metering equipment owned, operated and maintained by GENCO at the Interconnection Point and used to measure and record Metered Energy and input at the Interconnection Point. The Main Meter is more particularly identified and described in Schedules 1 and 4.

"Metered Energy": is comprised of the Peak Metered Energy, the Shoulder Metered Energy and the Off-Peak Metered Energy (expressed in MWh), as recorded by the Main Meter or the Check Meter or estimated and computed in accordance with Schedule 2.

"Metering System": means the Main Meter and the Check Meter and all associated equipment.

"Month": means a calendar month.

"Monthly Exchange Rate" shall have the meaning ascribed thereto in Schedule 3.

"MW": means a megawatt or 1000 kilowatts or 1,000,000 watts. "MWh": means one (1) megawatt hour.

"Notice of Intent to Terminate" shall have the meaning ascribed thereto in Sub-

clause 0.

"Off-Peak Block" means the set of Hours as defined in Schedule 2. "Off-Peak Energy Charge" means the Energy Charge for the Off-Peak Metered Energy as determined in accordance with Schedule 3.

"Off-Peak Metered Energy" means the energy delivered to UETCL by GENCO at the Interconnection Point in the Off-Peak Block as recorded by the Metering System in accordance with Schedule 2.

"Party": means any of the signatories to this Agreement and "Parties" shall mean all of them.

"Peak Block" means the set of Hours as defined in Schedule 2.

"Peak Energy Charge" means the Energy Charge for the Peak Metered Energy as determined in accordance with Schedule 3.

"Peak Metered Energy" means the energy delivered to UETCL by GENCO at the Interconnection Point in the Peak Block as recorded by the Metering System in accordance with Schedule 2.

"Power Factor": means the cosine of an angle whose tangent is a ratio of reactive power to active power.

"Project": means the development, design, construction, ownership, operation and maintenance of the power station and associated electricity distribution infrastructure. "Prudent Operating Practice": means generally accepted industry operating and maintenance practices.

"SCADA" means Supervisory Control And Data Acquisition, in the context of this Agreement being a system capable of remotely retrieving data recorded by the Metering System.

"Schedules": means the schedules attached to this Agreement and forming an integral part of this Agreement.

"Shoulder Block" means the set of Hours as defined in Schedule 2.

"Shoulder Energy Charge" means the Energy Charge for the Shoulder Metered Energy as determined in accordance with Schedule 3.

"Shoulder Metered Energy" means the energy delivered to UETCL by GENCO at the Interconnection Point in the Shoulder Block as recorded by the Metering System in accordance with Schedule 2.

"Supply Period": means the period commencing on the first Commercial Operations Date and concluding on the expiration of the Term or the earlier termination of this Agreement.

"Term" has the meaning ascribed thereto in Clause 0.

"Termination Notice" shall have the meaning ascribed thereto in Sub-clause 0. "Tri-

bunal” means the panel of arbitrators as established in accordance with Clause 0.

“UETCL System” means the electric high voltage transmission system, including but not limited to all transmission lines and equipment, transformers and associated equipment, relay and switching equipment and protective devices and safety and communications equipment owned and/or operated by UETCL and required for the performance by UETCL of its obligations under this Agreement.

“UETCL” means the Uganda Electricity Transmission Company Limited “UG Shilling”: means the currency that is the legal tender of the Republic of Uganda. “Umeme System”: means the 33kV distribution system including but not limited to all distribution lines and equipment, transformers and associated equipment, relay and switching equipment and protective devices and safety and communications equipment owned and/or operated by Umeme.

“Umeme” means the company registered in Uganda in this name or its successor.

“US Dollars” or “US \$”: the lawful currency of the United States of America.

1.2 Interpretation in this Agreement:

References in the singular shall include references in the plural and vice versa, and words denoting natural persons shall include corporations and any other legal entity and vice versa;

References to the word “including” are to be construed without limitation; Except to the extent that the context requires reference to a particular Clause, Subclause or Schedule shall be references to that Clause, Sub-clause or Schedule in or to this Agreement;

Except to the extent that the context requires any reference to “this Agreement” or any other agreement or document is a reference to it as amended, supplemented or notated from time to time and includes a reference to any document which amends, is supplemental to, notates, or is entered into, made or given pursuant to or in accordance with any terms to it;

The headings and paragraph numbers are inserted for convenience only and are to be ignored for the purposes of construction;

Calculations carried out pursuant to this Agreement will be rounded to two (2) decimal places.

The language of negotiation of this Agreement has been English, this Agreement is executed in English, and this English text shall prevail for the purposes of determining the intention of the Parties and in any construction of this Agreement.

2. Conditions Precedent and Term of Agreement

2.1 Conditions Precedent

This Agreement shall come into full force and effect on the Effective Date upon:

- This Agreement being approved by ERA; and
- Financial Closure of the Project.

2.2 Term of Agreement

This Agreement shall continue in full force and effect for [15] years following the Commercial Operation Date, provided that this term may be extended or reduced in accordance with the terms of this Agreement (the "Term")

The Term shall be extended automatically by the aggregate number of Days that all Force Majeure Events, where declared by either Party, were in existence during the Term. During such extensions, the terms of this Agreement shall continue with full force and effect.

Unless this Agreement has been terminated prior to such date, not later than two (2) years prior to the end of the Term, at the request of either Party, GENCO and UETCL shall enter into good faith negotiations to establish the terms and conditions under which this Agreement may be extended or renewed.

3. Delivery of Energy

3.1 Interconnection

GENCO will build a metered interconnection to the distribution network operated by UMEME at the Interconnection Point as shown in Schedule 1 to this Agreement. The Interconnection Point shall be the point at which GENCO delivers Energy to UETCL and the point at which UETCL accepts Energy from GENCO.

GENCO will ensure that its interconnection arrangements and agreements are in accordance with Section 11 and Section 25 of the Grid Code.

3.2 Dispatch of generating facilities

GENCO will provide to UETCL the Dispatch Schedule for its generating facilities in a format and frequency as may reasonably be requested by UETCL.

In accordance with the information provided under clause 0, GENCO will have the right to independently operate the generating facilities and deliver Energy to the Interconnection Point, subject to Sub-clause 0.

Under Emergency Conditions, including situations where UETCL is obliged to load shed in such a way that influences the operations of GENCO, GENCO will dispatch

the generating facilities in accordance to Dispatch Instructions provided by UETCL.

3.3 Quality of Supply

GENCO shall deliver Energy in accordance with the quality of supply standards of Sections 8 and 11 of the Grid Code as they apply to embedded generation, excepting any standards that the ERA may have provided exemption from.

4. Metering

4.1 Meter installation and sealing

GENCO shall install, own and maintain the Main and Check Meters at the Interconnection Point.

The Main and Check Meters shall have the functional capability to determine the Metered Energy quantities as set out in Schedule 2 to this Agreement.

GENCO undertakes to provide to UETCL access to the Main and Check Meters for the installation of any SCADA monitoring equipment that UETCL may at their expense install.

The Metering System shall be jointly sealed. Each party shall own its seals. These seals shall be broken only jointly by GENCO and UETCL. A Party shall give at least twenty-four (24) hours advance notice to the other Party of the breaking of seals on any part of the Metering System. If the other Party when served with the notice does not appear, the Party wishing to break the seals may proceed but shall provide signed explanation to the other Party within forty-eight (48) hours of such breaking of the seals.

The seals shall not be removed by any of the Parties without consent of the other Party, which consent shall not be unreasonably withheld by a Party. Both Parties undertake not to tamper or otherwise interfere with any part of the Metering System in any way.

4.2 Meter Reading

The Main and Check Meters shall be read monthly by GENCO in accordance with Schedule 2.

The monthly meter readings shall be used to determine the monthly Metered Energy quantities in accordance with Schedule 2.

4.3 Meter Testing

GENCO shall initially test the Main and Check Meters at the Interconnection Point for accuracy in accordance with Schedule 4 at least fifteen (15) days prior to either de-

livering or receiving Energy through such Interconnection Point.

GENCO shall have the Main and Check Meters tested in accordance with the requirements of Schedule 4 and, if necessary, re-calibrated at least once every twenty-four Months or whenever either Party has reason to believe that the equipment is no longer performing within the standards of accuracy prescribed and has given notice to the other Party of such concern. GENCO shall on reasonable notice to UETCL arrange a suitable date for the Main or Check Meters to be tested. Testing and re-calibration shall be carried out in the presence of both Parties' duly Authorised Person or Persons appointed in writing.

After completion of any testing in accordance with Sub-clause 0, GENCO shall prepare and promptly submit to UETCL a statement which shall be a record of the results of the testing, and the extent to which the Meters were performing outside the limits of accuracy prescribed under Schedule 4;

The Metered Energy supplied by GENCO to UETCL shall be measured using readings of the Main Meter unless such meter is found to be malfunctioning or performing outside the limits of accuracy specified in Schedule 4. In such event, the procedure specified in Schedule 2 shall be used to determine the Metered Energy.

If, at any time, it is determined by the Parties, as a consequence of a test or as is otherwise manifest, that the Main Meter or Check Meter should be replaced, then GENCO shall replace the Main Meter or Check Meter as the case may be.

5. Sale and Purchase of Energy

5.1 Delivery and Purchase of Energy

Not later than 60 Days prior to the first Day of any Contract Year GENCO shall notify UETCL of the Annual Contract Volume for the following Contract Year, which shall not be greater than [XXX] GWh.

With effect from the Commercial Operation Date and subject to and in accordance with this Agreement:

GENCO shall each Contract Year during the Supply Period deliver Energy to UETCL at the Interconnection Point; and

UETCL shall each Contract Year during the Supply Period accept Energy delivered by GENCO and shall pay GENCO the charges ascertained and calculated in accordance with this Agreement.

The quantities of Energy sold and purchased under this Agreement shall be metered in accordance with Clause 0 and determined in accordance with Schedule 2 to this Agreement.

5.2 Invoices for Energy Delivered

UETCL shall pay GENCO:

The Energy Charge for Metered Energy delivered to UETCL at the Interconnection Point determined in accordance with Schedule 3 to this Agreement; and

Any Liquidated Damages as determined in accordance with Sub-clause 0; and an amount equal to the Value Added Tax as legally imposed upon GENCO by any Governmental Authority in Uganda and which are due and payable by GENCO on sales of Energy.

Subsequent to the Commercial Operation Date, GENCO shall prepare and submit to UETCL an invoice no later than the [10th] Day of each Month following any Month during which Metered Energy is supplied to UETCL, and that invoice (the "Billing Period Invoice") showing all intermediate calculations shall state:

- the Metered Energy quantities, comprising the Energy delivered by GENCO to UETCL, determined in accordance with Schedule 2 to this Agreement;
- the Energy Charge, determined in accordance with Schedule 3 to this Agreement;
- any other sums payable by UETCL to GENCO under this Agreement then due.

The Billing Period Invoice shall be sent to UETCL initially by facsimile or email followed by a hard copy.

5.3 Method of Payment

UETCL shall make payment in UG Shillings, not later than [sixty (60) Days] following the delivery of the Billing Period Invoice, by direct bank transfer to a nominated bank account notified to UETCL by GENCO in such invoice.

Subject to Sub-clause 0, GENCO shall be entitled, without prejudice to any other right, relief or remedy, to receive interest on any payment properly due to it, and not made within the time for such payment at the Interest Rate computed from the due date of the invoice.

5.4 Disputed Payments

If any sum or part of any sum stated in a Billing Period Invoice or other invoice (as the case may be), is in good faith disputed by UETCL, then UETCL shall:

Promptly issue to the other GENCO a written notice ("Invoice Dispute Notice") specifying exactly what it is disputing within the invoice and thereafter pay any undisputed sum in accordance with Sub-clause 0.

Pay such amount as is agreed or determined payable in respect of the disputed sum within sixty (60) days of

- i) the date on which the Parties resolve the disputed sum; or
- ii) the date of determination if the Parties fail to reach agreement, and the matter has been referred for arbitration in accordance with Clause 0.

Unless it is so determined that payment should be made in accordance with Clause 0, when making payment of the amount agreed or determined, pay interest on that amount at the Interest Rate divided by twelve compounded monthly, from and including the due date of the Billing Period Invoice or any other invoice (as the case may be) up to but excluding the date of payment.

If UETCL disputes any amount specified in any Billing Period Invoice presented by GENCO more than three (3) times in any period of nine (9) consecutive Months, and to the extent that the disputes are found to be valid by GENCO or by an Arbitrator, then the Parties shall meet at the request of either Party to discuss and resolve the causes of the persistent billing errors.

If UETCL disputes any amount specified in any Billing Period Invoice presented by the GENCO more than three (3) times in any period of nine (9) months and such disputes are found to be invalid by GENCO or by an Arbitrator, then UETCL shall be liable to pay all the direct costs incurred by GENCO which may accrue as a result of such disputed Billing Period Invoice.

5.5 No Set-off

All payment by UETCL to GENCO under this Agreement shall be made without deduction or withholding (except to the extent required by law) on account of any other amount, whether by way of set-off or otherwise, unless deductible under the express provisions of this Agreement or pursuant to a valid Court Order, provided that nothing in Sub-clause 0 shall prevent GENCO from bringing an action in respect of any contractual dispute.

5.6 Liquidated Damages

If GENCO is prevented from delivering Energy to UETCL as a result of a failure of the UETCL System, UETCL shall pay GENCO Liquidated Damages; Provided that Liquidated Damages shall not be payable where the failure of the UETCL is due to scheduled maintenance.

For the purpose of this Agreement, failure of the UETCL System due to scheduled maintenance shall be limited to [872] hours per Contract Year.

Liquidated Damages for a Month payable by UETCL shall be determined as the average Energy Charge of the preceding three Billing Period Invoices, divided by seven hundred and thirty (730), multiplied by the number of Hours in the Month that the GENCO was unable to delivery Energy to UETCL as a result of a failure of the UETCL System.

The Target Availability for GENCO is [ninety five percent (95%)].

Availability of the GENCO generator in any year shall be determined as the ratio of the hours during the year when the generator was available to generate to the potential number of operating hours. The potential number of operating hours shall be the number of hours in the year less the number of hours during which the generator was not available due to hydrological constraints.

If the availability of the GENCO generator is below the Target Availability in any calendar year; GENCO shall pay UETCL Liquidated Damages.

Liquidated Damages payable by GENCO shall be calculated as the product of the lost output due to availability below the Target Availability and the average Energy Charge of the preceding twelve Billing Period Invoices divided by seven hundred and thirty (730).

6. Undertakings and Warranties of the Parties

6.1 Undertakings of each Party

Each Party undertakes that

it shall comply with all the applicable Legal Requirements, and

will hold and maintain in good order and validity, and renew and comply with, all Authorisations required for the performance of their obligations under this Agreement.

6.2 Warranties of each Party

Each Party represents and warrants that

It is a limited liability company duly organized and validly existing under the laws of Uganda and has all requisite legal power and authority to execute this Agreement and to carry out the terms, conditions and provisions herein contained;

All Authorisations required for the execution, delivery and performance by it of this Agreement and the transactions contemplated herein have been taken and are in full force and effect, or have been applied for through the due process required by the relevant Governmental Authority;

This Agreement constitutes its valid, legal and binding obligations, enforceable in accordance with the terms hereof except where the enforceability may be limited by applicable laws affecting creditors' rights generally;

There are no actions, suits or proceedings pending or, to its knowledge, threatened, against or affecting it before any court or administrative body or arbitral tribunal that might materially adversely affect its ability to meet and carry out its obligations under this Agreement;

The execution, delivery and performance of this Agreement have been duly authorised by all requisite corporate action, and will not contravene any provision of, or constitute a default under any other agreement or instrument to which it is a party or by which its property may be bound; and

It has all necessary legal power and authority to perform its obligations under this Agreement.

6.3 Insurance and Taxes

Each Party shall take out and maintain adequate insurance cover as are customary, desirable and consistent with Prudent Operating Practice and Legal Requirements.

Each Party shall furnish to the other copies of insurance policies effecting the insurance referred to in this Sub-clause 0 and from time to time, any Party may request the other Party to provide proof that all relevant premiums have been paid and that the relevant policy or policies remain in existence.

Each party shall be responsible for payment of royalties, taxes, fees, or assessments levied against its property, leasehold rights or other assets or profits by any Governmental Authority as may be provided for by the Laws of Uganda, and shall settle such levies without attempting to recover them from the other Party except through the Energy Charges determined in accordance with Schedule 3.

7. Force Majeure

7.1 Definition of Force Majeure

For the purposes of this Agreement "Force Majeure" means any event or circumstance which affects a Party and which is not within the reasonable control (directly or indirectly) of such Party (acting in accordance with Prudent Operating Practice) and which results in or causes such Party to fail to perform any obligation under this Agreement;

Events or circumstances which, subject as aforesaid, may constitute Force Majeure shall include but shall not be limited to:

- an act of war whether declared or undeclared, invasion, armed conflict or act of foreign enemy, blockade, embargo, revolution, riot, insurrection, civil commotion, political act or campaign of terrorism, sabotage or vandalism;
- strikes, works to rule or go-slows that extend beyond the facilities of either Party, are widespread or nationwide, or that are of a political nature;
- an epidemic or plague that extend beyond the affected Party's organization and are widespread or nationwide;
- a Change in Law;

- an act of God including but not limited to fire, earthquakes, volcanic activities, flood, storms, drought, landslide, cyclone or typhoons, tornados or other unforeseen event;
- an explosion or chemical contamination;
- an act or omission of any contractor or supplier of UETCL or GENCO which would have been a Force Majeure Event had the contractor or supplier been a party to this Agreement; and
- a failure of the UETCL System or of the GENCO System caused by an event that would constitute Force Majeure for the purposes of this Agreement.

Events or circumstances which may constitute Force Majeure shall not include:

- lack of funds due to any commercial, economic or financial reason such as, but not limited to, a Party's inability to make a profit or achieve a satisfactory rate of return due to the provisions of this Agreement or changes in market conditions (although the inability to use available funds, due to any reason set out in Sub-clause 0 above, shall be regarded as Force Majeure);
- late delivery of machinery or other materials or a delay in the performance by any contractor or supplier (except where such late delivery or delay is itself attributable to a Force Majeure Event);
- normal wear and tear or random flaws in materials and equipment or breakdown in equipment;
- hazards, including but not limited to lightning or the growth of trees, which can be reasonably anticipated in normal utility operations and planned for as part of Prudent Operating Practice.

7.2 In case of an event of Force Majeure

If a Party ("the affected Party") is prevented from or delayed in performing an obligation hereunder by reason of Force Majeure the affected Party shall:

be relieved from the requirement to perform that obligation;

promptly notify the other Party of the occurrences of the event within ninety six (96) hours giving full particulars and satisfactory evidence in support of its claim; and in the event of a break down of communication rendering it not reasonably practicable to give notice of Force Majeure within the period specified above, the Party claiming Force Majeure may give such notice as soon as possible, but not later than twenty four (24) hours of reinstatement of communication; and

use all reasonable endeavours to overcome the consequences of the event and where the Force Majeure Event has been eliminated or no longer affects a Party, the obligations in this Agreement shall recommence forthwith, and the applicable period for the performance of the obligation shall be extended by a period equal to the du-

ration of the Force Majeure Event.

The declaration of Force Majeure shall not relieve any Party from the requirement to make any payment when due.

If either Party is prevented, hindered or delayed in the performance of material obligations under this Agreement by reason of Force Majeure occurring after the Commercial Operation Date, then provided the affected Party has complied with its obligations under this Clause 0, the Term shall be extended by a period in time equal to the period during which the affected Party was so prevented, hindered or delayed, in accordance with Clause 0.

8. Termination

8.1 Event of Default

Each of the following events shall be a GENCO Event of Default which, if not cured within the time permitted in this Clause shall give rise to the right on the part of UETCL to terminate this agreement:

Failure by GENCO to achieve the Commercial Operation Date within [two (2) years] from the date of this Agreement or as otherwise agreed between the Parties; Assignment by GENCO of this agreement to a third party in violation of the approval requirements of Sub-clause 0;

Any material breach by GENCO of this Agreement which is not remedied within one hundred and eighty (180) days following notice by UETCL stating that a material breach of this Agreement has occurred and identifying the breach in question;

The filing of a petition of bankruptcy of GENCO.

Each of the following shall be UETCL Event of Default which, if not cured within the time permitted shall give rise to the right on the part of GENCO to terminate this agreement:

Failure by UETCL to make a payment in full of any amount due to GENCO under this Agreement within one hundred and eighty (180) days of its due date, or failure to pay a disputed amount within one hundred and twenty (120) days of resolution of the dispute;

Assignment by UETCL of this agreement to a third party in violation of the approval requirements of Sub-clause 0;

material breach by UETCL of this Agreement which is not remedied within one hundred and eighty (180) days following notice by GENCO stating that a material breach of this Agreement has occurred and identifying the breach in question;

The filing of a petition of bankruptcy of UETCL.

The provisions of this Clause 0 shall be the sole and exclusive grounds on which the Parties may terminate this Agreement save for a circumstance of Force Majeure that has occurred and shall continue for a period of one hundred and eighty two (182) days from the issue of the notice of occurrence of Force Majeure Event by the Party, then, any Party shall be entitled to serve upon the other twenty-eight (28) days' notice to terminate this Agreement. If at expiry of such period of twenty-eight (28) days Force Majeure shall still continue this Agreement shall terminate.

8.2 Termination Notices

Upon occurrence of a UETCL Event of Default or a GENCO Event of Default, as the case may be, that is not cured within the applicable period (if any) for cure, the nondefaulting party may, at its option, initiate termination of this Agreement by delivering a written notice ("Notice of Intent to Terminate") of its intent to terminate this Agreement to the defaulting party. The Notice of Intent to Terminate shall specify in reasonable detail the UETCL Event of Default or the GENCO Event of Default, as the case may be, giving rise to the Notice of Intent to Terminate.

Following the giving of a Notice of Intent to Terminate, the Parties shall consult for a period of forty five (45) days in case of a failure by either party to make payments or provide security when due, and ninety (90) days with respect to any other Event of Default (or such longer period as the Parties mutually may agree), as to what steps shall be taken with a view to mitigating the consequences of the relevant event taking into account all prevailing circumstances. During the period following delivery of the Notice of Intent to Terminate, the party in default may continue to undertake efforts to cure the default, and if the default is cured at anytime prior to the delivery of a Termination Notice in accordance with Sub-clause 0, then the non-defaulting Party shall have no right terminate this Agreement in respect of such cured default. Upon expiration of the consultation period described in Sub-clause 0, if any, and unless the Parties shall have otherwise agreed or unless the UETCL Event of Default or GENCO Event of Default giving rise to the Notice of Intent to Terminate shall have been remedied the Party having given the Notice of Intent to Terminate may terminate this Agreement by delivering a Termination Notice to the other Party, whereupon this Agreement shall immediately terminate.

8.3 Payments in the Event of Termination

Any Party shall be liable to and shall indemnify the other Parties for the loss or damage directly and foreseeable suffered by the other Parties as a result of termination of this Agreement due to that Party's Event of Default. Provided that the loss or damage suffered by either Party, if disputed by the other Party, shall have been determined by an Arbitrator in accordance with the dispute resolution procedure under Clause 0. Provided further that the loss determined by the Arbitrator does not

exceed [US\$ 500,000] in any given year.

8.4 Antecedent Rights

The termination of this Agreement shall be without limitation of or prejudice to any other relief, remedy or antecedent right of either Party under or in connection with this Agreement.

8.5 Survival

In the event of the termination of this Agreement then for a period of two (2) years following termination the provisions of this Agreement:

- as they relate to the payment of any sum due or any sum which may become payable by one Party to the other;
- as they relate to confidentiality; and
- as they relate to the disputes resolution procedure under Clause 0;

shall survive termination and continue to have effect in the terms of this Agreement (save in respect of any continuing arbitration commenced prior to the lapse of such two (2) year period this Agreement shall survive solely in respect of the matter in arbitration).

8.6 Limitation of Liability

Subject to Sub-clause 0 and Sub-clause 0 neither UETCL nor GENCO shall be liable to the other for the other's Consequential Loss.

Nothing in this Sub-clause 0 shall relieve either Party from any express obligation under this Agreement to make a payment to the other Party when due including the payment of Liquidated Damages pursuant to Sub-clause 0.

9. Confidentiality

9.1 General Restriction

Subject to the exceptions provided in Sub-clause 0, neither of the Parties to this Agreement shall, at any time, whether before or after the termination of this Agreement, without the prior consent of the other Party, divulge or suffer or permit its officers, employees, agents or contractors to divulge to any person (other than to any of its or their respective officers or employees who require the same to enable them properly to carry out their duties or to its or their respective banks or financiers of the Parties) any of the contents of this Agreement or any commercially confidential information relating to the negotiations concerning the same which may come to a Party's knowledge in the course of such negotiations concerning the op-

erations, contracts, commercial or financial arrangements or affairs of the other Party.

9.2 Exceptions

The restrictions imposed by Sub-clause 0 shall not apply to the disclosure of any information:

- which now or hereafter comes into the public domain otherwise than as a result of a breach of this Agreement or the undertaking of confidentiality;
- which is obtainable with no more than reasonable diligence from sources other than the Parties hereto;
- which is required by law or appropriate regulatory/ constitutional authority to be disclosed to any person who is authorized by law to receive the same; which is on or comes into the possession of the receiving Party prior to the aforesaid publication or disclosure and which was or is not obtained under any obligation of confidentiality;
- which was or is obtained from a third party who is free to divulge the same and which was or is not obtained under any obligation of confidentiality.

A Party may disclose the confidential information subject to obtaining confidential undertakings to keep the same confidential in terms not less strict than those imposed under this Agreement to:

- a court, Arbitrator or administrative tribunal in the course of proceedings before the court, Arbitrator or tribunal to which the disclosing Party is a Party;
- appropriate agencies or Ministries of the Government of Uganda. the lenders or to any consultants, banks, financiers or advisers to the disclosing Party (including their respective managements and Board of Directors), or
- any recognized exchange upon which the share capital of the Party making the disclosure is proposed to be from time to time listed or dealt in; and
- any insurers of either Party.

10. Dispute Resolution

10.1 Mutual Discussion

If any dispute or difference of any kind whatsoever shall arise between the Parties in connection with or arising out of this Agreement, the Parties shall attempt to amicably settle such dispute in the first instance within thirty (30) days or within an agreed time frame by mutual discussion.

Upon completion of such thirty (30) day period, or such additional period as may be agreed, either Party may request that the dispute be settled in accordance with

Subclause 0.

10.2 Arbitration (International option)

All and any disputes or differences arising out of or in connection with this Agreement, which are not first resolved amicably between the Parties in accordance with Subclause 0, shall be finally settled by arbitration in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law ("the UNCITRAL Rules") as at present in force.

Unless the parties agree differently, the following shall apply. The number of arbitrators comprising the Tribunal shall be three. Appointing authority according to article 6 in the UNCITRAL rules shall be the President for the time being of the London Court of International Arbitration. The place of arbitration shall be Kampala, Uganda. The language of arbitration and any award shall be rendered in English. The rights and obligations of the Board and the Company shall be determined in accordance with Ugandan Law. The arbitration proceedings shall be conducted in accordance with the laws of the venue where the arbitration proceedings shall be held.

The decision of the Tribunal shall be final and binding upon the Parties and shall not be subject to appeal.

In all matters not expressly provided for in the UNCITRAL Arbitration Rules, the Tribunal shall act in accordance with the spirit of the UNCITRAL Arbitration Rules.

10.3 Arbitration (Ugandan option)

All and any disputes or differences arising out of or in connection with this Agreement, which are not first resolved amicably between the Parties in accordance with Subclause 0, shall be finally settled by arbitration in accordance with the Arbitration and Reconciliation Act Chapter 4 of the laws of Uganda.

Unless the parties agree differently, the following shall apply. The number of arbitrators comprising the Tribunal shall be three. The place of arbitration shall be Kampala, Uganda. The language of arbitration and any award shall be rendered in English. The rights and obligations of the Board and the Company shall be determined in accordance with Ugandan Law. The arbitration proceedings shall be conducted in accordance with the laws of the venue where the arbitration proceedings shall be held.

The decision of the Tribunal shall be final and binding upon the Parties and shall not be subject to appeal.

In all matters not expressly provided for in the Arbitration and Reconciliation Act, the Tribunal shall act in accordance with the spirit of the Arbitration and Reconciliation Act.

11. Miscellaneous Provisions

11.1 Notices

Except for communication in accordance with operating and dispatch procedures, any certificates, notices or written instructions to be given under this Agreement shall be served by sending the same by post, courier, facsimile or leaving the same at the following addresses and marked for the attention of the persons specified in this Subclause 0:

If to GENCO

For the Attention of: The Company Secretary
 XXX Company Limited

Postal address: PO Box XXX, Kampala, Uganda

Physical address: XXX

Telephone: XXX

Facsimile No. XXX

Email:| XXX If to UETCL

For the Attention of: The Managing Director Uganda Electricity Transmission Company Limited

Postal address: PO Box 7625, Kampala, Uganda

 Physical address: Plot 29/33 Amber House,
 Kampala Road, Kampala, Uganda

Telephone: +256 41 233 433/5

Facsimile No. +256 41 341 789

Email: Transco@uetcl.com

Any Party may change its nominated address/addresses or facsimile number by prior notice to the other Parties. Notices given by registered post shall be effective upon the earlier of (i) actual receipt, and (ii) seven (7) Days after mailing. Notices given by leaving them with the addressee shall only be valid if the addressee or a responsible officer of the addressee acknowledges receipt in writing. Notices given by facsimile shall be deemed to have been received where there is confirmation of uninterrupted transmission by a transmission report and where there has been no telephonic communication by the recipient to the sender (to be confirmed in writing)

that the facsimile has not been received in legible form:

- by 1500 Hours on the Day of sending if sent on a Business Day between 0900 Hours and 1500 Hours; and
- by 1000 Hours on the next following Business Day if sent after 1500 Hours on a Business Day but before 0900 Hours on the next Business Day.

11.2 Amendments

This Agreement may only be amended or varied by the written agreement of each Party.

11.3 Waiver

No waiver or failure by a Party to insist on the strict performance of this Agreement or to act in respect of the default or defaults of the other party and no acceptance of payment or performance during the continuance of any such default or defaults shall preclude any right, relief or remedy under or in connection with this Agreement available to the non defaulting Party and may not be relied on by the defaulting Party as a consent to that default or those defaults or its or their repetition.

11.4 Successors

This Agreement shall bind and endure to the benefit of the Parties and their respective successors and permitted assigns.

11.5 Assignment, Transfer of Interest and Changes in Ownership

Neither Party may assign or otherwise transfer all or any of its rights, benefits or obligations hereunder without the other Party's prior written consent, provided such consent is not to be unreasonably withheld or delayed, if the Party seeking assignment can satisfy the other Party of such proposed assignee's financial, technical and legal status and ability to observe and perform this Agreement, Provided however that the Party wishing to assign has given notice to that effect to the other Party and such notice shall have given sufficient information to show the status and ability of the proposed assignee to carry out the terms of this Agreement.

No assignment pursuant to this Sub-clause 0 shall have effect unless and until the assigning Party has:

procured the proposed assignee to covenant directly with the other Party in a form reasonably satisfactory to such Party to observe and perform all the terms and conditions of this Agreement;

and has provided to the other Party a certified copy of the assignment (excluding

consideration paid or payable for such assignment).

Notwithstanding the foregoing provisions, for the purpose of financing the Project, it is expressly acknowledged that GENCO intends to obtain such financing for the Project from Lenders, GENCO may assign to, or grant a security interest in favour of, the Lenders of all of its rights and interests under or pursuant to this Agreement. GENCO shall notify UETCL of the creation of such security over its rights and interests under this Agreement at least 30 days prior to the execution of any such assignment or security interest.

11.6 Severability

If any provision or part of a provision of this Agreement or its application to any party is invalid or cannot be enforced, then all other provisions of this Agreement will be construed, insofar as possible, to be valid and enforceable or in manner which enables them to continue to have full force and effect, and the invalid or unenforceable part shall be severed from this Agreement with a view to maintaining, to the fullest extent possible, the validity and enforceability of all other provisions of this Agreement.

If for any reason whatsoever any provision of this Agreement is or becomes invalid, illegal or unenforceable, or is declared by any court of competent jurisdiction or any Governmental Authority to be invalid, illegal or unenforceable or if such Governmental Authority:

refuses or formally indicates an intention to refuse authorization of, or exemption to, any of the provisions of or arrangements contained in this Agreement (in the case of a refusal either by way of outright refusal or by way of requirement that this Agreement be amended or any of its provisions be deleted or that a party give an undertaking or accept a condition as to future conduct); or

formally indicates that to continue to operate any provisions of this Agreement may expose the Parties to sanctions under any law, order, enactment or regulation, or requests any Party to give undertakings or to accept conditions as to future conduct in order that such Party may not be subject to such sanctions; then in all cases, whether initially or at the end of any earlier period or periods of exemption, the Parties will negotiate in good faith with a view to agreeing one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions which substitute provisions are satisfactory to all relevant Competent Authorities and produce as nearly as is practicable in all the circumstances the appropriate balance of the commercial interests of the Parties.

11.7 No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship or partnership between the Parties or to impose any

partnership or agency obligation or liability upon either Party. No Party shall have any right, power or authority to enter into any agreement or undertaking for, or to act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, any other Party.

11.8 Further Assurance

Each Party agrees to execute and deliver all such further instruments and do and perform all such further acts and things as shall be necessary for the carrying out of the provisions of this Agreement.

11.9 Entirety of Agreement

This Agreement constitutes the entire agreement between the Parties in relation to the sale and purchase of Energy at the Interconnection Point and all prior representations, negotiations and undertakings shall be excluded from any construction of this Agreement.

11.10 Counterparts

This Agreement shall be executed in three counterparts by the Parties hereto and when executed and delivered all the counterparts shall together constitute one and the same instrument.

11.11 Sovereign Immunity

If any Party may in any jurisdiction claim for itself or its assets or revenues immunity from suit, execution, attachment (whether in aid of execution, before judgment or otherwise) or other legal process and if in any such jurisdiction there may be attributed to it or its assets or revenues such immunity (whether or not claims), then that party agrees not to claim and irrevocably waives such immunity to the full extent permitted by the laws of such jurisdiction.

11.12 Governing Law

This Agreement shall be governed by and construed in accordance with the Laws of Uganda.

IN WITNESS whereof the Parties or their duly authorized representative have executed this Agreement on the day, month and year first above mentioned.

The Common Seal of THE XXX COMPANY LIMITED is hereto affixed in the presence of:

- MANAGING DIRECTOR
- COMPANY SECRETARY

The Common Seal of THE UGANDA ELECTRICITY TRANSMISSION COMPANY LIMITED is hereunto affixed in the presence of:

- MANAGING DIRECTOR
- COMPANY SECRETARY

12. SCHEDULE 1: Interconnection Facilities

Map showing location of generation facilities and location of Interconnection Point.

Single line diagrams of the Interconnection Point at including the Main Meter, and Check Meter and showing the location of the Metering Point in each case.

13. SCHEDULE 2: DETERMINATION OF METERED QUANTITIES

13.1 Reading of Meters

The Main Meter and the Check Meters at the Interconnection Point, shall be read at 12:00 on the first Day of each successive Month (or such other Day as may be mutually agreed upon by the Parties). GENCO shall read the Main and Check Meters during normal business hours and shall notify UETCL at least forty-eight (48) hours in advance of the time of reading in order to afford UETCL the opportunity to be present during the reading. GENCO shall provide a copy of the readings to UETCL either by fax, courier or other appropriate means, and shall keep a log of the readings at the Interconnection Point and in the GENCO offices.

The readings of the Main Meter shall be used in the preparation of all invoices unless the Main Meter was not in service for a portion of the Month in question as a result of maintenance, repairs or testing, or is otherwise known to be inaccurate or functioning improperly. In such event, the following procedures will be followed in the stated order:

The readings of the Check meter shall be utilised to calculate the correct Metered Energy quantities, unless a test of such Check Meter as required by either Party, reveals that the Check Meter is inaccurate by more than two-tenths of a percent ($\pm 0.2\%$), or is otherwise functioning improperly.

If the Check Meter is found to be inaccurate by more than two-tenths of a percent ($\pm 0.2\%$) or is otherwise functioning improperly, then GENCO and UETCL shall jointly prepare an estimate of the correct reading on the basis of all available information and such guidelines as may have been agreed to for the handling of such matters;

In the event that the readings of either the Main or Check meter have been relied upon for the preparation of invoices and such meter is subsequently found to have been inaccurate or otherwise functioning improperly, the invoices which relied upon the erroneous meter shall be corrected for the inaccurate readings by reference to a meter whose readings were known to be accurate within plus or minus two-tenths of one percent ($\pm 0.2\%$) for the period during which the meter was inaccurate, if such period can be determined. In the event there is no alternative meter whose reading can be relied upon, the erroneous readings shall be corrected by the error in excess of two-tenths of one percent ($\pm 0.2\%$) determined by testing of the erroneous meter. If the period of inaccuracy cannot be accurately determined, it shall be deemed to be half the period between the date the meter was found to be inaccurate and the date of the last meter reading accepted by the Parties as accurate, or three months, whichever is the shorter period. In no event, however, shall any such adjustment be made for any period prior to the date on which the subject meter was last tested and found to be accurate within plus or minus two-tenths of one percent ($\pm 0.2\%$) and not otherwise functioning improperly.

13.2 Determination of Energy Quantities

The meter readings shall be used to determine the following monthly energy quantities:

The Peak Metered Energy for the month will be the increase in meter reading for the Peak Block since the meter reading of the previous month;

The Shoulder Metered Energy for the month will be the increase in meter reading for the Shoulder Block since the meter reading of the previous month;

The Off-Peak Metered Energy for the month will be the increase in meter reading for the Off-Peak Block since the meter reading of the previous month.

13.3 Definition of TOU Blocks

The Peak Block shall be between 18:00 and 23:00 every day of the week. The Shoulder Block shall be between 05:00 and 18:00 every day of the week. The Off-Peak Block shall be between 23:00 and 05:00 every day of the week.

14. SCHEDULE 3: DETERMINATION OF PAYMENTS

14.1 Energy Prices

Energy prices are expressed in US Dollar per MWh and are specified for three time-of-use blocks as defined in Schedule 2, and for two periods, each period being a set of Years. The set of power prices are shown below.

	Period 1: XXX to XXX	Period 2: XXX to XXX
Peak Price		
Shoulder Price		
Off-peak Price		

14.2 Exchange rate

The exchange rate to be used for determination of the monthly Energy Charge (the "Monthly Exchange rate") shall be the average of the official buying and selling exchange rate of the US Dollar to the UG Shilling posted by the Bank of Uganda on the last working day of the month.

14.3 Energy Charge

The Peak energy charge shall be calculated as the product of the prevailing Peak Price in US Dollars per MWh and the Peak Metered Energy for the month in MWh.

The Shoulder energy charge shall be calculated as the product of the prevailing Shoulder Price in US Dollars per MWh and the Shoulder Metered Energy for the month in MWh.

The Off-peak Energy Charge shall be calculated as the product of the prevailing Off-peak Price in US Dollars per MWh and the Off-peak Metered Energy for the month in MWh.

The Energy Charge for a specific Month shall be calculated as the equivalent in UG Shillings of the sum of the Peak Energy Charge, the Shoulder Energy Charge and the Off-Peak Energy Charge for that Month; multiplied by the Monthly Exchange rate for that Month.

15. SCHEDULE 4: METER SPECIFICATIONS

15.1 Metering System Requirements

Main/Check meter system to be installed, owned and maintained by GENCO at the Interconnection Point shall each consist of a single set of three current transformers and potential transformers feeding both a primary and a backup three phase four wire metering instrument. The system shall be designed such that the overall error of the installation, (including instrument transformers, wiring, and metering instruments) shall be no greater than 0.5% for power flows through the metering installation between 600kW and 20000kW. Both the Main and Check Meters shall be selected to have rated error no greater than 0.2% over the equivalent load range. Both Main and Check Meters shall be electronic time of use (TOU) meters which accumulate data separately for at least three time blocks with programmable beginning and ending times and holiday/weekend discrimination. Each meter shall be capable of separately accumulating and presenting on the register display the following data for the Peak Block, Shoulder Block and Off-Peak Block:

- Net kWh from the GENCO system
- Net kVArh from the GENCO system

The metering system shall be described clearly in appropriate drawings to be provided to both Parties. The current and voltage transformers will measure current and voltage as near as practicable to point at which the Interconnection Facility connects with the Umeme distribution system, as shown in Schedule 1. Both the Main and Check Meters shall be installed in weatherproof enclosures which shall include test switches and shorting blocks to allow removal of either meter instrument without taking the other out of service. The Main and Check Meters may be installed in a single enclosure or in separate enclosures, but the enclosure shall be so arranged that both meters can be read without disturbing the seals on the enclosure(s).

15.2 Testing

All testing and calibration of the Main and Check Meter instruments shall be carried out by qualified personnel using test equipment with a rated error of 0.1% or better, and which has been calibrated according to a procedure and against instruments traceable to a national standard within the preceding forty eight (48) months. Meters shall be tested at full rated test current, and at 10% of full rated test current at power factors of 50% lag, 50% lead and 100%. A written test report shall be prepared for all tests showing the calibration history of the test instruments, the as-found, and as-left conditions of the Main and Check Meters which shall be supplied to both Parties.

Current and voltage transformers shall be tested for ratio and phase angle errors following manufacture at an accredited testing station. Test certificates issued by

the testing station will be issued independently to both parties

15.3 Instruments

All instruments shall be of the flush mounting type and shall be fitted with non-reflecting glass according to the relevant IEC Standards.

All instruments and apparatus shall be capable of carrying their full load currents without undue heating. They shall not be damaged by the passage of fault currents within the rating of the associated switchgear through the primaries of their corresponding instrument transformers. All instruments and apparatus shall be back connected, and all cases shall be earthed. Means shall be provided for zero adjustment of instruments without dismantling.

All voltage circuits to instruments shall be protected by a fuse/MCB in each un-earthed phase of the circuit placed as close as practicable to the instrument transformer terminals, or where instruments are direct-connected, as close as practicable to the main connection. All power factor indicators shall have the star point of their current coils brought out to a separate terminal, which shall be connected to the star point of the instrument transformer secondary windings. Instrument scales shall be submitted for the approval of UETCL.

15.4 Integrating Meters

Power losses: The losses in each voltage and current circuits shall be measured under reference conditions to prove compliance with Tables IV and V of IEC Standard 60521.

Heating and Dielectric Tests: Tests shall be carried out to establish compliance with the requirements of Sub-clauses 6.4 and 6.5 of IEC Standard 60521. Accuracy: Under the conditions set out in IEC Standard 60521 and after having been energized for the appropriate period stated therein, the meters shall be listed to establish that the actual percentage error values fall within the limits as set out in Schedule 2. The mean temperature coefficient shall be determined for the reference temperature and shall be within the limits set out in IEC Standard 60521. Starting and running with no-load: The rotor shall start and continue to run at current values corresponding to 0.4% of basic current and shall complete at least one revolution at this current value. With no current in the current coil(s) and when energized at any voltage between 80% and 110% of the reference voltage, the rotor shall not make a complete revolution within one hour.

Insulation test: The meters shall be tested at a voltage of 2 kV for a period of one minute between all live terminals and earth.

The kWh meters shall be of square or rectangular form and shall be installed in the cubicles mutually agreed upon. The method of mounting of the meters on the pan-

els shall be the same as for the usual instruments. The form of the meters shall be flush with the face. They shall be programmable solid-state or electronic type and of 0.2 accuracy class and be supplied with a MD indicators and a contact for submitting impulses to the SCADA system.

The kWh integrating meters shall comply with the requirements of IEC Standard 60521 Class 0.2 meters unless otherwise approved by UETCL. These meters should be read direct without multiplying factors for kWh and maximum demand indicators and shall be provided with a means of transmitting readings to the System Control Centre.

**Annex 1
FEED IN TARIFFS**

Feed-in tariff schedule for renewable energy generators of less than 20 MW
(US¢/kWh)

i) Hydropower

	Years 1 - 6	Years 7 - 20	Simple Weighted Average
Peak	12.0	9.00	9.90
Shoulder	6.40	5.40	5.70
Off-peak	4.00	1.50	2.25
Average	7.20	5.33	5.89

ii) Cogeneration with Bagasse

	Years 1 - 6	Years 6 - 15	Simple Weighted Average
Peak	12.00	8.00	9.60
Shoulder	6.00	4.50	5.10
Off-peak	4.10	4.00	4.04
Average	7.03	5.25	5.96

Annex 3 HYDRO POWER SITES IN UGANDA

Table A3.1 Non-Nile Sites (Mini/Micro Sites) Refer to Fig. 2.3

No	NAME	DISTRICT	STATUS	INSTALLED (MW)	POTENTIAL (MW)
1	Mziliba	Kabale	Out of operation-needs rehabilitation	1.00	1.00
2	Kuluva	Mojo	In operation feeding Kuluva Hospital	0.12	1.00
3	Kogando	Kasese	In operation feeding Kagando Hospital	0.06	1.00
4	Kielzi	Rukungiri	In operation at 60 MW Expansion to 800 MW is in progress and to be complete in December 2007	0.06	0.3
5	Mobaku I	Kasese	Operated by Kilelesh mines. Supplies Kilelesh and feeds into the main grid	5.40	5.40
6	Mobaku III	Kasese	Operated by Kasese Cobalt co and feeds into the main grid	10.50	10.50
7	Muzizi	Kibale / Kabarole	Developer an power invest. AS Permit granted Nov/Dec 2004 for 12 months. Feasibility study still going on	0	20.00
8	Wengo	Bushenyi	Pre-feasibility study carried out by UNIDO	0	3.5
9	Rwizi	Mbarara	Pre investment studies carried out	0	0.50
10	Kakaka	Kabarole	Feasibility studies carried out by SWECCO. Eco Power has applied for permit.	0	7.20

No	NAME	DISTRICT	STATUS	INSTALLED (MW)	POTENTIAL (MW)
11	Nshungwezi	Mbarara	Electricity Distribution Management (Namibia) has permit to develop the site.	0	20.00
12	Nyamabuye	Kisoro	Developer is the Uganda Sustainable Energy Company Limited (USEC). Permit granted in Feb 2005. Feasibility study was conducted by Norplan. USEC is yet to start on pre-investment study	0	2.20
13	Sifi	Kapchorwa	Developer Mt. Elgon Power Company. Permit issued in July 2002 and extended until September 2004	0	3.30
14	Sipi	Kapchorwa	Developer Mt. Elgon Power Company. Permit issued in July 2002 and extended until September 2004	0	2.50
15	Anyau / Olewa	Anua	WENRECO has exclusive rights to the site through the West Nile license	0	1.50
16	Halesero	Kabale	Estimate	0	1.00
17	Kitumba	Kabale	Estimate	0	0.20
18	Mpanga	Kabarole	Estimate	0	0.40
19	Nyakibate	Rukungiri	Estimate	0	0.10
20	Leya	Mojo	Estimate	0	0.12

No	NAME	DISTRICT	STATUS	INSTALLED (MW)	POTENTIAL (MW)
21	Anua	Moyo	Estimate	0	0.18
23	Mvepi	Anua	Estimate	0	2.40
25	Ela	Anua	Estimate	0	1.50
26	Agol	Anua	Estimate	0	0.35
27	Ngusee	Kibale	Estimate	0	0.40
			Old power plant used to operate at 1 MW China Shang Sheng Industrial Company to rebuild and expand plant to 20 MW Permit granted on 25 th July 2005 for 12 months	0	20.00
28	Kilagati	Mbarara	Estimate	0	0.50
29	Seziwa	Mukono	Estimate	0	0.50
30	Tokwe	Bundibugyo	Developer, Uganda Energy for Rural Development, UERD	0	0.10
31	Mgilla	Bundibugyo	Estimate	0	0.15
32	Miria Adua	Anua	Estimate	0	0.10
34	Ishasha	Rukungiri	Feasibility studies carried out by tele consult Eco Power has applied for a permit and is carrying out preinvestment studies	0	6.5
35	Buenika	Hojima	Feasibility studies done by Hydromax 12 months of the permit granted effective 1 st	0	10.00

No	NAME	DISTRICT	STATUS	INSTALLED (MW)	POTENTIAL (MW)
			August 2005		
36	Nango Ridge	Kanungu/Rukungiri	Developer SN Power Invest AS Permit granted Nov / Dec 2004 for 12 months	0	7.50
37	Egoye	Kasese	Developer SN power invest AS Permit granted Nov / Dec 2004 for 12 months	0	11.00
38	Mobuku II	Kasese	Developer SN power invest AS Permit granted Nov / Dec 2004 for 12 months	0	13.00
39	Kyambura	Bushenyi	Prefeasibility studies being carried out by Eco Power	0	0.00
40	Mujembe Sinyuho	Sironko	Developer M. Elgon Power Company; Permit issued July 2002 and extended until expiry in September 2004	0	2.60
41	Rima	Kapchorwa	Developer M. Elgon Power Company; Permit issued July 2002 and extended until expiry in September 2004	0	1.20
42	Mahoma	Kamwengeri/Kabarole	Developer Uganda Energy for Rural Development	0	3.00
43	Rwebipika	Kabarole	Permit granted in Nov / Dec for 12 months Developer Uganda Energy for Rural Development Permit granted in Nov / December for 12 months	0	1.00

No	NAME	DISTRICT	STATUS	INSTALLED (MW)	POTENTIAL (MW)
44	Milano	Kanungu/Rukungiri	Estimate	0	2.50
45	Rwempungu	Bushenyi	Estimate	0	2.30
46	Cresta	Ibanda	Estimate	0	2.00
47	Rwenzori	Kaese	Estimate	0	3.00
48	Mpanga Escarpment	Kamwenge	Estimate	0	14.00
49	Rwigo	Bundibugyo	Estimate	0	0.00
50	Nyahuka	Bundibugyo	Estimate	0	0.70
51	Nkusei Escarpment	Homa/Kibaale	Estimate	0	11.00
52	Nkusei at Pichwa	Homa/Kibaale	Estimate	0	0.38
			Developer SN Power Invest AS Permit granted Nov / Dec 2004 for 12 month Feasibility study by Norplan	0	5.00
53	Waki	Homa/Masindi	Estimate	0	1.40
54	Seneo	Masindi	Estimate	0	1.70
55	Wejooko	Masindi	Estimate	0	1.60
56	Izizi	Masindi	Estimate	0	1.60
57	Ezia	Adjumani	Developer Adjumani Rural Electrification Company.	0	1.00

No	NAME	DISTRICT	STATUS	INSTALLED (MW)	POTENTIAL (MW)
58	Kochi	Koboko	Estimate	0	0.91
59	Nyarwoto I	Nebbi	Estimate	0	0.00
			Feasibility study completed and ready for development. WEINRECO was awarded concession in March 2003 Conducting a Resettlement Action Plan (RAP) Construction expected to begin Jan 2007	0	3.50
60	Nyagak I	Nebbi	Estimate	0	3.00
61	Nyagak II	Nebbi	Estimate	0	0.90
62	Ora	Arua	Estimate	0	0.75
63	Manafwa	Manafwa	Estimate	0	2.60
64	Simu	Sironko	Estimate	0	2.60

Table A3.2 Sites along the Nile (Large Hydro Sites) Refer to Fig 2.2

No	Site	Location	Installed Capacity (MW)	Potential Capacity (MW)	Status
1	Nalubale (Owen Falls Dam)	Jinja	180	180	In operation
2	Kiira (Owen Falls Extension)	Jinja	200	200	In operation
3	Bujegali	Jinja	0	320	IPS Consortium has started construction.
4	Kalegala	Jinja	0	350	Feasibility study complete
5	Kanuma	Masindi/Apoc	0	200	Feasibility study complete NORPAK Power Ltd to develop site
6	Ayago South	Gulu/Masindi	0	234	Preliminary studies available
7	Ayago North	Gulu/Masindi	0	304	Preliminary studies available
8	Murchison	Gulu/Masindi	0	642	Preliminary studies available but has adverse environmental effects
9	Isimba	Kamuli	0	87	Estimate
10	Bugumira	Kamuli	0	109	Estimate

Annex 4 PROJECT DEVELOPMENT

Table A4.1 Process and Coordination Mechanisms for PREPS and LIREPS/ CIREPS

PHASE	PREPS	LIREPS/CIREPS
Initiation	<p>REA leads identification of PREPS with a minimum involvement of ERA.</p>	<p>Local, foreign Developer or communities identifies the project and analyses the commercial feasibility of the project</p>
Project development process	<p>The project is tendered to potential bidders, and the successful bidder is awarded a permit by ERA to finalise the project preparation. REA consults ERA, UETCL, MEMD, NEMA and other authorities in preparing the project documentation and doing early feasibility studies. Interaction with UETCL should confirm inter-connection options, impact on load flow, and whether any amendments to the pro-forma PPA are required.</p>	<p>The developer contacts ERA and signs a Memorandum of Understanding (MoU) with MEMD. The developer consults REA, UETCL, NEMA and other authorities in preparing their project documentation. Interaction with UETCL should confirm inter-connection options, impact on load flow, and whether any amendments to the pro-forma PPA are required.</p>

<p>EIA/RAP and other permits <i>Project Brief</i> <i>Scoping and TOR</i> <i>approval</i> <i>EIA</i> <i>Feasibility study</i> <i>Project design</i></p>	<p>REA jointly submits a project brief to NEMA for an initial reaction. REA prepares the scoping and study and submits it to NEMA, including TOR for the EIA that will be undertaken. REA initiates negotiations with local government regarding royalties, as required in the Act. <i>Tender documents:</i> REA prepares the documentation needed for the tender and consults with ERA as appropriate. <i>Tender:</i> REA and ERA jointly issue an invitation to submit proposals. <i>Due diligence and submission:</i> Bidders complete their due diligence and prepare their submissions based on the terms of the tender.</p>	<p>The developer submits an application to ERA for a permit to undertake the necessary project development. ERA copies the permit application to REA for information purposes. The developer prepares the scoping study and submits it to NEMA, including TOR for the EIA that will be undertaken. NEMA screens projects with no significant impact, which do not require an EIA, and projects for which mitigation measures can be easily identified either directly or through an Environmental Impact Review (EIR). The developer initiates negotiations with local government regarding royalties, as provided in the Act. NEMA must approve an Environmental Impact Assessment (EIA) and a Resettlement Action Plan (RAP) before ERA can issue a licence for the project. NEMA reviews the studies and, if approved, issues a certificate of approval for the project. RAP valuation and registration of properties is submitted to NEMA who in turn forwards it to the Chief Government Valuer at the Land Office. The Land Office must approve the valuation and registration of properties before NEMA can approve the</p>
	<p>ERA and REA</p>	

	<p>take a joint appraisal of the bids and the preferred bidder is awarded a permit by ERA.</p>	<p>RAP processes applications for a Construction Permit and a Water Surface Abstraction Permit while Uganda Investment Authority processes the application for an Investment Licence.</p> <p>Once a permit is awarded, developers may apply to ERT-BUDS for support in performing feasibility and environmental impact studies. The ERT-BUDS arm of the Private Sector Foundation will process the application, and if successful, arrange for payment of a grant.</p>
<p>License and subsidy application (under 0.5 MW, no licence is required; between 0.5 and 2 MW, the developer may apply to ERA for exemption)</p>	<p>The selected bidder completes the necessary application forms for the licence and subsidy, and submits these to ERA and REA respectively.</p>	<p>The developer negotiates amendments to the pro-forma PPA with UETCL, and a draft of the final PPA is prepared and initiated.</p> <p>For projects larger than 2 MW, the developer submits a licence and subsidy application, containing the same information in the same format.</p> <p>The ERA and REA undertake jointly a due-diligence study of the application.</p> <p>The REB considers the subsidy award by evaluating the application against its own subsidy criteria.</p> <p>The decisions (rejection:</p>

		acceptance with or without conditions; request to resubmit) are communicated to the applicant by ERA for licence and REA for subsidy. UETCL Board confirms the PPA and it is signed; REA and developer finalise the subsidy contract; and ERA issues the licence.
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The process of implementing the PREPS is summarized in Fig A4. 1.



Figure A4.1 Implementation of the PREPS

Figures A4.2 and A4.3 show a timeline for the overall development of LIREPS and PREPS respectively. ERA must make a decision on the permit within 30 days from when they received comments. After the license application has been made, ERA is again obliged by the Electricity Act to make a public notice and to receive comments from the public. The final licence decision must have been made within 180 days from receiving the application. Table A4.2 summarizes the different documents required for project processing and approval.

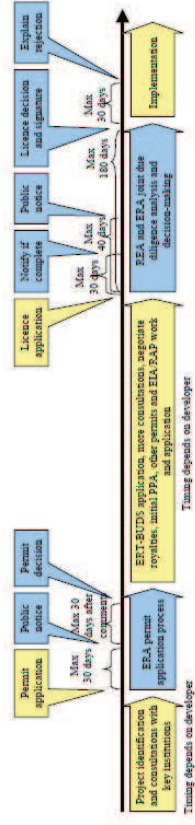


Figure A4.2 Simplified Timeline for LIREPS Development Process

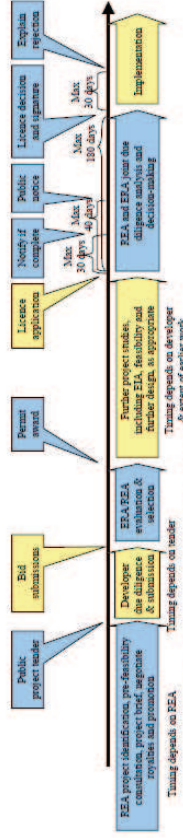


Figure A4.3 Simplified Timelines for PREPS Development

Table A4.2 Documents Required for Project Processing and Approval

1. Proforma Memorandum of Understanding
2. Proforma Power Purchase Agreement
3. Proforma Subsidy Contract
4. Proforma Interconnection and Wheeling Agreements
5. Application Form for Permit
6. Application Form for License and Subsidy
7. Application Form for Cost Sharing
8. Application Form for surface water permit and construction permit from DWD
9. Application Form for Investment License for UJA
10. Requirements for an Environment Impact Assessment Brief
11. Environmental and Social Management Framework for Renewable Energy Investments in Uganda.

Annex 4: EEG – Law for the Use of Renewable Energies in Germany

GESETZ ZUR NEUREGELUNG DES RECHTS DER ERNEUERBAREN

ENERGIEN IM STROMBEREICH¹) VOM 21. JULI 2004

Gesetz für den Vorrang Erneuerbarer Energien

(Erneuerbare-Energien-Gesetz – EEG)

§ 1 Zweck des Gesetzes

(1) Zweck dieses Gesetzes ist es, insbesondere im Interesse des Klima-, Natur- und Umweltschutzes eine nachhaltige Entwicklung der Energieversorgung zu ermöglichen, die volkswirtschaftlichen Kosten der Energieversorgung auch durch die Einbeziehung langfristiger externer Effekte zu verringern, Natur und Umwelt zu schützen, einen Beitrag zur Vermeidung von Konflikten um fossile Energieresourcen zu leisten und die Weiterentwicklung von Technologien zur Erzeugung von Strom aus erneuerbaren Energien zu fördern.

(2) Zweck dieses Gesetzes ist ferner, dazu beizutragen, den Anteil erneuerbarer Energien an der Stromversorgung bis zum Jahr 2010 auf mindestens 12,5 Prozent und bis zum Jahr 2020 auf mindestens 20 Prozent zu erhöhen.

§ 2 Anwendungsbereich

(1) Dieses Gesetz regelt

1. den vorrangigen Anschluss von Anlagen zur Erzeugung von Strom aus Erneuerbaren Energien und aus Grubengas im Bundesgebiet einschließlich der deutschen ausschließlichen Wirtschaftszone (Geltungsbereich des Gesetzes) an die Netze für die allgemeine Versorgung mit Elektrizität,

2. die vorrangige Abnahme, Übertragung und Vergütung dieses Stroms durch die Netzbetreiber und

3. den bundesweiten Ausgleich des abgenommenen und vergüteten Stroms.

(2) Dieses Gesetz findet keine Anwendung auf Anlagen, die zu über 25 Prozent der Bundesrepublik Deutschland oder einem Land gehören und die bis zum 31. Juli 2004 in Betrieb genommen worden sind.

§ 3 Begriffsbestimmungen

(1) Erneuerbare Energien sind Wasserkraft einschließlich der Wellen-, Gezeiten-, Salzgradienten- und Strömungsenergie, Windenergie, solare Strahlungsenergie, Geothermie, Energie aus Biomasse einschließlich Biogas, Deponiegas und Klärgas sowie aus dem biologisch abbaubaren Anteil von Abfällen aus Haushalten und Industrie.

(2) Anlage ist jede selbständige technische Einrichtung zur Erzeugung von Strom aus erneuerbaren Energien oder aus Grubengas. Mehrere Anlagen zur Erzeugung von Strom aus gleichartigen erneuerbaren Energien oder aus Grubengas, die im Geltungsbereich des Gesetzes errichtet und mit gemeinsamen für den Betrieb technisch erforderlichen Einrichtungen oder baulichen Anlagen unmittelbar verbunden sind, gelten als eine Anlage, soweit sich nicht aus den §§ 6 bis 12 etwas anderes ergibt; nicht für den Betrieb technisch erforderlich sind insbesondere Wechselrichter, Wege, Netzanschlüsse, Mess-, Verwaltungs- und Überwachungseinrichtungen.

(3) Anlagenbetreiber ist, wer unbeschadet des Eigentums die Anlage zum Zweck der Erzeugung von Strom aus erneuerbaren Energien oder aus Grubengas nutzt.

(4) Inbetriebnahme ist die erstmalige Inbetriebsetzung der Anlage nach Herstellung ihrer technischen Betriebsbereitschaft oder nach ihrer Erneuerung, sofern die Kosten der Erneuerung mindestens 50 Prozent der Kosten einer Neuherstellung der gesamten Anlage einschließlich sämtlicher technisch für den Betrieb erforderlicher Einrichtungen und baulicher Anlagen betragen.

(5) Leistung einer Anlage ist die elektrische Wirkleistung, die die Anlage bei bestimmungsgemäßem Betrieb ungeachtet kurzfristiger geringfügiger Abweichungen ohne zeitliche Einschränkung technisch erbringen kann. Bei der Feststellung der für die Vergütungshöhe maßgebenden Leistung bleibt die nur zur Reserve genutzte Leistung unberücksichtigt.

(6) Netz ist die Gesamtheit der miteinander verbundenen technischen Einrichtungen zur Übertragung und Verteilung von Elektrizität für die allgemeine Versorgung.

(7) Netzbetreiber sind die Betreiber von Netzen aller Spannungsebenen für die allgemeine Versorgung mit Elektrizität. Übertragungsnetzbetreiber sind die regelverantwortlichen Netzbetreiber von Hoch- und Höchstspannungsnetzen, die der überregionalen Übertragung von Elektrizität zu nachgeordneten Netzen dienen.

§ 4 Abnahme- und Übertragungspflicht

(1) Netzbetreiber sind verpflichtet, Anlagen zur Erzeugung von Strom aus erneuerbaren Energien oder aus Grubengas unverzüglich vorrangig an ihr Netz anzuschließen und den gesamten aus diesen Anlagen angebotenen Strom aus erneuerbaren Energien oder aus Grubengas vorrangig abzunehmen und zu übertragen. Die Verpflichtung zur Abnahme nach Satz 1 besteht nach Einrichtung des Anlagenregisters nach § 15 Abs. 3 nur, wenn der Anlagenbetreiber die Eintragung der Anlage in das Register beantragt hat. Unbeschadet des § 12 Abs. 1 können Anlagenbetreiber und Netzbetreiber vertraglich vereinbaren, vom Abnahmevorrang abzuweichen, wenn dies der besseren Integration der Anlage in das Netz dient. Netzbetreiber können infolge der Vereinbarung nach Satz 3 entstehende Kosten im nachgewiesenen Umfang bei der Ermittlung des Netznutzungsentgelts in Ansatz bringen.

(2) Die Verpflichtung nach Absatz 1 Satz 1 trifft den Netzbetreiber, zu dessen technisch für die Aufnahme geeignetem Netz die kürzeste Entfernung zum Standort der Anlage besteht, wenn nicht ein anderes Netz einen technisch und wirtschaftlich günstigeren Verknüpfungspunkt aufweist. Ein Netz gilt auch dann als technisch geeignet, wenn die Abnahme des Stroms unbeschadet des Vorrangs nach Absatz 1 Satz 1 erst durch einen wirtschaftlich zumutbaren Ausbau des Netzes möglich wird; in diesem Fall ist der Netzbetreiber auf Verlangen des Einspeisewilligen zum unverzüglichen Ausbau verpflichtet. Wenn die Anlage einer Genehmigung nach anderen Rechtsvorschriften bedarf, besteht die Verpflichtung zum Ausbau nach Satz 2 nur, wenn der Anlagenbetreiber eine Genehmigung, eine Teilgenehmigung oder einen Vorbescheid vorlegt. Die Pflicht zum Ausbau erstreckt sich auf sämtliche für den Betrieb des Netzes notwendigen technischen Einrichtungen sowie die im Eigentum des Netzbetreibers stehenden oder in sein Eigentum übergehenden Anschlussanlagen.

(3) Die Verpflichtung zum vorrangigen Anschluss nach Absatz 1 Satz 1 besteht auch dann, wenn das Netz oder ein Netzbereich zeitweise vollständig durch Strom aus erneuerbaren Energien oder Grubengas ausgelastet ist, es sei denn, die Anlage ist nicht mit einer technischen Einrichtung zur Reduzierung der Einspeiseleistung bei Netzüberlastung ausgestattet. Die Verpflichtung nach Absatz 1 Satz 1 zur vorrangigen Abnahme des in diesen Anlagen erzeugten Stroms besteht nur, soweit das Netz oder der Netzbereich nicht durch Strom aus zeitlich vor diesen Anlagen angeschlossenen Anlagen zur Erzeugung von Strom aus erneuerbaren Energien oder Grubengas vollständig ausgelastet ist; die Verpflichtung zum unverzüglichen Ausbau nach Absatz 2 Satz 2 bleibt unberührt. Der Netzbetreiber ist auf Verlangen des Anlagenbetreibers verpflichtet, bei Nichtabnahme des Stroms das Vorliegen der

Voraussetzungen nach Satz 2 innerhalb von vier Wochen schriftlich unter Vorlage nachprüfbarer Berechnungen nachzuweisen.

(4) Soweit es für die Planung des Netzbetreibers oder des Einspeisewilligen sowie für die Feststellung der Eignung des Netzes erforderlich ist, sind auf Antrag die für eine nachprüfbare Netzverträglichkeitsprüfung erforderlichen Netzdaten und Anlagendaten innerhalb von acht Wochen vorzulegen.

(5) Die Verpflichtung zur vorrangigen Abnahme und Übertragung nach Absatz 1 Satz 1 besteht auch dann, wenn die Anlage an das Netz des Anlagenbetreibers oder eines Dritten, der nicht Netzbetreiber im Sinne von § 3 Abs. 7 ist, angeschlossen und der Strom mittels kaufmännisch-bilanzieller Durchleitung durch dieses Netz in ein Netz nach § 3 Abs. 6 angeboten wird.

(6) Der vorgelagerte Übertragungsnetzbetreiber ist zur vorrangigen Abnahme und Übertragung der von dem Netzbetreiber nach Absatz 1 oder 5 aufgenommenen Energiemenge verpflichtet. Wird im Netzbereich des abgabeberechtigten Netzbetreibers kein inländisches Übertragungsnetz betrieben, so trifft die Pflicht zur Abnahme und Übertragung nach Satz 1 den nächstgelegenen inländischen Übertragungsnetzbetreiber. Satz 1 gilt für sonstige Netzbetreiber entsprechend.

§ 5 Vergütungspflicht

(1) Netzbetreiber sind verpflichtet, Strom, der in Anlagen gewonnen wird, die ausschließlich erneuerbare Energien oder Grubengas einsetzen und den sie nach § 4 Abs. 1 oder Abs. 5 abgenommen haben, nach Maßgabe der §§ 6 bis 12 zu vergüten. Die Verpflichtung nach Satz 1 besteht bei Anlagen mit einer Leistung ab 500 Kilowatt nur, soweit eine registrierende Leistungsmessung erfolgt.

(2) Der vorgelagerte Übertragungsnetzbetreiber ist zur Vergütung der von dem Netzbetreiber nach § 4 Abs. 6 abgenommenen und von diesem nach Absatz 1 vergüteten Energiemenge entsprechend den §§ 6 bis 12 verpflichtet. Von den Vergütungen sind die nach guter fachlicher Praxis zu ermittelnden vermiedenen Netznutzungsentgelte in Abzug zu bringen. § 4 Abs. 6 Satz 2 gilt entsprechend.

§ 6 Vergütung für Strom aus Wasserkraft

(1) Für Strom aus Wasserkraftanlagen mit einer Leistung bis einschließlich 5 Megawatt beträgt die Vergütung

- 1.** bis einschließlich einer Leistung von 500 Kilowatt mindestens 9,67 Cent pro Kilowattstunde und
- 2.** bis einschließlich einer Leistung von 5 Megawatt mindestens 6,65 Cent pro Kilowattstunde.

Satz 1 findet auf Laufwasserkraftanlagen mit einer Leistung von bis zu 500 Kilowatt, die nach dem 31. Dezember 2007 genehmigt worden sind, nur Anwendung, wenn sie

- 1.** im räumlichen Zusammenhang mit einer ganz oder teilweise bereits bestehenden oder vorrangig zu anderen Zwecken als der Erzeugung von Strom aus Wasserkraft neu errichteten Staustufe oder Wehranlage oder
- 2.** ohne durchgehende Querverbauung

errichtet worden sind und dadurch nachweislich ein guter ökologischer Zustand erreicht oder der ökologische Zustand gegenüber dem vorherigen Zustand wesentlich verbessert worden ist.

(2) Strom aus Wasserkraftanlagen mit einer Leistung ab 5 Megawatt bis einschließlich 150 Megawatt wird nach den Vorschriften dieses Gesetzes nur vergütet, wenn

- 1.** die Anlage zwischen dem 1. August 2004 und dem 31. Dezember 2012 erneuert worden ist,
- 2.** die Erneuerung zu einer Erhöhung des elektrischen Arbeitsvermögens um mindestens 15 Prozent geführt hat sowie
- 3.** nach der Erneuerung nachweislich ein guter ökologischer Zustand erreicht oder der ökologische Zustand gegenüber dem vorherigen Zustand wesentlich verbessert ist.

Abweichend von § 3 Abs. 4 gelten Wasserkraftanlagen mit einer Leistung ab 5 Megawatt mit Erfüllung der Voraussetzungen des Satzes 1 als neu in Betrieb genommen. Als Erneuerung im Sinn von Satz 1 gilt auch die erstmalige Inbetriebnahme einer Anlage im räumlichen Zusammenhang mit einer bereits bestehenden Staustufe oder Wehranlage. Vergütet wird nur die zusätzliche Strommenge, die der Erneuerung zuzurechnen ist. Die Vergütung beträgt

- 1.** bis einschließlich einer Leistungserhöhung von 500 Kilowatt mindestens 7,67 Cent pro Kilowattstunde,
- 2.** bis einschließlich einer Leistungserhöhung von 10 Megawatt mindestens 6,65 Cent pro Kilowattstunde,
- 3.** bis einschließlich einer Leistungserhöhung von 20 Megawatt mindestens 6,10 Cent pro Kilowattstunde,
- 4.** bis einschließlich einer Leistungserhöhung von 50 Megawatt mindestens 4,56 Cent pro Kilowattstunde und
- 5.** ab einer Leistungserhöhung von 50 Megawatt mindestens 3,70 Cent pro Kilowattstunde.

Wenn die Anlage vor dem 1. August 2004 eine Leistung bis einschließlich 5 Megawatt aufwies, wird der diesem Leistungsanteil entsprechende Strom zusätzlich nach Absatz 1 vergütet.

(3) Als Nachweis der Erreichung eines guten ökologischen Zustands oder der wesentlichen Verbesserung des ökologischen Zustands gegenüber dem vorherigen Zustand im Sinne von Absatz 1 Satz 2 und Absatz 2 Satz 1 Nr. 3 gilt die Vorlage der behördlichen wasserrechtlichen Zulassung der Anlage.

(4) Die Mindestvergütungen nach Absatz 2 werden beginnend mit dem 1. Januar 2005 jährlich jeweils für nach diesem Zeitpunkt neu in Betrieb genommene Anlagen um jeweils 1 Prozent des für die im Vorjahr neu in Betrieb genommenen Anlagen maßgeblichen Wertes gesenkt und auf zwei Stellen hinter dem Komma gerundet.

(5) Die Absätze 1 bis 4 finden keine Anwendung auf Strom, der durch Speicherkraftwerke gewonnen wird.

§ 12 Gemeinsame Vorschriften für Abnahme, Übertragung und Vergütung

(1) Netzbetreiber dürfen die Erfüllung ihrer Verpflichtungen aus den §§ 4 und 5 nicht vom Abschluss eines Vertrages abhängig machen.

(2) Soweit die §§ 6 bis 11 in Abhängigkeit von der Leistung der Anlage unterschiedliche Mindestvergütungssätze festlegen, bestimmt sich die Höhe der Vergütung jeweils anteilig nach der Leistung der Anlage im Verhältnis zu dem jeweils anzuwendenden Schwellenwert. Als Leistung im Sinne von Satz 1 gilt für die Zuordnung zu den Schwellenwerten der §§ 6 bis 9 abweichend von § 3 Abs. 5 der

Quotient aus der Summe der im jeweiligen Kalenderjahr nach § 4 Abs. 1 oder Abs. 5 abzunehmenden Kilowattstunden und der Summe der vollen Zeitstunden des jeweiligen Kalenderjahres abzüglich der vollen Stunden vor Inbetriebnahme und nach endgültiger Stilllegung der Anlage.

(3) Die Mindestvergütungen sind vom Zeitpunkt der Inbetriebnahme an jeweils für die Dauer von 20 Kalenderjahren zuzüglich des Inbetriebnahmejahres zu zahlen. Abweichend von Satz 1 sind die Mindestvergütungen für Strom aus Anlagen nach § 6 Abs. 1 für die Dauer von 30 Jahren und für Strom aus Anlagen nach § 6 Abs. 2 für die Dauer von 15 Jahren jeweils zuzüglich des Inbetriebnahmejahres zu zahlen.

(4) Die Aufrechnung von Vergütungsansprüchen der Anlagenbetreiber nach § 5 mit einer Forderung des Netzbetreibers ist nur zulässig, soweit die Forderung unbestritten oder rechtskräftig festgestellt ist. Das Aufrechnungsverbot des § 31 der Verordnung über Allgemeine Bedingungen für die Elektrizitätsversorgung von Tarifkunden vom 21. Juni 1979 (BGBl. I S. 684), die zuletzt durch Artikel 1 Abs. 1 Nr. 11 der Verordnung vom 5. April 2002 (BGBl. I S. 1250) geändert worden ist, findet keine Anwendung, soweit mit Ansprüchen aus diesem Gesetz aufgerechnet wird.

(5) Auf Antrag des Anlagenbetreibers kann das für die Hauptsache zuständige Gericht unter Berücksichtigung der Umstände des Einzelfalles nach billigem Ermessen durch einstweilige Verfügung regeln, dass der Schuldner der in den §§ 4 und 5 bezeichneten Ansprüche die Anlage vorläufig anzuschließen und den Strom abzunehmen sowie hierfür einen als billig und gerecht zu erachtenden Betrag als Abschlagszahlung zu leisten hat. Die einstweilige Verfügung kann erlassen werden, auch wenn die in den §§ 935, 940 der Zivilprozessordnung bezeichneten Voraussetzungen nicht zutreffen.

(6) Strom aus mehreren Anlagen kann über eine gemeinsame Messeinrichtung abgerechnet werden. In diesem Fall ist für die Berechnung der Höhe differenzierter Mindestvergütungen die Leistung jeder einzelnen Anlage maßgeblich. Wenn Strom aus mehreren Windenergieanlagen, für die sich unterschiedliche Mindestvergütungshöhen errechnen, über eine gemeinsame Messeinrichtung abgerechnet wird, erfolgt die Zuordnung der Strommengen zu den Windenergieanlagen im Verhältnis der jeweiligen Referenzerträge.

§ 13 Netzkosten

(1) Die notwendigen Kosten des Anschlusses von Anlagen zur Erzeugung von Strom aus erneuerbaren Energien oder aus Grubengas an den technisch und wirtschaftlich günstigsten Verknüpfungspunkt des Netzes sowie der notwendigen Messeinrichtungen zur Erfassung der gelieferten und der bezogenen elektrischen Arbeit trägt der Anlagenbetreiber. Bei einer oder mehreren Anlagen mit einer Leistung von insgesamt bis zu 30 Kilowatt, die sich auf einem Grundstück mit bereits bestehendem Netzanschluss befinden, gilt der Verknüpfungspunkt des Grundstücks mit dem Netz als günstigster Verknüpfungspunkt; weist der Netzbetreiber den Anlagen einen anderen Verknüpfungspunkt zu, ist er verpflichtet,

die daraus resultierenden Mehrkosten zu tragen. Die Ausführung des Anschlusses und die übrigen für die Sicherheit des Netzes notwendigen Einrichtungen müssen den im Einzelfall notwendigen technischen Anforderungen des Netzbetreibers und § 16 des Energiewirtschaftsgesetzes entsprechen. Der Anlagenbetreiber kann den Anschluss der Anlagen sowie die Errichtung und den Betrieb der Messeinrichtungen von dem Netzbetreiber oder einem fachkundigen Dritten vornehmen lassen.

(2) Die notwendigen Kosten eines nur infolge neu anzuschließender, reaktivierter, erweiterter oder in sonstiger Weise erneuerter Anlagen zur Erzeugung von Strom aus erneuerbaren Energien oder aus Grubengas erforderlichen Ausbaus des Netzes im Sinne von § 4 Abs. 2 zur Abnahme und Übertragung des Stroms aus erneuerbaren Energien trägt der Netzbetreiber, bei dem der Ausbau erforderlich wird. Er muss die konkret erforderlichen Investitionen unter Angabe ihrer Kosten im Einzelnen darlegen. Der Netzbetreiber kann die auf ihn entfallenden Kosten bei der Ermittlung des Netznutzungsentgelts in Ansatz bringen.

§ 14 Bundesweite Ausgleichsregelung

(1) Die Übertragungsnetzbetreiber sind verpflichtet, den unterschiedlichen Umfang, den zeitlichen Verlauf der nach § 5 Abs. 2 vergüteten Energiemengen und die Vergütungszahlungen zu erfassen, die Energiemengen unverzüglich untereinander vorläufig auszugleichen sowie die Energiemengen und die Vergütungszahlungen nach Maßgabe von Absatz 2 abzurechnen.

(2) Die Übertragungsnetzbetreiber ermitteln bis zum 30. September eines jeden Jahres die Energiemenge, die sie im vorangegangenen Kalenderjahr nach § 5 abgenommen und vergütet sowie nach Absatz 1 vorläufig ausgeglichen haben, und den Anteil dieser Menge an der gesamten Energiemenge, die Elektrizitätsversorgungsunternehmen im Bereich des jeweiligen Übertragungsnetzbetreibers im vorangegangenen Kalenderjahr an Letztverbraucher geliefert haben. Übertragungsnetzbetreiber, die größere Mengen abzunehmen hatten, als es diesem durchschnittlichen Anteil entspricht, haben gegen die anderen Übertragungsnetzbetreiber einen Anspruch auf Abnahme und Vergütung nach den §§ 6 bis 12, bis auch diese Netzbetreiber eine Energiemenge abnehmen, die dem Durchschnittswert entspricht.

(3) Elektrizitätsversorgungsunternehmen, die Strom an Letztverbraucher liefern, sind verpflichtet, den von dem für sie regelverantwortlichen Übertragungsnetzbetreiber nach den Absätzen 1 und 2 abgenommenen Strom anteilig nach Maßgabe eines rechtzeitig bekannt gegebenen, der tatsächlichen Stromabnahme nach § 4 in Verbindung mit § 5 angenäherten Profils abzunehmen und zu vergüten. Satz 1 gilt nicht für Elektrizitätsversorgungsunternehmen, die, bezogen auf die gesamte von ihnen gelieferte Strommenge, mindestens 50 Prozent Strom im Sinne der §§ 6 bis 11 liefern. Der nach Satz 1 abzunehmende Anteil wird bezogen auf die von dem jeweiligen Elektrizitätsversorgungsunternehmen gelieferte Strommenge und ist so zu bestimmen, dass jedes Elektrizitätsversorgungsunternehmen einen relativ gleichen Anteil erhält. Der Umfang der Abnahmepflicht (An-

teil) bemisst sich nach dem Verhältnis des nach § 5 Abs. 2 insgesamt vergüteten Stroms zu dem insgesamt an Letztverbraucher abgesetzten Strom. Die Vergütung im Sinne von Satz 1 errechnet sich aus dem voraussichtlichen Durchschnitt der nach § 5 von der Gesamtheit der Netzbetreiber pro Kilowattstunde in dem vorvergangenen Quartal gezahlten Vergütungen abzüglich der nach § 5 Abs. 2 Satz 2 vermiedenen Netznutzungsentgelte. Die Übertragungsnetzbetreiber sind verpflichtet, Ansprüche gegen Elektrizitätsversorgungsunternehmen nach Satz 1, die infolge des Ausgleichs nach Absatz 2 entstehen, bis zum 31. Oktober des auf die Einspeisung folgenden Jahres geltend zu machen. Der tatsächliche Ausgleich der Energiemengen und Vergütungszahlungen erfolgt im Folgejahr bis zum 30. September in monatlichen Raten. Der nach Satz 1 abgenommene Strom darf nicht unter der nach Satz 5 gezahlten Vergütung verkauft werden, soweit er als Strom aus erneuerbaren Energien oder als diesem vergleichbarer Strom vermarktet wird.

(4) Ergeben sich durch eine rechtskräftige Gerichtsentscheidung im Hauptsacheverfahren, die erst nach der Abrechnung nach Absatz 2 Satz 1 oder Absatz 3 ergangen ist, Änderungen der abzurechnenden Energiemengen oder Vergütungszahlungen, sind diese Änderungen bei der jeweils nächsten Abrechnung zu berücksichtigen.

(5) Auf die zu erwartenden Ausgleichsvergütungen sind monatliche Abschläge zu leisten.

(6) Netzbetreiber, die nicht Übertragungsnetzbetreiber sind, und Elektrizitätsversorgungsunternehmen sind verpflichtet, die für die Berechnungen nach den Absätzen 1 bis 5 erforderlichen Daten unverzüglich zur Verfügung zu stellen und bis zum 30. April eine Endabrechnung für das Vorjahr vorzulegen. Netzbetreiber und Elektrizitätsversorgungsunternehmen können verlangen, dass die Endabrechnungen nach Satz 1 bis zum 30. Juni und nach Absatz 2 bis zum 31. Oktober durch einen Wirtschaftsprüfer oder vereidigten Buchprüfer bescheinigt werden. Anlagenbetreiber sind verpflichtet, die für die Endabrechnung des Vorjahres erforderlichen Daten bis zum 28. Februar des Folgejahres zur Verfügung zu stellen.

(7) Letztverbraucher, die Strom nicht von einem Elektrizitätsversorgungsunternehmen, sondern von einem Dritten beziehen, stehen Elektrizitätsversorgungsunternehmen im Sinne der Absätze 2 und 3 gleich.

(8) Das Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit wird ermächtigt, im Einvernehmen mit dem Bundesministerium für Wirtschaft und Arbeit durch Rechtsverordnung Vorschriften zur organisatorischen und zeitlichen Abwicklung des Ausgleichs nach Absatz 1, insbesondere zur Bestimmung des dafür Verantwortlichen und zur Sicherstellung bestmöglicher und gleicher Prognosemöglichkeiten hinsichtlich der auszugleichenden Energiemengen und Lastverläufe,

1. Festlegung oder Ermittlung eines einheitlichen Profils nach Absatz 3, zum Zeitpunkt einschließlich des zeitlichen Vorlaufs und zur Art und Weise der Bekanntgabe dieses Profils und der zugrunde liegenden Daten sowie

2. näheren Bestimmung der nach Absatz 6 erforderlichen Daten und zur Art und Weise der Bereitstellung dieser Daten zu erlassen.

§ 15 Transparenz

(1) Netzbetreiber und Elektrizitätsversorgungsunternehmen, die Strom an Letztverbraucher liefern, sowie deren Zusammenschlüsse sind berechtigt, die Differenz zwischen den nach § 14 Abs. 3 Satz 1 und 5 gezahlten Vergütungen und ihren durchschnittlichen Strombezugskosten pro Kilowattstunde oder den durchschnittlichen Strombezugskosten pro Kilowattstunde der an ihr Netz angeschlossenen Elektrizitätsversorgungsunternehmen im letzten abgeschlossenen Geschäftsjahr (Differenzkosten) gegenüber Dritten anzuzeigen, wenn sie diese durch eine zu veröffentlichende Bescheinigung eines Wirtschaftsprüfers oder vereidigten Buchprüfers nachweisen. Bei der Anzeige von Differenzkosten ist gleichzeitig die der Berechnung nach Satz 1 zugrunde liegende Anzahl der Kilowattstunden Strom aus erneuerbaren Energien und aus Grubengas in der gleichen Art und Weise anzuzeigen. Kosten, die bei den Netznutzungsentgelten in Ansatz gebracht werden können, dürfen nicht gesondert angezeigt werden.

(2) Netzbetreiber sind verpflichtet, die für die Ermittlung der auszugleichenden Energiemengen und Vergütungszahlungen nach § 14 erforderlichen Angaben bis zum 30. September des Folgejahres zu veröffentlichen. Aus den Angaben muss ersichtlich sein, inwieweit der Netzbetreiber die Energiemengen von einem nachgelagerten Netz abgenommen und inwieweit er sie an Letztverbraucher, Netzbetreiber oder Elektrizitätsversorgungsunternehmen, die Strom an Letztverbraucher liefern, abgegeben oder sie selbst verbraucht hat. Das Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit wird ermächtigt, im Einvernehmen mit dem Bundesministerium für Verbraucherschutz, Ernährung und Landwirtschaft sowie dem Bundesministerium für Wirtschaft und Arbeit durch Rechtsverordnung Einzelheiten der Veröffentlichungspflicht zu regeln.

(3) Zum Zweck der Erhöhung der Transparenz sowie zur Vereinfachung des bundesweiten Ausgleichsmechanismus kann durch Rechtsverordnung nach Satz 3 ein öffentliches Register errichtet werden, in dem Anlagen zur Erzeugung von Strom aus erneuerbaren Energien und aus Grubengas registriert werden müssen (Anlagenregister). Für die Registrierung können Gebühren nach Maßgabe der Rechtsverordnung nach Satz 3 erhoben werden. Das Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit wird ermächtigt, durch Rechtsverordnung die Führung des Anlagenregisters einer nachgeordneten Bundesbehörde zuzuweisen oder einer juristischen Person des Privatrechts zu übertragen sowie das Nähere über die Ausgestaltung des Anlagenregisters, die zu registrierenden Informationen, das Verfahren zur Registrierung, den Datenschutz, die Veröffentlichung der Daten und die Erhebung der Gebühren sowie deren Höhe zu bestimmen.

§ 16 Besondere Ausgleichsregelung

(1) Das Bundesamt für Wirtschaft und Ausfuhrkontrolle begrenzt auf Antrag für eine Abnahmestelle den Anteil der Strommenge nach § 14 Abs. 3 Satz 1, der von Elektrizitätsversorgungsunternehmen an Letztverbraucher, die Unternehmen des produzierenden Gewerbes oder Schienenbahnen sind, weitergegeben wird, um dadurch die sich aus der Weitergabe der Strommenge für diese Unternehmen ergebenden Kosten zu verringern, soweit hierdurch die Ziele des Gesetzes nicht gefährdet werden und die Begrenzung mit den Interessen der Gesamtheit der Stromverbraucher vereinbar ist.

(2) Die Begrenzung darf bei einem Unternehmen des produzierenden Gewerbes nur erfolgen, soweit es nachweist, dass und inwieweit im letzten abgeschlossenen Geschäftsjahr

- 1.** der von einem Elektrizitätsversorgungsunternehmen nach § 14 Abs. 3 Satz 1 bezogene und selbst verbrauchte Strom an einer Abnahmestelle 10 Gigawattstunden überstiegen hat,
- 2.** das Verhältnis der Stromkosten zur Bruttowertschöpfung des Unternehmens nach der Definition des Statistischen Bundesamtes, Fachserie 4, Reihe 4.3 vom Juni 2003 15 Prozent überschritten hat,
- 3.** die Strommenge nach § 14 Abs. 3 Satz 1 anteilig an das Unternehmen weitergereicht und von diesem selbst verbraucht worden ist und
- 4.** das Unternehmen hierfür Differenzkosten im Sinne von § 15 Abs. 1 entrichtet hat.

Elektrizitätsversorgungsunternehmen sind auf Antrag des Unternehmens verpflichtet, dem Bundesamt für Wirtschaft und Ausfuhrkontrolle unverzüglich die anteilig weitergereichte Strommenge und die Differenzkosten einschließlich der für die Berechnung der Differenzkosten zugrunde gelegten Daten durch Vorlage einer Bescheinigung eines Wirtschaftsprüfers oder vereidigten Buchprüfers für das letzte abgeschlossene Geschäftsjahr nachzuweisen; die Kosten für die Bescheinigung hat das letztverbrauchende Unternehmen zu tragen. Der Nachweis der Voraussetzungen von Satz 1 Nr. 3 sowie der Differenzkosten erfolgt durch Vorlage der Bescheinigung; der Nachweis der übrigen Voraussetzungen von Satz 1 durch Vorlage der Stromlieferungsverträge und die Stromrechnungen für das letzte abgeschlossene Geschäftsjahr sowie Gutachten eines Wirtschaftsprüfers oder vereidigten Buchprüfers auf Grundlage des Jahresabschlusses für das letzte abgeschlossene Geschäftsjahr. Abnahmestelle sind alle räumlich zusammenhängenden elektrischen Einrichtungen des Unternehmens auf einem Betriebsgelände, das über einen oder mehrere Entnahmepunkte mit dem Netz des Netzbetreibers verbunden ist. Die Sätze 1 bis 4 gelten für selbständige Teile des Unternehmens entsprechend.

(3) Für Schienenbahnen gilt Absatz 2 Satz 1 Nr. 1, 3 und 4 sowie Satz 2 bis 4 entsprechend mit folgenden Maßgaben:

- 1.** Es sind nur diejenigen Strommengen zu berücksichtigen, die unmittelbar für den Fahrbetrieb im Schienenbahnverkehr verbraucht werden.

2. Abnahmestelle ist die Summe der Verbrauchsstellen für den Fahrbetrieb im Schienenbahnverkehr des Unternehmens.

(4) Zur Begrenzung der anteilig weitergereichten Strommenge wird mit Wirkung für die Abnahmestelle nach Absatz 2 Satz 1 Nr. 1 oder Absatz 3 Nr. 2 ein bestimmter Prozentsatz festgesetzt. Der Prozentsatz ist so zu bestimmen, dass die Differenzkosten für die anteilig weitergereichte Strommenge unter Zugrundelegung der nach § 14 Abs. 3 Satz 1 und 5 zu erwartenden Vergütung 0,05 Cent je Kilowattstunde betragen. Für Unternehmen, deren Strombezug im Sinne von Absatz 2 Satz 1 Nr. 1 unter 100 Gigawattstunden oder deren Verhältnis der Stromkosten zur Bruttowertschöpfung unter 20 Prozent lag, sowie für Schienenbahnen gilt dies nur hinsichtlich des gesamten über 10 Prozent des im letzten abgeschlossenen Geschäftsjahr an der betreffenden Abnahmestelle nach Absatz 2 Satz 1 Nr. 3 oder Absatz 3 Nr. 2 bezogenen und selbst verbrauchten Stroms hinaus; der Nachweis des Überschreitens der Werte ist in entsprechender Anwendung von Absatz 2 Satz 3 zu führen. Wird das Unternehmen im Zeitpunkt des Nachweises nach Absatz 2 Satz 2 von mehreren Elektrizitätsversorgungsunternehmen beliefert, gilt die Beschränkung des Satzes 1 für jedes dieser Elektrizitätsversorgungsunternehmen anteilig nach Maßgabe des Umfangs, in dem sie im Vergleich zueinander diesen Letztverbraucher an dieser Abnahmestelle beliefern; das Unternehmen hat den Elektrizitätsversorgungsunternehmen die für die Anteilsberechnung erforderlichen Informationen zur Verfügung zu stellen. Wenn die infolge dieser Regelung zu gewährende Begünstigung für alle Schienenbahnen in der Summe 20 Millionen Euro übersteigen würde, ist abweichend von Satz 1 der Prozentsatz für die Schienenbahnen einheitlich so festzusetzen, dass diese Summe nicht überschritten wird.

(5) Sofern das Produkt aus dem Anteil nach § 14 Abs. 3 Satz 4 und der Durchschnittsvergütung nach § 14 Abs. 3 Satz 5 für die von dieser Regelung nicht begünstigten Letztverbraucher infolge der Anwendung dieser Regelung um mehr als 10 Prozent bezogen auf die Daten des der Entscheidung vorangegangenen Kalenderjahres steigen würde, ist der Prozentsatz nach Absatz 4 Satz 2 für sämtliche Unternehmen, deren Anträge nach Absatz 6 die Voraussetzungen nach Absatz 2 oder Absatz 3 erfüllen, unbeschadet des Absatzes 4 Satz 5 einheitlich so zu bestimmen, dass dieser Wert nicht überschritten wird. Die Strommenge, die bereits durch eine über den 31. Dezember 2004 hinaus geltende Entscheidung im Sinne des § 21 Abs. 6 begünstigt ist, ist zu berücksichtigen.

(6) Der Antrag einschließlich der vollständigen Antragsunterlagen nach Absatz 2 oder Absatz 3 und der Angabe des Elektrizitätsversorgungsunternehmens und des regelverantwortlichen Übertragungsnetzbetreibers ist jeweils zum 30. Juni des laufenden Jahres zu stellen (Ausschlussfrist). Die Entscheidung ergeht mit Wirkung gegenüber dem Antragsteller, dem Elektrizitätsversorgungsunternehmen und dem regelverantwortlichen Übertragungsnetzbetreiber. Sie wird zum 1. Januar des Folgejahres mit einer Geltungsdauer von einem Jahr wirksam. Die durch eine vorangegangene Entscheidung hervorgerufenen Wirkungen bleiben bei der Berechnung des Verhältnisses der Stromkosten zur Bruttowertschöpfung nach Absatz 2 Satz 1 Nr. 2 und Absatz 4 Satz 3 außer Betracht.

(7) Das Bundesamt für Wirtschaft und Ausfuhrkontrolle untersteht bei Wahrnehmung der durch dieses Gesetz übertragenen Aufgaben der Fachaufsicht des Bundesministeriums für Umwelt, Naturschutz und Reaktorsicherheit.

(8) Der Anspruch des für den antragstellenden Letztverbraucher an der betreffenden Abnahmestelle regelverantwortlichen Übertragungsnetzbetreibers aus § 14 Abs. 3 Satz 1 gegenüber den betreffenden Elektrizitätsversorgungsunternehmen wird entsprechend der Entscheidung des Bundesamtes für Wirtschaft und Ausfuhrkontrolle nach den Absätzen 1 bis 6 begrenzt; die Übertragungsnetzbetreiber haben diese Begrenzungen im Rahmen von § 14 Abs. 2 zu berücksichtigen.

(9) Die Anwendung der Absätze 1 bis 8 ist Gegenstand des Erfahrungsberichts nach § 20.

§ 17 Herkunftsnachweis

(1) Anlagenbetreiber können sich für Strom aus erneuerbaren Energien von einer Person oder Organisation, die nach dem Umweltauditgesetz für den Bereich Elektrizitätserzeugung als Umweltgutachter oder Umweltgutachterorganisation tätig werden darf, einen Herkunftsnachweis ausstellen lassen.

(2) Der Herkunftsnachweis muss Angaben enthalten über

1. die zur Stromerzeugung eingesetzten Energien nach Art und wesentlichen Bestandteilen einschließlich der Angabe, inwieweit es sich um Strom aus erneuerbaren Energien im Sinne der Richtlinie 2001/77/EG des Europäischen Parlaments und des Rates vom 27. September 2001 zur Förderung der Stromerzeugung aus erneuerbaren Energiequellen im Elektrizitätsbinnenmarkt (ABI. EG Nr. L 283 S. 33), zuletzt geändert durch die Beitrittsakte vom 16. April 2003 (ABI. EU Nr. L 236 S. 586), handelt,

2. bei Einsatz von Biomasse, ob es sich ausschließlich um Biomasse im Sinne der Rechtsverordnung nach §8 Abs. 7 handelt,

3. Name und Anschrift des Anlagenbetreibers,

4. die in der Anlage erzeugte Strommenge, den Zeitraum, in dem der Strom erzeugt wurde, und inwieweit der Strom nach den §§ 5 bis 12 vergütet worden ist sowie

5. den Standort, die Leistung und den Zeitpunkt der Inbetriebnahme der Anlage.

(3) Der Herkunftsnachweis darf nur unter vollständiger Angabe der nach Absatz 2 erforderlichen Angaben verwendet werden.

§ 18 Doppelvermarktungsverbot

(1) Strom aus erneuerbaren Energien und aus Grubengas sowie in ein Gasnetz eingespeistes Deponie-, Klär- oder Grubengas sowie Gas aus Biomasse dürfen nicht mehrfach verkauft oder anderweitig überlassen werden.

(2) Anlagenbetreiber, die die Vergütung nach den §§ 5 bis 12 in Anspruch nehmen, dürfen Nachweise für Strom aus erneuerbaren Energien und aus Grubengas nicht weitergeben. Gibt ein Anlagenbetreiber einen Nachweis für Strom aus erneuerbaren Energien oder aus Grubengas weiter, darf für diesen Strom keine Vergütung nach den §§ 5 bis 12 in Anspruch genommen werden.

§ 19 Clearingstelle

Zur Klärung von Streitigkeiten und Anwendungsfragen dieses Gesetzes kann das Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit eine Clearingstelle errichten, an der die betroffenen Kreise beteiligt werden können.

§ 20 Erfahrungsbericht

(1) Das Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit hat dem Deutschen Bundestag bis zum 31. Dezember 2007 und dann alle vier Jahre im Einvernehmen mit dem Bundesministerium für Verbraucherschutz, Ernährung und Landwirtschaft und dem Bundesministerium für Wirtschaft und Arbeit über den Stand der Markteinführung von Anlagen zur Erzeugung von Strom aus erneuerbaren Energien und aus Grubengas sowie die Entwicklung der Stromgestehungskosten in diesen Anlagen zu berichten sowie gegebenenfalls eine Anpassung der Höhe der Vergütungen nach den §§ 6 bis 12 und der Degressionssätze entsprechend der technologischen und Marktentwicklung für nach diesem Zeitpunkt in Betrieb genommene Anlagen vorzuschlagen. Gegenstand des Erfahrungsberichts sind auch Speichertechnologien sowie die ökologische Bewertung der von der Nutzung erneuerbarer Energien ausgehenden Auswirkungen auf Natur und Landschaft.

(2) Anlagenbetreiber, deren Anlagen ab dem 1. August 2004 in Betrieb genommen worden sind und die eine Vergütung nach den §§ 5 bis 12 in Anspruch genommen haben, sowie Netzbetreiber sind zum Zweck der stichprobenartigen Ermittlung der Stromgestehungskosten im Sinne von Absatz 1 sowie der Sicherstellung der Funktionsfähigkeit des Ausgleichsmechanismus nach § 14 verpflichtet, dem Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit und seinen Beauftragten auf Verlangen wahrheitsgemäß Auskunft über sämtliche Tatsachen zu geben, die für die Ermittlung der Stromgestehungskosten sowie der ausgeglichenen Energiemengen und Vergütungszahlungen nach § 14 erheblich sein können. Soweit es sich bei den Anlagen- und Netzbetreibern um Kaufleute im Sinne des Handelsgesetzbuches handelt, sind darüber hinaus auf Verlangen die Handelsbücher offen zu legen, soweit sie Aufschluss über Tatsachen geben können, die für die Ermittlung der Stromgestehungskosten sowie der ausgeglichenen Energiemengen und Vergütungszahlungen erheblich sein können. Die Grundsätze des Datenschutzes sind zu beachten.

§ 21 Übergangsbestimmungen

(1) Für Strom aus Anlagen, die bis zum 31. Juli 2004 in Betrieb genommen worden sind, sind die bisherigen Vorschriften über die Vergütungssätze, über die Dauer des Vergütungsanspruches und über die Bereitstellung von Messdaten mit folgenden Maßgaben anzuwenden:

1. für Strom aus Wasserkraftanlagen gilt die bisherige Regelung nur bei einer Leistung bis einschließlich 5 Megawatt;

2. für Strom aus Laufwasserkraftanlagen, die vor dem 1. August 2004 eine Leistung bis einschließlich 5 Megawatt aufwiesen, gilt § 6, wenn die Anlage modernisiert wurde und nach der Modernisierung nachweislich ein guter ökologischer Zustand erreicht oder der ökologische Zustand gegenüber dem vorherigen Zustand wesentlich verbessert ist. § 6 Abs. 3 gilt entsprechend. Abweichend von § 3 Abs. 4 gelten diese Anlagen mit Abschluss der Modernisierung als neu in Betrieb genommen;

3. für Strom aus Biomasseanlagen, die nach dem 31. Dezember 2003 in Betrieb genommen worden sind, gelten ab dem 1. August 2004 die Vergütungssätze des § 8 dieses Gesetzes;

4. für Strom aus Biomasseanlagen, die vor dem 1. Januar 2004 in Betrieb gegangen sind, erhöht sich die Mindestvergütung nach Maßgabe des § 8 Abs. 2 dieses Gesetzes;

5. für Strom aus Biomasseanlagen, die vor dem 1. August 2004 in Betrieb genommen worden sind, findet § 8 Abs. 6 Satz 2 dieses Gesetzes Anwendung;

6. für Strom aus Windenergieanlagen, die nach dem 31. März 2000 in Betrieb genommen worden sind, gilt für die Berechnung des Referenzertrages die Anlage zu § 10 Abs. 1 dieses Gesetzes;

7. für Strom aus Anlagen zur Erzeugung von Strom aus solarer Strahlungsenergie, die vor dem 1. Januar 2004 in Betrieb gegangen sind, ist § 8 des Erneuerbare-Energien-Gesetzes vom 29. März 2000 (BGBl. IS. 305), das zuletzt durch das Gesetz vom 22. Dezember 2003 (BGBl. I S. 3074) geändert worden ist, in der am 22. Juli 2003 geltenden Fassung anzuwenden;

8. für Strom aus Anlagen zur Erzeugung von Strom aus solarer Strahlungsenergie, die nach dem 31. Dezember 2003 in Betrieb gegangen sind, ist § 8 des Erneuerbare-Energien-Gesetzes vom 29. März 2000 (BGBl. I S. 305), das zuletzt durch das Gesetz vom 22. Dezember 2003 (BGBl. I S. 3074) geändert worden ist, in der am 1. Januar 2004 geltenden Fassung anzuwenden, wobei dessen Absätze 3 und 4 nur für Strom aus einer Anlage anzuwenden sind, die nach dem 30. Juni 2004 in Betrieb genommen worden ist.

(2) § 4 Abs. 1 Satz 2 gilt nur für Strom aus Anlagen, die drei Monate nach Bekanntgabe der Einrichtung des Anlagenregisters im Bundesanzeiger in Betrieb genommen worden sind. Für Strom aus sonstigen Anlagen gilt § 4 Abs. 1 Satz 2 drei Monate nach gesonderter schriftliche Aufforderung durch den Netzbetreiber unter Angabe der Kontaktdaten des Anlagenregisters und unter Hinweis auf die Rechtsfolgen einer fehlenden Beantragung.

(3) Für Strom aus Biomasseanlagen, die auch Altholz der Altholzkategorie A III und A IV im Sinne der Altholzverordnung vom 15. August 2002 (BGBl. I S. 3302) einsetzen und die vor dem 30. Juni 2006 in Betrieb genommen worden sind, ist anstelle von § 8 Abs. 1 Satz 2 § 8 Abs. 1 Satz 1 anzuwenden.

(4) § 10 Abs. 4 gilt nur für Anlagen, die nach dem 31. Juli 2005 in Betrieb genommen worden sind.

(5) Bis zum Erlass einer Rechtsverordnung nach § 8 Abs. 7 tritt, soweit in diesem Gesetz auf diese Rechtsverordnung verwiesen wird, an deren Stelle die Biomasseverordnung vom 21. Juni 2001 (BGBl. I S. 1234). § 8 Abs. 6 bleibt unberührt.

(6) Abweichend von § 16 Abs. 6 Satz 1 ist der Antrag im Jahr 2004 zum 31. August zu stellen. Anträge auf Begrenzung des Anteils der Strommenge im Rahmen der besonderen Ausgleichsregelung nach dem Erneuerbare-Energien-Gesetz vom 29. März 2000 (BGBl. I S. 305), zuletzt geändert durch das Gesetz vom 22. Dezember 2003 (BGBl. I S. 3074), die vor dem 1. August 2004 gestellt worden sind, sind nach den hierfür bisher geltenden Vorschriften zu behandeln und zu entscheiden, soweit sie nicht von Unternehmen gestellt worden sind, für die der Anteil der Strommenge bereits über den 1. August 2004 hinaus begrenzt ist. Entscheidungen des Bundesamtes für Wirtschaft und Ausfuhrkontrolle über die Begrenzung des Anteils der Strommenge in Anwendung der in Satz 2 bezeichneten Vorschriften, die vor dem

1. August 2004 dem Antragsteller bekannt gegeben worden sind, werden unbeschadet des Satzes 4 bis zum 31. Dezember 2004 verlängert. Entscheidungen im Sinne des Satzes 3, die über den 31. Dezember 2004 hinaus gelten, werden ab dem 1. Januar 2005 unwirksam, wenn das Unternehmen vor dem 1. September 2004 einen Antrag nach § 16 Abs. 1 dieses Gesetzes stellt und dieser Antrag nicht unanfechtbar abgelehnt worden ist.

Annex 4a

Act revising the legislation on renewable energy sources in the electricity sector of 21 July 2004

The *Bundestag* has adopted the following act:

Section 1

Act on granting priority to renewable energy sources (Renewable Energy Sources Act)

Article 1

Purpose

(1) The purpose of this act is to facilitate a sustainable development of energy supply, particularly for the sake of protecting our climate, nature and the environment, to reduce the costs of energy supply to the national economy, also by incorporating long-term external effects, to protect nature and the environment, to contribute to avoiding conflicts over fossil fuels and to promote the further development of technologies for the generation of electricity from renewable energy sources. 1 Act implementing 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 (OJ L 283 p. 33), as last amended by the Acts of Accession of 16 April 2003 (OJ L 236 p. 586).

(2) This act is further intended to contribute to the increase in the percentage of renewable energy sources in power supply to at least 12.5 per cent by 2010 and to at least 20 per cent by 2020.

Article 2

Scope of application

(1) This act regulates

1. priority connections to the grid systems for general electricity supply of plants 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 and transmission of, and payment for, such electricity by the grid system operators and
3. the nation-wide equalisation scheme for the quantity of electricity purchased and paid for.

(2) This act shall not apply to plants of which over 25 per cent are owned by the Federal Republic of Germany or one of its *Länder* and which were commissioned prior to the 1 August 2004.

Article 3

Definitions

(1) Renewable energy sources shall mean hydropower including wave power, tidal power, salt gradient and flow energy, wind energy, solar radiation, geothermal energy, energy from biomass including biogas, landfill gas and sewage treatment plant gas as well as the biodegradable fraction of municipal and industrial waste.

(2) Plant shall mean any independent technical facility generating electricity from renewable energy sources or from mine gas. Several plants generating electricity from equivalent renewable energy sources or from mine gas, if constructed within the territorial application of this act and directly attached to building structures and commonly used installations technically required for operation shall be considered as one plant if Articles 6 to 12 do not provide for otherwise; inverters, access ways, grid connections as well as measuring, administrative and control facilities in particular are not technically required for such operation.

(3) Plant operator shall mean anyone who, notwithstanding the issue of ownership, uses the plant for the purpose of generating electricity from renewable energy sources or from mine gas.

(4) Commissioning shall mean the first time a plant is put into operation, following establishment of operational readiness or its modernisation, if modernisation costs amount to at least 50 per cent of the investment costs required to build a completely new plant including all building structures and installations technically required for its operation.

(5) Capacity of a plant shall mean the effective electrical capacity which the plant may technically produce without time restrictions during regular operation irrespective of shortterm deviations. When the relevant capacity is determined to calculate the fees, the standby capacity shall not be considered.

(6) Grid system shall mean all the interconnected facilities used for the transmission and distribution of electricity for general supply.

(7) Grid system operators shall mean the operators of all types of voltage systems for general electricity supply. The transmission system operators shall be the responsible grid system operators of high-voltage and extra-high-voltage systems which are used for the supraregional transmission of electricity to downstream systems.

Article 4

Obligation to purchase and transmit electricity

(1) Grid system operators shall immediately and as a priority connect plants generating electricity from renewable energy sources or from mine gas to their systems and guarantee priority purchase and transmission of all electricity from renewable energy sources or from mine gas supplied by such plants . After establishment of a register of installations pursuant to Article 15(3), such obligation for the purchase pursuant to the first sentence above shall apply only if the plant operator has submitted an application for entry into the register. Notwithstanding Article 12(1), plant operators and grid system operators may agree by contract to digress from the priority of purchase, if the plant can thus be better integrated into the grid system. When determining the charges for use of the grid, grid system operators may add any costs incurred in accordance with a contractual agreement pursuant to the third sentence above, provided that such costs are substantiated.

(2) The obligation under paragraph (1) first sentence above shall apply to the grid system operator that is most closely located to the plant site and is in possession of a grid technically suitable to receive electricity if there is no other grid with a technically and economically more suitable grid connection point. A grid shall be deemed to be technically suitable even if – notwithstanding the priority established under paragraph (1) first sentence above – feeding in the electricity requires the grid system operator to upgrade its grid at a reasonable economic expense ; in this case, the grid system operator shall upgrade its grid without undue delay, if so requested by a party interested in feeding in electricity. If the plant must be licensed in accordance with any other legal provisions, the obligation to upgrade the grid in accordance with the second sentence above shall only apply if the plant operator submits either a license, a partial license or a preliminary decision. The obligation to upgrade the grid shall apply to all technical facilities required for operating the grid and to all connecting installations which are owned by or passed into the ownership of the grid system operator.

(3) The obligation for priority connection to the grid system pursuant to paragraph (1) first sentence above shall apply even if the capacity of the grid system or the area serviced by the grid system operator is temporarily entirely taken up by electricity produced from renewable energy sources or mine gas, unless the plant does not have a technical facility for reducing the feed-in in the event of grid overload. The obligation pursuant to paragraph (1) first sentence above for priority purchase of the electricity produced in these plants shall apply only if the capacity of the grid system or the area serviced by the grid system operator is not already used up by electricity produced in other plants generating electricity from renewable energy sources or mine gas which were connected prior to these plants; the obligation to upgrade the grid system without undue delay pursuant to paragraph (2) second sentence above shall remain unaffected. In the event of non-purchase of such electricity, the grid system operator shall, if so requested by the plant operator, provide proof of fulfilment of the conditions

set out in the second sentence above in writing within four weeks and produce verifiable calculations.

(4) The relevant data on the grid system and on the electricity generation plants, which are required to test and verify the grid compatibility, shall be presented upon request within eight weeks where this is necessary for the grid system operator or the party interested in feeding in electricity to do their planning and to determine the technical suitability of the grid.

(5) The obligation for priority purchase and transmission of electricity in accordance with paragraph (1) first sentence above shall also be applied, if the plant is connected to the grid of a plant operator or a third party who is not a grid system operator within the meaning of Article 3(7) and if the electricity is offered to a grid system in accordance with Article 3(6) via a merely budgeted transit through this grid system.

(6) The upstream transmission system operator shall guarantee priority purchase and transmission of the quantity of energy purchased by the grid system operator in accordance with paragraph (1) or (5) above. If there is no domestic transmission system in the area serviced by the grid system operator entitled to sell electricity, the most closely located domestic transmission system operator shall purchase and transmit electricity in accordance with the first sentence above. The first sentence above shall apply *mutatis mutandis* to other grid system operators.

Article 5

Obligation to pay fees

(1) Pursuant to Articles 6 to 12, the grid system operators shall pay fees for electricity generated in plants exclusively using renewable energy sources or mine gas and purchased in accordance with Article 4(1) or (5). The obligation in accordance with the first sentence above shall only apply to plants with a capacity of over 500 kilowatts where the capacity is measured and recorded.

(2) Pursuant to Articles 6 to 12, the upstream transmission system operator shall pay for the quantity of energy which the grid system operator has purchased in accordance with Article 4(6) and paid for in accordance with paragraph (1) above. Any avoided charges for use of the grid system, calculated in accordance with good professional practice, shall be deducted from the fees. Article 4(6) second sentence shall apply *mutatis mutandis*.

Article 6

Fees paid for electricity produced from hydropower

(1) The fees paid for electricity generated in hydroelectric power plants with a capacity up to and including 5 megawatts shall be

1. at least 9.67 cents per kilowatt-hour for plants with a capacity up to and including 500 kilowatts and

2. at least 6.65 cents per kilowatt-hour for plants with a capacity up to and including 5^o megawatts.

The first sentence above shall apply to run-of-river power plants with a capacity of up to 500 kilowatts licensed after 31 December 2007 only if they

1. were constructed in the spatial context of an existing barrage weir or dam which wholly or partly existed before or was newly built primarily for purposes other than the generation of electricity from hydropower or
2. without complete weir coverage, and if this has demonstrably brought about a good ecological status or a substantial improvement in relation to the previous status.

(2) Fees for electricity generated in hydroelectric power plants with a capacity ranging from 5 megawatts up to and including 150 megawatts shall only be paid for in accordance with the provisions of this act if

1. the plant was modernised between 1 August 2004 and 31 December 2012,
2. the modernisation has resulted in an increase in the electrical energy of at least 15 per cent and if
3. such modernisation has demonstrably brought about a good ecological status or a substantial improvement in relation to the previous status.

Notwithstanding Article 3(4), hydroelectric power plants with a capacity of over 5 megawatts which meet the requirements of the first sentence above shall be deemed to have been newly commissioned. The first commissioning of a plant in the spatial context of an existing barrage weir or a dam shall also be deemed to represent modernisation within the meaning of the first sentence above. Fees shall only be paid for the additional electricity generated due to modernisation.

Such fees shall be

1. at least 7.67 cents per kilowatt-hour up to and including an increase in capacity of 500 kilowatts,
2. at least 6.65 cents per kilowatt-hour up to and including an increase in capacity of 10 megawatts,
3. at least 6.10 cents per kilowatt-hour up to and including an increase in capacity of 20 megawatts,
4. at least 4.56 cents per kilowatt-hour up to and including an increase in capacity of 50 megawatts and
5. at least 3.70 cents per kilowatt-hour if the increase in capacity exceeds 50 megawatts.

If the plant had a capacity of up to and including 5 megawatts prior to 1 August 2004, the quantity of electricity corresponding to this share of capacity shall in addition be paid for in accordance with paragraph (1) above.

(3) Presentation of an official authorisation under water law shall be deemed to be proof of achievement of a good ecological status or of a substantial

improvement of the ecological status compared to the previous status in accordance with paragraph (1) second sentence and paragraph (2) first sentence No. 3 above.

(4) As of 1 January 2005, the minimum fees specified in paragraph (2) above shall be reduced for new plants commissioned after that date by one per cent annually of the relevant value for new plants commissioned in the previous year; the amounts payable shall be rounded to two decimals.

(5) Paragraphs (1) to (4) shall not apply to electricity produced from storage power stations.

Article 7

Fees paid for electricity produced from landfill gas, sewage treatment plant gas and mine

gas

The fees paid for electricity from landfill gas, sewage treatment plant gas and mine gas shall be

1. at least 7.67 cents per kilowatt-hour up to and including a capacity of 500 kilowatts and
2. at least 6.65 cents per kilowatt-hour up to and including a capacity of 5 megawatts.

The fees paid for electricity from mine gas plants with a capacity of over 5 megawatts shall be 6.65 cents per kilowatt-hour.

Gas withdrawn from a gas network shall be deemed to be landfill gas, sewage treatment plant gas or mine gas if the thermal equivalent of the withdrawn quantity of such gas corresponds to the quantity of landfill gas, sewage treatment plant gas or mine gas fed into the gas network elsewhere within the territorial application of this act.

(2) The minimum fees in accordance with paragraph (1) above shall be increased by 2 cents per kilowatt-hour if the gas fed in pursuant to paragraph (1) third sentence above has been processed to reach the quality of natural gas or if the electricity is produced by fuel cells, gas turbines, steam engines, organic Rankine cycles, multi-fuel plants, especially Kalina cycles, or Stirling engines. For the purpose of adapting this provision to the state of the art, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is authorised to issue, in agreement with the Federal Ministry of Consumer Protection, Food and Agriculture and the Federal Ministry of Economics and Labour, an ordinance detailing further processes or techniques referred to in the first sentence above or exempting some of these processes or techniques from the scope of the first sentence above.

(3) As of 1 January 2005, the minimum fees specified in paragraph (1) above shall be reduced for new plants commissioned after that date by 1.5 per cent

annually of the relevant value for new plants commissioned in the previous year; the amounts payable shall be rounded to two decimals.

Article 8

Fees paid for electricity produced from biomass

(1) The fees paid for electricity produced in plants with a capacity of up to and including 20 megawatts using exclusively biomass as defined in an ordinance adopted pursuant to paragraph (7) below shall be

1. at least 11.5 cents per kilowatt-hour up to and including a capacity of 150 kilowatts,
2. at least 9.9 cents per kilowatt-hour up to and including a capacity of 500 kilowatts,
3. at least 8.9 cents per kilowatt-hour up to and including a capacity of 5 megawatts and
4. at least 8.4 cents per kilowatt-hour for a capacity of over 5 megawatts.

Notwithstanding the first sentence above, the fee shall be 3.9 cents per kilowatt-hour if the plant also uses waste wood classified in categories A III and A IV set out in the Waste Wood Ordinance of 15 August 2002 (BGBl. I p. 3302). Gas withdrawn from the gas network shall be deemed to be biomass if the thermal equivalent of the withdrawn quantity of such gas corresponds to the quantity of biogas from biomass fed into the gas network elsewhere within the territorial application of this act.

(2) The minimum fees in accordance with paragraph (1) first sentence Nos. 1 and 2 above shall be increased by 6 cents per kilowatt-hour, and the minimum fees in accordance with paragraph (1) first sentence No. 3 above, by 4 cents per kilowatt-hour, if

1. all electricity was produced
 - a) from plants or parts of plants which have originated from agricultural, silvicultural or horticultural operations or during landscaping activities and which have not been treated or modified in any way other than for harvesting, conservation or use in the biomass plant,
 - b) from manure within the meaning of Regulation (EC) No 1774/2002 of the European Parliament and of the Council of 3 October 2002 laying down health rules concerning animal by-products not intended for human consumption (OJ L 273 p. 1), as amended by Commission Regulation (EC) No 808/2003 of 12 May 2003 (OJ L 117 p.1), or from vinasse generated at an agricultural distillery pursuant to Article 25 of the Spirits Monopoly Act as promulgated in the Federal Law Gazette Part III No. 612-7, last amended by Article 2 of the Act of 23 December 2003 (BGBl. I p. 2924), if that vinasse is not subject to any other recovery requirements pursuant to Article 25(2) No. 3 or paragraph (3) No. 3 of that Article of the Spirits Monopoly Act or

- c) from both substance categories;
- 2. the biomass plant has been licensed exclusively for operation with substances pursuant to No. 1, or, where such a licence is not available, the plant operator provides proof, by keeping a record of the substances used with details and documentation of the type, quantity and origin of the substances used, that no other substances are used and if
- 3. there are no other biomass plants on the same site which produce electricity from other substances.

Notwithstanding the first sentence above, the minimum fees pursuant to paragraph (1) first sentence No. 3 shall be increased by 2.5 cents per kilowatt-hour if the electricity is produced by burning wood. The obligation to pay increased minimum fees in accordance with the first sentence above shall apply as of the date on which the requirements of the first sentence above are fulfilled. The right to payment of increased fees shall finally expire when the requirements of the first sentence above are no longer fulfilled.

(3) The minimum fees in accordance with paragraph (1) first sentence above shall be increased by 2 cents per kilowatt-hour in the case of electricity within the meaning of Article 3(4) of the Combined Heat and Power Generation Act and where proof can be furnished to the grid system operator in accordance with the *Arbeitsblatt FW 308 - Zertifizierung von KWK-Anlagen - Ermittlung des KWK-Stromes* of November 2002 (*Bundesanzeiger* No. 218a of 22 November 2002) published by the *Arbeitsgemeinschaft für Wärme und Heizkraftwirtschaft – AGFW e.V.*. For series-produced combined heat and power stations with a capacity of up to and including 2 megawatts, suitable documentation available from the manufacturer, stating the thermal and electrical capacities and the electricity coefficient, may be furnished instead of proof in accordance with the first sentence above.

(4) The minimum fees in accordance with paragraph (1) first sentence Nos. 1 to 3 above shall be increased by another 2 cents per kilowatt-hour if the electricity was produced in plants using combined heat and power generation and if the biomass was converted by thermochemical gasification or dry fermentation and if the gas used for power generation was processed to reach the quality of natural gas or if the electricity is produced by fuel cells, gas turbines, steam engines, organic Rankine cycles, multi-fuel plants, especially Kalina cycles, or Stirling engines. For the purpose of adapting this provision to the state of the art, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is authorised to issue, in agreement with the Federal Ministry of Consumer Protection, Food and Agriculture and the Federal Ministry of Economics and Labour, an ordinance detailing further processes or techniques referred to in the first sentence above or exempting some of these processes or techniques from the scope of the first sentence above.

(5) As of 1 January 2005, the minimum fees specified in paragraph (1) above for new plants commissioned after that date shall be reduced by 1.5 per cent

annually of the relevant value for new plants commissioned in the previous year; the amounts payable shall be rounded to two decimals.

(6) The obligation to pay fees shall not apply to electricity produced from plants commissioned after 31 December 2006 where, for the purposes of priming or supporting fuels, biomass within the meaning of the ordinance pursuant to paragraph (7) below or vegetable oil methyl ester is not used exclusively. For plants commissioned prior to 1 January 2007, the share to be attributed to the necessary priming and supporting fuels from fossil fuels shall continue to be deemed to be electricity from biomass after 31 December 2006.

(7) The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is authorised to issue, in agreement with the Federal Ministry of Consumer Protection, Food and Agriculture and the Federal Ministry of Economics and Labour and with the consent of the *Bundestag*, an ordinance with provisions as to which substances shall be deemed to be biomass within the meaning of this provision, which technical processes may be used to produce electricity and which environmental standards must be complied with.

Article 9

Fees paid for electricity produced from geothermal energy

(1) The fees paid for electricity generated in geothermal energy plants shall amount to

1. at least 15 cents per kilowatt-hour up to and including a capacity of 5 megawatts,
2. at least 14 cents per kilowatt-hour up to and including a capacity of 10 megawatts,
3. at least 8.95 cents per kilowatt-hour up to and including a capacity of 20 megawatts and
4. at least 7.16 cents per kilowatt-hour for a capacity of 20 megawatts and over.

(2) As of 1 January 2010, the minimum fees specified in paragraph (1) above for new plants commissioned after that date shall be reduced by one per cent annually of the relevant value for new plants commissioned in the previous year; the amounts payable shall be rounded to two decimals.

Article 10

Fees paid for electricity produced from wind energy

(1) The fees paid for electricity generated by wind-powered plants shall amount to at least 5.5 cents per kilowatt-hour except as provided in paragraph (3) below. For a period of five years starting from the date of commissioning, the fees shall be increased in accordance with the first sentence above by 3.2 cents per kilowatt-hour for electricity generated in plants which during this period of

time achieve 150 per cent of the reference yield calculated for the reference plant as defined in the annex to this act. For any other plants, this period shall be extended by two months for each 0.75 per cent of the reference yield which their yield stays below 150 per cent of the reference yield.

(2) In derogation of paragraph (1) third sentence above, the period stated in paragraph (1) second sentence above shall be extended for electricity generated by plants which

1. replace or modernise existing plants in the same rural district (*Landkreis*), which were commissioned no later than 31 December 1995 and which
2. at least triple the installed capacity (repowering plants) by two months for each 0.6 per cent of the reference yield which their yield stays below 150 per cent of the reference yield.

(3) The fees paid for electricity generated in offshore wind-power plants which are located at least three nautical miles seawards from the shoreline shall be at least 6.19 cents per kilowatt-hour. This shoreline shall be the shoreline as represented on map No. 2920 "*Deutsche Nordseeküste und angrenzende Gewässer*", 1994 edition, XII, and map No. 2921 "*Deutsche Ostseeküste und angrenzende Gewässer*", 1994 edition, XII, issued by the Federal Maritime and Hydrographic Agency on a scale of 1: 375,000. For electricity generated by plants commissioned no later than 31 December 2010, the fees to be paid in accordance with the first sentence shall be increased by 2.91 cents per kilowatt-hour for a period of twelve years starting from the date of commissioning. For electricity generated by plants located at least twelve nautical miles seawards and in a water depth of at least 20 metres, such period shall be extended by 0.5 months for each full nautical mile beyond 12 nautical miles and by 1.7

months for each additional full metre of water depth.

(4) In derogation of Article 5(1) the grid system operators shall not be obliged to pay for electricity generated by plants that have not proved prior to commissioning that they are able to achieve at least 60 per cent of the reference yield at the intended site. The plant operator shall furnish relevant proof of this to the grid system operator by submitting a technical expertise as defined in the annex to this act and commissioned to a technical expert in agreement with the grid system operator. If the grid system operator fails to give his consent within four weeks following the plant operator's request, the Federal Environmental Agency shall name the technical expert after consulting the *Fördergesellschaft Windenergie e.V. (FGW)*. The plant operator and the grid system operator shall bear 50 per cent of the costs each.

(5) As of 1 January 2005, the minimum fees specified in paragraph (1) above, and as of 1 January 2008, the minimum fees specified in paragraph (3) above, for new plants commissioned after these dates shall be reduced by 2 per cent annually of the relevant value for new plants commissioned in the previous year; the amounts payable shall be rounded to two decimals.

(6) For the purpose of implementing paragraphs (1) to (4) above, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is

authorised to issue an ordinance regulating the calculation and application of the reference yield.

(7) Paragraphs (1) to (6) above shall not apply to electricity generated by wind-powered plants whose construction was licensed after 1 January 2005 in an area of Germany's exclusive economic zone or coastal waters which has been declared a protected area of nature and landscape in accordance with Article 38 in conjunction with Article 33(2) of the Federal Nature Conservation Act or in accordance with *Land* legislation. The first sentence above shall also apply to such areas which the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety has notified to the Commission of the European Communities as sites of Community importance or as European bird sanctuaries , until they have been declared protected areas.

Article 11

Fees paid for electricity produced from solar radiation

(1) The fees paid for electricity generated by plants using solar radiation shall amount to at least 45.7 cents per kilowatt-hour.

(2) If the plant is attached to or integrated on top of a building or noise protection wall, the fees shall be

1. at least 57.4 cents per kilowatt-hour up to and including a capacity of 30 kilowatts,
2. at least 54.6 cents per kilowatt-hour for a capacity 30 kilowatts and over, and
3. at least 54.0 cents per kilowatt-hour for a capacity of 100 kilowatts and over.

The minimum fees in accordance with the first sentence above shall each be increased by 5.0 cents per kilowatt-hour if the plant is not integrated into the roof or designed to be the roof of the building and if it forms a substantial part of the building. Buildings shall be understood as meaning roofed building structures that can be independently used and entered by humans and are suitable for or designed for the purpose of protecting humans, animals or objects.

(3) In cases where the installation is not attached to or integrated on top of a building structure used primarily for purposes other than the generation of electricity from solar radiation, the grid system operator shall only be obliged to pay fees if the installation was commissioned prior to 1 January 2015

1. within the scope of application of a local development plan within the meaning of Article 30 of the Federal Building Code or
2. on a site for which a procedure in accordance with Article 38 first sentence of the Federal Building Code was carried out.

(4) For electricity generated in an installation in accordance with paragraph (3) above erected within the scope of application of a local development plan drawn

up or amended at least also for this purpose after 1 September 2003, the grid system operator shall only be obliged to pay fees if the installation is located on

1. plots of land which were already sealed when the decision on drawing up or amending the local development plan was adopted,
2. land converted from economic or military use or
3. on green areas designated for the construction of this installation in the local development plan and used as cropland at the point in time when the decision on drawing up or amending the local development plan was adopted.

(5) As of 1 January 2005, the minimum fees pursuant to paragraph (1) and paragraph (2) first sentence above paid for new plants commissioned after that date shall be reduced by five cent annually of the relevant value for new plants commissioned in the previous year; the amounts payable shall be rounded to two decimals. As of 1 January 2006, the relevant percentage pursuant to the first sentence above for plants specified in paragraph (1) above shall be increased to 6.5 per cent.

(6) For the purposes of calculating the amount of the fees in accordance with paragraph (2) above for the installation which was commissioned most recently, and in derogation of Article 3(2) second sentence, several photovoltaic installations attached to or on top of the same building and commissioned within six consecutive calendar months shall be deemed to be one installation even if they are not directly attached to building structures and installations that are commonly used and are technically necessary for operation.

Article 12

Common provisions for purchase, transmission and payment of fees

(1) Grid system operators shall not make the fulfilment of their obligations under Articles 4 and 5 conditional upon the conclusion of a contract.

(2) Where Articles 6 to 11 provide for different minimum fees depending on the plant's capacity, the amount of the fees shall be determined according to the share of the plant's capacity in relation to the threshold value to be applied. For the purpose of attribution to the threshold values referred to in Articles 6 to 9 and notwithstanding Article 3(5), capacity within the meaning of the first sentence above shall be understood as meaning the ratio of the total kilowatt-hours to be purchased in the calendar year in question pursuant to Article 4(1) or (5) to the total number of full hours for that calendar year less the number of full hours prior to commissioning and after final decommissioning of the plant.

(3) The minimum fees shall be paid from the date of commissioning for a period of 20 calendar years as well as for the year of commissioning. Notwithstanding the first sentence above, the minimum fees for electricity generated in plants in accordance with Article 6(1) shall be paid for a period of 30 years and for

electricity generated in plants in accordance with Article 6(2) shall be paid for a period of 15 years, as well as for the year of commissioning, respectively.

(4) The set-off of payment claims by the plant operator in accordance with Article 5 against a claim by the grid system operator shall only be permissible where the claim is undisputed or has been legally established. The ban on setting off such claims, laid down in Article 31 of the Ordinance on general conditions for the supply of electricity to tariff customers of 21 June 1979 (BGBl. I p. 684), as last amended by Article 1(1) No. 11 of the Ordinance of 5 April 2002 (BGBl. I p. 1250), shall not be applicable where a set-off against claims arising from this Act takes place.

(5) Upon request of the plant operator, the court responsible for the principal case may, at its own discretion and in consideration of the merits of the individual case, order the debtor of the claims referred to in Articles 4 and 5 by way of a preliminary injunction to connect the plant temporarily and purchase the electricity generated by it and make an advance payment of an equitable and fair amount of money. The preliminary injunction may be issued even if the preconditions set out in Articles 935 and 940 of the Code of Civil Procedure are not applicable.

(6) Electricity fed in from several plants may be billed via a shared metering device. In this case, the capacity of each individual plant shall be deemed relevant for calculating the amount of differentiated minimum fees. If electricity generated by several wind-powered plants to which different rates of minimum fees are applicable is billed via a common metering device, the quantities of electricity are attributed to the wind-powered plants in proportion to their reference yields.

(7) The minimum fees in accordance with Articles 6 to 11 shall not be deemed to include value-added tax.

Article 13

Grid costs

(1) The costs associated with connecting plants generating electricity from renewable energy sources or from mine gas to the technically and economically most suitable grid connection point and with installing the necessary measuring devices for recording the quantity of electrical energy transmitted and received shall be borne by the plant operator. In the case of one or several plants with a total capacity of up to 30 kilowatts located on a plot of land which already has a connection to the grid, this plot's grid connection point shall be deemed to be its most suitable connection point; if the grid system operator establishes a new connection point for the plants, he shall bear the resulting incremental cost. Implementation of this connection and the other installations required for the safety of the grid shall meet the plant operator's technical requirements in a given case as well as the provisions of Article 16 of the Energy Industry Act. The plant operator may have the connection and the installation and operation of

measuring devices implemented either by the grid system operator or by a qualified third party.

(2) The costs associated with upgrading the grid in accordance with Article 4(2) that solely result from the need to accommodate new, reactivated, extended or otherwise modernised plants generating electricity from renewable energy sources or from mine gas for the purchase and transmission of electricity produced from renewable energy sources shall be borne by the grid system operator whose grid needs to be upgraded. He shall specify the required investment costs in detail. The grid system operator may add these costs when determining the charges for use of the grid.

Article 14

Nation-wide equalisation scheme

(1) The transmission system operators shall record the different volumes of and periods of generation of energy paid for in accordance with Article 5(2) as well as the fees paid, and provisionally equalise such differences amongst themselves without undue delay and settle the accounts with regard to the quantities of energy and the fees paid pursuant to paragraph (2) below.

(2) By 30 September of each year, the transmission system operators shall determine the quantity of energy purchased and paid for in the previous calendar year in accordance with Article 5 and provisionally equalised in accordance with paragraph (1) above, and the percentage share of this quantity in relation to the total quantity of energy delivered to final consumers by the utility companies in the area served by the individual transmission system operator in the previous calendar year. If transmission system operators have purchased quantities of energy that are greater than this average share, they shall be entitled to sell energy to and receive fees from the other transmission system operators in accordance with Articles 6 to 12, until the other grid system operators have purchased a quantity of energy equal to the average share.

(3) Utility companies which deliver electricity to final consumers shall purchase and pay for that share of the electricity which their regular transmission system operator purchased pursuant to the provisions of paragraphs (1) and (2) above in accordance with a profile made available in due time and approximated to the actually purchased quantity of electricity pursuant to Article 4 in conjunction with Article 5. The first sentence above shall not apply to utility companies which, of the total quantity of electricity supplied by them, supply at least 50 per cent in accordance with the provisions of Articles 6 to 11. The share of the electricity to be purchased by a utility company in accordance with the first sentence above shall be placed in relation to the quantity of electricity delivered by the utility company concerned and shall be determined in such a way that each utility company will receive a relatively equal share. The compulsory quantity to be purchased (share) shall be calculated as the ratio of the total quantity of electricity paid for in accordance with Article 5(2) to the total quantity of electricity sold to final consumers. The fees as specified in the first sentence

above shall be calculated as the expected average fees per kilowatt-hour paid by all grid system operators combined two quarters earlier in accordance with Article 5, less the charges for use of the grid avoided pursuant to Article 5(2) second sentence. The transmission system operators shall assert claims held against the utility companies in accordance with the first sentence above that arise from equalisation in accordance with paragraph (2) above by 31 October of the year following the feeding-in of electricity. Equalisation for the actual energy quantities purchased and the fees paid shall take place in monthly instalments before 30 September of the following year. Electricity purchased in accordance with the first sentence above may not be sold below the fees paid in accordance with the fifth sentence above if it is marketed as electricity produced from renewable energy sources or as comparable electricity.

(4) If a valid court decision in the principal case issued after a billing statement pursuant to paragraph (2) first sentence or paragraph (3) above leads to any changes regarding the quantities of energy to be billed or the payments of fees due, such changes shall be taken into account in the next billing statement.

(5) Monthly instalments shall be paid on the expected equalisation payments.

(6) Grid system operators that are not transmission system operators and utility companies shall without undue delay make available the data required to perform the calculations referred to in paragraphs (1) to (5) above and present their final accounts for the previous year by 30 April. Grid system operators and utility companies may request that final accounts pursuant to the first sentence above be certified by 30 June and final accounts pursuant to paragraph (2) above by 31 October by a chartered or certified accountant. Plant operators shall make the data required for the final accounts of the previous year available by 28 February of the following year.

(7) Final consumers who purchase electricity not from a utility company but from a third party are placed on an equal footing with utility companies as defined in paragraphs (2) and (3) above.

(8) The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is authorised, in agreement with the Federal Ministry of Economics and Labour, to issue an ordinance setting out the provisions on

1. the organisational and temporal framework for equalisation pursuant to paragraph (1) above, in particular with a view to determining the responsible party and ensuring optimum and equal forecasting options with regard to the quantities of energy to be equalised and burden trends;
2. determining or identifying a uniform profile in accordance with paragraph (3) above, on the question of when, including the run-up period, and how such a profile and the underlying data are made available and on
3. the specification of the data required in accordance with paragraph (6) above and how such data are to be made available.

Article 15

Transparency

(1) Grid system operators and utility companies, and any alliances formed by them, which deliver electricity to final consumers shall be entitled to give notice to any third parties of the difference between the fees paid in accordance with Article 14(3) first and fifth sentences and their own average purchase costs per kilowatt-hour or the average purchase costs per kilowatt-hour incurred by the utility companies connected to their grid system during the last closed financial year (differential cost), where they provide proof of this by presenting a certificate by a chartered or certified accountant which will be published. When giving notice of the differential cost, the number of kilowatt-hours of electricity produced from renewable energy sources and from mine gas on which the calculation pursuant to the first sentence above is based must also be stated. Costs that may be added to the charges for use of the grid shall not be shown separately.

(2) The grid system operators shall publish the data necessary to determine the energy quantities and the fee payments to be equalised in accordance with Article 14 by 30 September of the following year. Such data must show whether the grid system operators have purchased the energy quantities from a downstream grid and whether they have sold the electricity to final consumers, grid system operators or utility companies delivering electricity to final consumers or used it themselves. The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is authorised, in agreement with the Federal Ministry of Consumer Protection, Food and Agriculture and the Federal Ministry of Economics and Labour, to regulate the details of the publication requirements in an ordinance.

(3) For the purpose of increasing transparency and simplifying the nation-wide equalisation mechanism, a public register may be established through an ordinance pursuant to the third sentence below in which installations for the generation of electricity from renewable energy sources and mine gas are to be registered (register of installations). Registration may be subject to a fee as defined in an ordinance pursuant to the third sentence below. The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is authorised to issue an ordinance that entrusts a subordinate federal authority or a legal person under private law with the keeping of the register of installations and to determine any details regarding the register, the information to be registered, the registration procedure, data protection requirements, publication of data and the charging and level of fees.

Article 16

Special equalisation scheme

(1) The Federal Office of Economics and Export Control shall upon request limit for a delivery point the share of the quantity of electricity in accordance with Article 14(3) first sentence which is delivered by the utility companies to the final

consumers which are manufacturing enterprises or rail operators, thus reducing the costs arising for such enterprises from delivering the electricity quantities, in so far as this is compatible with the purposes of the act and the limit imposed is still compatible with the interest of the electricity users as a whole.

(2) In the case of manufacturing enterprises, a limit shall be set only where they furnish proof that and to what extent, in the last closed financial year,

1. the electricity purchased from a utility company and consumed by the enterprises themselves exceeded 10 gigawatt-hours at a certain delivery point,
2. the ratio of the enterprise's electricity costs to its gross value added as defined by the Federal Statistical Office (*Fachserie 4* , series 4.3 of June 20033), exceeded 15 per cent,
3. an individual share of the electricity in accordance with Article 14(3) first sentence has been delivered to and consumed by the company , and that
4. the enterprise has paid for that share a differential cost within the meaning of Article 15(1).

Upon request of the enterprise, the utility companies shall without undue delay furnish proof to the Federal Office of Economics and Export Control of the share of electricity delivered and the differential cost including the data used to calculate the differential cost by submitting a certificate by a chartered or certified accountant for the last closed financial year; the costs for such a certificate shall be borne by the end-consumer enterprise. Proof of the requirements pursuant to the first sentence No. 3 above and of the differential cost incurred shall be furnished by submission of the certificate; proof of the other requirements 3 Official information: This publication can be ordered from *Statistisches Bundesamt*, D-65180 Wiesbaden. pursuant to the first sentence above shall be furnished by producing the contracts on electricity supply and the electricity bills for the last closed financial year and the audit by a chartered or certified accountant based on the financial statement of the last closed financial year. Delivery points shall be deemed to mean all spatially connected electrical installations of the enterprise at a given industrial site which is connected to the grid of the grid system operator by one or several withdrawal points. The first to fourth sentences above shall apply to the independent parts of the enterprise *mutatis mutandis*.

(3) Paragraph (2) first sentence Nos. 1, 3 and 4 above and the second to fourth sentences of that paragraph shall apply *mutatis mutandis* to railway operators, with the following provisions:

1. Account will be taken only of those quantities of electricity which are directly used for rail transport operations.
2. The delivery point shall be understood as meaning the total of the consumption points in the company's rail transport operations.

(4) To limit the share of the electricity forwarded a certain percentage shall, in accordance with paragraph (2) first sentence No. 1 or paragraph (3) No. 2

above, be fixed for the delivery point in question. The percentage shall be fixed in such a way that the differential cost for the share of the quantity of electricity forwarded, if calculated on the basis of the expected fees to be paid in accordance with Article 14(3) first and fourth sentences, amounts to 0.05 cents per kilowatt-hour. In the case of enterprises for which the purchased quantity of electricity referred to in paragraph (2) first sentence No. 1 above is below 100 gigawatt-hours or for which the ratio of electricity costs to gross value added is below 20 per cent, and in the case of railway operators, this provision shall only apply to the total quantity of electricity exceeding 10 per cent of the electricity purchased and consumed at that delivery point in the last closed financial year in accordance with paragraph (2) first sentence No. 3 or paragraph (3) No. 2 above; provision of proof that these values have been exceeded shall be subject, *mutatis mutandis*, to paragraph (2) third sentence above. If the enterprise is serviced by several utility companies when furnishing proof in accordance with paragraph (2) second sentence above, the limit under the first sentence above shall be shared by the utility companies in according to the individual quantities which they deliver to this final consumer at the delivery point; the enterprise shall make available to the utility companies the necessary information for the calculation of the individual shares. If the preferential treatment granted to all railway operators on the basis of this provision exceeded a total of 20 million euro, the percentage to be applied to railway operators shall, notwithstanding the provisions of the second sentence above, be uniformly defined not to exceed that total.

(5) Where the product of the share in accordance with Article 14(3) fourth sentence and the average fee in accordance with Article 14(3) fifth sentence would rise by more than 10 per cent as a result of the application of this rule in relation to the data for the year preceding the decision for those final consumers who do not benefit from this rule, the percentage in accordance with paragraph (4) second sentence above shall be calculated and, notwithstanding the provisions of paragraph (4) fifth sentence above, shall be fixed in the same way for all enterprises whose applications pursuant to paragraph (6) below comply with the requirements under paragraph (2) or (3) above, so as to ensure that this value is not exceeded. The quantity of electricity already favoured by a decision valid beyond 31 December 2004 pursuant to Article 21(6) shall be taken into consideration.

(6) The application including the complete application documents in accordance with paragraph (2) or (3) above and the information about the utility company and the regular transmission system operator shall be submitted by 30 June of the present year (preclusive period). The decision shall be binding to the applicant, the utility company and the regular transmission system operator. It shall take effect on 1 January of the following year for the duration of one year. The effects caused by a prior decision shall not be taken into account in calculating the ratio of electricity costs to gross value added pursuant to paragraph (2) first sentence No. 2 and paragraph (4) third sentence above.

(7) In the performance of the duties assigned to it by this act, the Federal Office of Economics and Export Control shall be supervised by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

(8) The claim by the regular transmission system operator responsible for the end-consumer applicant arising from Article 14(3) first sentence against the utility company concerned shall be limited in accordance with a decision by the Federal Office of Economics and Export Control in accordance with paragraphs (1) to (6) above; the transmission system operators shall take such limits into consideration as required by Article 14(2).

(9) Application of paragraphs (1) to (8) above shall be the subject of the progress report in accordance with Article 20.

Article 17

Guarantee of origin

(1) Plant operators may request a person or organisation entitled to act as an environmental verifier or environmental verification organisation in the field of electricity production in accordance with the Environmental Audit Act to issue a guarantee of origin for electricity produced from renewable energy sources.

(2) Such guarantee of origin must specify

1. the energy sources from which the electricity was produced, listed according to type and major components, including the information to what extent the electricity was produced from renewable energy sources within the meaning 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 (OJ L 283 p. 33), as last amended by the Acts of Accession of 16 April 2003 (OJ L 236 p. 586),
2. where biomass is used, whether it is exclusively biomass within the meaning of the ordinance pursuant to Article 8(7),
3. the name and address of the plant operator,
4. the quantity of electricity generated in the plant, the period in which it was produced and to what extent it was paid for in accordance with Articles 5 to 12 and
5. the place, the capacity and the date of commissioning of the plant.

(3) Such guarantees of origin shall only be used if the information required in paragraph (2) above is complete.

Article 18

Prohibition of multiple sale

(1) Electricity produced from renewable energy sources and from mine gas or landfill gas, sewage treatment gas, mine gas or gas from biomass fed into a gas network may not be sold or otherwise transferred more than once.

(2) Plant operators who received payment in accordance with Articles 5 to 12 shall not forward any guarantees for electricity produced from renewable energy sources and from mine gas. If a plant operator forwards such a guarantee for electricity produced from renewable energy sources or from mine gas, the electricity shall not be paid for in accordance with Articles 5 to 12.

Article 19

Clearing house

The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety may establish a clearing house to settle any disputes and issues of application arising under this act, which may involve the parties concerned.

Article 20

Progress report

(1) The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety shall, in agreement with the Federal Ministry of Consumer Protection, Food and Agriculture and the Federal Ministry of Economics and Labour, report to the *Bundestag* by 31 December 2007 and subsequently every four years thereafter about the state of affairs with regard to the introduction to the market of plants generating electricity from renewable energy sources and from mine gas and about the development of electricity production costs in such plants and shall if necessary propose an adjustment of the amount of the fees to be paid in accordance with Articles 6 to 12 and of the degressive rates, in line with the development of technology and markets for plants commissioned after that date. The progress report shall also assess the storage technologies and the ecological effects of the use of renewable energy sources on nature and landscapes.

(2) For the purpose of spot checks of electricity production costs within the meaning of paragraph (1) above and in order to ensure the functioning of the equalisation scheme pursuant to Article 14, plant operators whose plants were commissioned on or after 1 August 2004 and who have received payment of fees in accordance with Articles 5 to 12, and grid system operators shall, upon request, provide the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and its authorised representatives with truthful and accurate information about all facts that may be relevant for the assessment of electricity production costs and of equalised energy quantities and payments of fees in accordance with Article 14. If the plant operators and grid system operators are traders within the meaning of the Commercial Code, the account books shall in

addition be disclosed upon request where they may give information about facts that may be relevant for assessing the electricity production costs and the equalised energy quantities and payments of fees. The principles of data protection shall be observed.

Article 21

Transitional provisions

(1) In the case of electricity generated in plants commissioned prior to 31 July, the provisions on fee rates, duration of the claim to payment and the availability of measuring data previously in force shall apply under the following conditions:

1. In the case of electricity generated in hydroelectric power plants, the provision previously in force shall only apply up to and including a capacity of 5 megawatts;
2. Electricity generated in run-of-river power plants that had a capacity of up to and including 5 megawatts prior to 1 August 2004 shall be subject to the provisions of Article 6 if the plant was modernised and such modernisation has demonstrably brought about a good ecological status or a substantial improvement of the previous status. Article 6(3) shall apply *mutatis mutandis*. Notwithstanding Article 3(4), such plants shall be deemed to have been newly commissioned once the modernisation work has been completed;
3. Electricity generated in biomass plants commissioned after 31 December 2003 as of 1 August 2004 shall be subject to the fees under Article 8 of this act;
4. In the case of electricity generated in biomass plants commissioned prior to 1 January 2004, the minimum fees paid shall be increased as specified in Article 8(2) of this act;
5. Electricity generated in biomass plants commissioned prior to 1. August 2004 shall be subject to Article 8(6) second sentence of this act;
6. In the case of electricity generated in wind-powered plants commissioned after 31 March 2000, the annex to Article 10(1) of this act shall be applied to calculate the reference yield;
7. Electricity from plants generating electricity from solar radiation and commissioned prior to 1 January 2004 shall be subject to the provisions of Article 8 of the Renewable Energy Sources Act of 29 March 2000 (BGBl. I p. 305), last amended by the Act of 22 December 2003 (BGBl. I p. 3074) as promulgated on 22 July 2003;
8. Electricity from plants generating electricity from solar radiation and commissioned after 31 December 2003 shall be subject to the provisions of Article 8 of the Renewable Energy Sources Act of 29 March 2000 (BGBl. I p. 305), last amended by the Act of 22 December 2003 (BGBl. I p. 3074) as

promulgated on 1 January 2004, with Articles 8(3) and 8(4) applying only to electricity generated in plants commissioned after 30 June 2004.

(2) Article 4(1) second sentence shall only apply to electricity from plants commissioned within three months of the notice of establishment of a register of installations in the Federal Gazette (*Bundesanzeiger*). Electricity generated in any other plants shall be subject to the provisions of Article 4(1) second sentence for a period of three months after receipt of a separate written notice requesting registration from the grid system operator, specifying contact details of the register and stating the legal consequences of failure to submit an application.

(3) Electricity from biomass plants that also use waste wood classified in categories A III and A IV set out in the Waste Wood Ordinance of 15 August 2002 (BGBl. I p. 3302) and were commissioned prior to 30 June 2006 shall be subject to the provisions of Article 8(1) first sentence, instead of Article 8(1) second sentence.

(4) Article 10(4) shall only apply to plants commissioned after 31 July 2005.

(5) Until the ordinance referred to in Article 8(7) has been issued, if reference is made to such ordinance under this act, the Biomass Ordinance of 21 June 2001 (BGBl. I p. 1234) shall apply in its place. Article 8(6) shall remain unaffected. (6) Notwithstanding Article 16(6) first sentence, the application for 2004 shall be submitted by 31 August. Applications to limit the share of the energy quantity under the special equalisation scheme in accordance with the Renewable Energy Sources Act of 29 March 2000 (BGBl. I p. 305), last amended by the Act of 22 December 2003 (BGBl. I p. 3074), which are submitted prior to 1 August 2004 shall be processed and decided upon in accordance with the provisions in force, if they have not been submitted by companies, for which the share of the electricity has already been limited beyond 1 August 2004. Decisions by the Federal Office of Economics and Export Control to limit the share of electricity in application of the provisions specified in the second sentence above, of which the applicant was informed prior to 1 August 2004, shall be extended until 31 December 2004 notwithstanding the fourth sentence above. Decisions within the meaning of the third sentence above that are valid beyond 31 December 2004, shall become ineffective on 1 January 2005 if the company submits an application in accordance with Article 16(1) of this act prior to 1 September 2004 and if such application has not been finally rejected.

Annex (to Article 10(1) and (4))

1. The reference plant shall be a wind-powered plant of a specific type for which a yield at the level of the reference yield can be calculated on the basis of the P-V curve (power-wind speed curve) measured by an authorised institution at the reference site.

2. The reference yield shall be the quantity of electricity which each specific type of windpowered plant, including its hub height, would, if calculated on the basis of measured P-V curves, yield during five years of operation if it were built at the reference site. The reference yield shall be calculated in accordance with the

generally accepted rules of technology; the generally accepted rules of technology shall be assumed to have been complied with if the procedures, foundations and calculating methods set out in the *Technische Richtlinien für Windenergieanlagen* (Technical guidelines for wind-powered plants), Part 5, published by the *Fördergesellschaft Windenergie e.V. (FGW)*⁴, in the version applicable at the time of calculating the reference yield, have been used.

3. The type of a wind-powered plant shall be defined by the type designation, the swept rotor area, the rated power output and the hub height as specified by the manufacturer.

4. The reference site shall be a site determined by means of a Rayleigh distribution with a mean annual wind speed of 5.5 metres per second at a height of 30 metres above ground level, a logarithmic wind shear profile and a roughness length of 0.1 metres.

5. The P-V curve shall be the correlation between wind speed and power output (irrespective of hub height) determined for each type of wind-powered plant. P-V curves shall be determined in accordance with the generally accepted rules of technology; the generally accepted rules of technology shall be assumed to have been complied with if the procedures, foundations and calculating methods set out in defined in the *Technische Richtlinien für Windenergieanlagen* (Technical guidelines for wind-powered plants), Part 2, published by the *Fördergesellschaft Windenergie e.V. (FGW)*⁵, in the version applicable at the time of calculating the P-V curves, have been used. P-V curves which were determined by means of a comparable procedure prior to 1 January 2000 can also be used instead of P-V curves as specified in the second sentence above, provided that no construction of wind-powered plants of the type to which these curves apply is commenced within the territorial scope of this act after 31 December 2001.

6 . Technical expertises in accordance with Article 10(4) to prove that the plant may at least achieve 60 per cent of the reference yield at the intended site shall include a physical site analysis and use site-specific wind measurements or extrapolatable operational data from a neighbouring wind park and relate them to data from existing wind data bases to obtain a long-term prognostic assessment. Calculation of the energy yield shall be based on the flow speed to which the wind-powered plant is exposed.

7. For the purposes of this act, measurements of the P-V curves in accordance with No. 5 above and calculations of the reference yields of different types of wind-powered plants at reference sites in accordance with No. 2 above, and the determination of possible energy yields at the intended site in accordance with No. 6 may be carried out by institutions which 4 Official information: This publication can be ordered from *Windenergie e.V.*, Stresemannplatz 4, D-24103 Kiel. 5 Official information: This publication can be ordered from *Windenergie e.V.*, Stresemannplatz 4, D-24103 Kiel. are properly accredited in accordance with the *Allgemeine Anforderungen an die Kompetenz von Prüf- und Kalibrierlaboratorien* (General requirements for the competence of testing and calibration laboratories) (DIN EN ISO/IEC 17025) of April 2006 by an

accreditation body which is officially recognised or has been evaluated with the involvement of public authorities.

Section 2

Amendment of the Environmental Audit Act

The following German sentence shall be added to Article 15(9) of the Environmental Audit Act as promulgated on 4 September 2002 (BGBl. I p. 3490): "Paragraph (6) above shall apply *mutatis mutandis* to the activities of environmental verifiers or environmental verification organisations on the grounds of any other legal provisions."

Section 3

Amendment of the Combined Heat and Power Generation Act

In accordance with Article 4(3) second sentence of the Combined Heat and Power Generation Act of 19 March 2002 (BGBl. I p. 1092), as last amended by Article 136 of the Ordinance of 25 November 2003 (BGBl. I p. 2304), the following sentence will be added: "The usual price shall in each case be understood as meaning the average price of baseload electricity at the EEX electricity exchange in *Leipzig* in the previous quarter."

Section 4

Entry into Force, Expiry

This act shall enter into force on the day following its promulgation. At the same time, the Renewable Energy Sources Act of 29 March 2000 (BGBl. I p. 305), last amended by the Act of 22 December 2003 (BGBl. I p. 3074), shall expire.

Annex 4b

The main features of the (German) Act on granting priority to renewable energy sources (Renewable Energy Sources Act) of 21 July 2004

The Renewable Energy Sources Act of 21 July 2004

We cannot imagine life without an energy supply. To secure our own well-being and protect the natural foundation of life for future generations, a sustainable energy system must exhibit a number of characteristics: it must be climate friendly, resource saving, low risk, and socially sound; it must offer energy supply security, cost effectiveness and be acceptable to society. Renewable energies can meet these demands to a particularly high degree. In Germany, the Act on Granting Priority to Renewable Energy Sources (Renewable Energy Sources Act - EEG) is an effective and efficient instrument for increasing the use of renewable energies on the road towards a sustainable energy system.

How the EEG works

The core elements of the EEG are:

- the priority connection of installations for the generation of electricity from renewable energies and from mine gas to the general electricity supply grids
- the priority purchase and transmission of this electricity and
- a consistent fee for this electricity paid by the grid operators, generally for a 20-year period, for commissioned installations. This payment is geared around the costs
- the nationwide equalization of the electricity purchased and the corresponding fees paid.

The fee paid for the electricity depends on the energy source and the size of the installation. The rate also depends on the date of commissioning; the later an installation begins operation, the lower the tariff (degression).

The EEG ensures the increased use of environmentally friendly renewable energies, not through subsidies but through apportioning the costs. The grid operators and energy supply companies can pass on the difference in costs for electricity from renewable energies to the final consumer.

The effects and advantages of the EEG

The EEG is very effective. From 2000 to 2004 the volume of electricity generated from renewable energies supported by this Act increased from around 13.6 TWh to 34.9 TWh.

During the same period the Act resulted in the volume of electricity generated from wind and biomass more than doubling, and brought about a nine-fold increase in electricity generated from photovoltaic systems in Germany. A total of around 70 million tonnes of carbon dioxide were already saved in 2004, with 33 millions tonnes of these being attributable directly to the EEG.

The EEG is very efficient, because the costs for renewable energies hinge largely on investment security. If an investment is high risk, banks demand high interest rates for the loan and the investors demand high-risk mark-ups. Since the structure of the EEG guarantees a particularly high investment security, credit interest rates and risk mark-ups are low compared with other instruments. Furthermore, the lowering of fees as laid down in the EEG for installations commissioned at a later date ensures further price reductions.

This degression has already had an impact: The costs for installing photovoltaic systems dropped by 25% between 1999 and 2004; for wind turbines, costs were reduced by 30% between 1993 and 2003.

The degression also leads to installations being constructed as quickly as possible, in order to obtain a high payment level. This rules out the possibility of operators waiting until installations become cheaper. The EEG ensures very high-quality installations as – because payment is made per kilowatt-hour produced – there is great incentive for operators to run their installations efficiently and with as little interruption of operation as possible, at least during the usual 20-year payment period. Operators therefore demand high standards from the installation manufacturers.

The amendment to the EEG

In order to continue advancing the positive development of renewable energies in all sectors, and to adapt the EEG to this development, the Act was amended on 1 August 2004. The particular aims of the amended EEG are to increase the share of renewable energies in the total electricity supply to at least 12.5% by the year 2010 and to at least 20% by the year 2020, and the further development of technologies for the generation of electricity from renewable energies, thus contributing to the reduction in costs.

The EEG amendment also assists the implementation of the September 2001 European Union directive on the promotion of renewable energies in the electricity sector, ensuring that all the renewable energies defined in the directive fall under the scope of the EEG.

However payments are only compulsory if the electricity is generated exclusively from renewable energies.

The EEG regulations in detail

Obligation to purchase and transmit Grid operators must give immediate priority to connecting installations for the generation of electricity from renewable energies or from mine gas to their grid and to purchasing and transmitting all the electricity available from these installations.

Installation operators bear the costs of connection. Grid operators take on the necessary costs for upgrading the grid. They can take these costs into consideration in their charges for use of the grid. The grid upgrading costs must be declared to ensure the necessary transparency. This obligation aims, in the interests of consumer protection, to prevent costs being shifted unfairly to the electricity purchaser.

The amendment creates incentives for operators of installations for the utilisation of renewable energies to agree on generation management with the grid operators in their mutual interest. This is especially relevant for grid upgrading and stand-by energy. Such an agreement can take the at times fluctuating electricity supply into consideration in a way that enables the costs for grid upgrades, reserves and stand-by energy to be minimised. To facilitate better integration of renewable energies into the electricity system, the amendment to the EEG contains an obligation to measure and record the capacity for installations with a capacity of 500 kilowatts or more.

Fees

The EEG prescribes fixed tariffs which grid operators must pay for the feed-in of electricity from hydropower, landfill gas, sewage treatment and mine gas, biomass, geothermal and wind energy and solar radiation. The minimum payments, which are differentiated according to energy source, vary depending on the size of the installation, and, in the case of wind energy, on the local wind conditions on site and whether it is generated on land or offshore. For 2005, fees under the new EEG range from 5.39 euro cents/kWh for electricity from wind energy (basic payment) and 6.65 euro cents / kWh for electricity from hydropower, to 59.53 euro cents / kWh for solar electricity from small façade systems. In principle the guaranteed payment period is 20 calendar years, for hydropower 15 or 30 years. The fee valid for the year of commissioning remains constant for this period, with the exception of wind energy. For wind-generated electricity, special regulations are laid down which deviate from the fixed fees for other energy sources. Electricity from wind energy is paid for with two different rates: for an onshore wind park, a starting fee is paid for electricity produced for the first five years after commissioning, thereafter a lower basic fee. The period of higher starting fees can be extended according to the wind conditions at the site, the total payment period is still restricted to 20 years. For offshore wind parks, starting fees are paid for 12 years. This period is extended for installations located further from the coastline and erected in deeper water.

In order to take account of technological developments and their economic efficiency, and to optimise the use of cost reduction potential, the tariffs for most

branches are degressive in structure. The degression annually lowers the payment rates in all branches for new installations (except small hydropower plants). For installed plants, the fee valid for the respective year of commissioning applies for the entire payment period. For geothermal and offshore wind installations, degression takes effect later.

Compared with the previous EEG, the amendment provides for a more differentiated fee structure, taking account of efficiency aspects. In particular, the payment conditions for geothermal energy and biomass were improved. If existing large hydropower plants are modernised or expanded, the additional electricity generated is included in the fee. The degressive structure was strengthened and further developed.

For the area of bioenergy, in addition to the minimum fees laid down, the new version of the EEG provides for additional fees (bonuses), if the electricity is exclusively produced from self-regenerating raw materials, combined heat-power, or if the biomass was converted using innovative technologies (e.g. thermal chemical gasification, fuel cells, gas turbines, organic Rankine systems, Kalena cycle plants or Stirling engines). The bonuses can be used cumulatively.

The payment rate for wind energy on land was lowered in the amendment. Wind parks which could not achieve at least 60% of the reference yield at the planned location can no longer claim payment under the 2004 law. For coastal sites in particular there are new incentives for so-called repowering - the replacement of old, smaller installations with modern, more efficient ones. The higher starting fees for offshore wind parks will now be paid for installations commissioned before 2010 (previously 2006).

Equalisation scheme

Due to wind conditions, considerably more electricity is generated from wind power in northern Germany than in the south. To prevent regional inequality in the treatment of electricity consumers, the transmission grid operators must undertake a nationwide equalisation of the electricity volumes purchased under the EEG and the corresponding fees.

Supplementary regulations

The new EEG gives greater consideration to aspects of nature conservation, in particular with regard to the use of hydropower, photovoltaics and wind energy. To improve transparency, the new EEG introduces an obligation on the part of the grid operators to publish energy volumes and payment figures. To improve information on the increased use of renewable energies even further in future, an installation register will be created.

Since July 2003 there has been an equalisation regulation for electricity intensive companies in the producing sector. This regulation is expanded in the amended EEG.

Electricity intensive companies in the producing sector and environmentally friendly railways can be included under the equalisation regulation if their electricity consumption is higher than 10 Gigawatt (previously 100 gigawatts) and the ratio of electricity costs to gross value added exceeds 15% (previously 20%). The amendment to the EEG limits the total relief volume. This limits the extra costs incurred by non-privileged companies due to the equalisation scheme. The electricity volumes which are distributed among the non-privileged electricity consumers are limited to a maximum of 10% above the share calculated pursuant to the EEG.

In accordance with the provisions laid down by the European Union, the new EEG allows authorised bodies to issue guarantee of origin for electricity from renewable energies. This promotes consumer information and protection. The prohibition of multiple sales makes plain that the positive environmental characteristics of electricity from renewable energies may not be sold multiple times. The ban includes relevant guarantees and the simultaneous payment for and passing on of guarantees for the same electricity.

To clarify issues of application and to solve basic disputes, a clearing house can be established.

The Federal Environment Ministry must make regular reports to the German Bundestag on the impact of the EEG. This aims i.a. at enabling payment structures to be adapted where necessary to the actual circumstances. This reporting obligation was expanded to include the impacts of the EEG on environmental protection and nature conservation.

Table I: payment rates for new installations commission in 2004 (from 1.8.) for Hydro Power only).

Branch	Installation capacity	Fee paid (ct/kWh)	Capacity range	Degression ¹	Comments
hydro power	up to 5 MW	9.67	up to 500 kW	-	as of 2008 certain site restrictions
		6.65	from 500 kW to 5 MW		
hydro power	from 5 MW to 150 MW	7.67	up to 500 kW	1%	only in case of modernisation and only payment for the capacity increase
		6.65	from 500 kW to 10 MW		
		6.10	from 10 MW to 20 MW		
		4.56	from 20 MW to 50 MW		
		3.70	from 50 MW to 150 MW		

¹ The rate of payment also depends on the year of commissioning. For newly commissioned installations, the rate is reduced annually (degression) not for micro hydro power plants. This provides a continual incentive to improve efficiency and reduce costs.

Annex 5

Feed-in Policy in Kenya

MINISTRY OF ENERGY, Kenya

FEED-IN-TARIFFS POLICY

ON

WIND, BIOMASS AND SMALL-HYDRO RESOURCE GENERATED ELECTRICITY

March, 2008

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REVIEW OF THE FEED-IN-TARIFFS POLICY

INTRODUCTION

1. The government of Kenya recognises that other renewable energy sources (RES) including solar, wind, small hydros, biogas and municipal waste energy have potential for income and employment generation, over and above contributing to the supply and diversification of electricity generation sources. Sessional Paper No. 4 of 2004 on Energy incorporates strategies to promote the contributions of other renewable energy sources in the generation of electricity.

The Policy Framework - Sessional Paper No. 4 of 2004 on Energy

2. In Section 6.3.2 of the Sessional Paper No. 4 of 2004 on Energy the Government is committed to promote co-generation in the sugar industry and other establishments where the opportunity exists to meet a target of 300 MW by 2015 .

3. Section 6.4.1 (i)-(iv) of the Sessional Paper No. 4 of 2004 on Energy provides for the government to undertake pre-feasibility and feasibility studies on the potential for RES and for the packaging and dissemination of information on renewable energy sources to create investor and consumer awareness on the economic potential offered by other renewable sources of energy.

4. Pursuant to these policy strategies and in recognition of the potential of renewable energy sources in Kenya, the Ministry of Energy has encouraged potential IPPs to carry out feasibility studies on wind and biomass generation on the basis of which power purchase agreements with the Kenya Power and Lighting Company (KPLC) can be negotiated.

5. In view of the time and resources required to undertake feasibility studies, the MoE prepared a Position Paper in FY 2007/08 proposing to set Feed-in-Tariffs for electricity generated from renewable energy sources; specifically wind, biomass and small hydro in order to safeguard the investments made by the respective developers in data collection undertaking feasibility studies; and to boost the development of Renewable Energy Sources Electricity (RES-E) generation.

Public Procurement Oversight Authority's Approval for Feed-in-Tariffs

6. Setting Feed-in-Tariffs (FiTs) is a non-competitive form of procurement and can be interpreted as "single-sourcing" in the parlance of the Government of Kenya's Public Procurement Guidelines; and would therefore be considered irregular except with the approval of the relevant authorities, in this case the Public Procurement Oversight Authority

7. The alternative to setting guidelines on "Feed-in-Tariffs" is to procure the RES-E

generation capacity through the competitive open tender system, which can only succeed if the appropriate feasibility studies have been undertaken in advance and the data is provided to the prospective developers.

8. The objective of the position paper prepared by the MoE was to provide appropriate information to the Public Procurement Oversight Authority in order to facilitate discussions between the MoE and the Authority, thereby enabling the MoE to execute its mandate of promoting the development of RES-E generation as a means of diversifying national power sources and enhancing national energy security.

9. The Public Procurement Oversight Authority, having reviewed the position paper, concurred with the MoE's proposal but suggested that views of other stakeholders be sought. The Ministry of Energy made consultations with the key stakeholders namely KPLC, ERC and KenGen. On the basis of these consultations, the MoE has now developed Feed-in-Tariffs for Wind, Biomass and Small Hydro, which are contained in this guideline.

The Feed-in-Tariff Instrument

10. A Feed-in-Tariff (FiT) is an instrument for promoting generation of electricity from renewable energy sources (RES). A Feed-in-Tariff allows power producers to sell renewable energy sources generated electricity (RES-E) to a distributor at a pre-determined fixed tariff for a given period of time. The renewable energy sources include wind power, biomass, small hydro, solar, biogas and wave power.

11. The objectives of the FiTs system are to:

- a) facilitate resource mobilization by providing investment security and market stability for investors in Renewable Energy Sources (RES) electricity generation
- b) reduce transaction and administrative costs by eliminating the conventional bidding processes
- c) encourage private investors to operate the power plant prudently and efficiently so as to maximize its returns.

12. The advantages of RES-E include:

- a) Environmental integrity including the reduction of greenhouse gas emissions;
- b) Enhancing energy supply security, reducing the country's dependence on imported fuels; and coping with the global scarcity of fossil fuels and its attendant price volatility;
- c) Enhancing economic competitiveness and job creation among others.

13. It is envisaged that by adopting the FiTs system, Kenya's energy sector will improve its rating as an attractive destination for substantial private sector capital

thereby facilitating the exploitation of the abundant local renewable energy sources especially wind, small hydro and biomass.

DESIGNING FEED-in-TARIFFS FOR KENYA

14. Electricity generation costs vary according to the RES-E technology used. Therefore, the FiT levels will be technology specific and will depend on:

- a) The investment costs for the plant,
- b) The Operations and Maintenance (O&M) Costs
- c) Fuel costs where applicable
- d) Financing costs and return on the invested capital
- e) Estimated lifetime of the power plant;
- f) Amount of electricity to be generated

15. The avoided cost will typically comprise the energy cost incorporating the fuel cost and a portion of the O&M costs.

16. Since generation costs differ for different RES-E technologies the FiTs design will provide technology specific tariff levels incorporating the electricity generation costs and a fair return on the investment.

17. The Feed-in-Tariffs will be based on the generation cost but having regard to the avoided cost, the Feed-in-Tariffs in other parts of the world and the specific socio-economic conditions in Kenya.

18. The avoided costs will be estimated by the current energy cost associated with using the most efficient thermal plant supplying the Kenyan grid: currently Medium Speed Diesel (MSD) and the least expensive fuel oil: HFO 180 cSt; Due to the constant evolution of global oil prices the avoided cost will therefore, necessarily evolve over time in line with this.

19. The RES-E generation costs will be based on the best estimates at different load factors of energy availability;

20. The current cost estimates, both for a Medium Speed Diesel plant at Mombasa and upcountry, in close proximity to the major load centre i.e. Nairobi are summarised in Table 1.

Table 1: *The Energy Cost in US Cts/kWh Associated with Using Medium Speed Diesel Plants in Mombasa and Nairobi, Respectively (August 2007)*

Global Crude Oil Prices (US\$/bbl)	Fuel Cost (US Cts/kWh)	
	Mombasa	Nairobi or upcountry
50	6.7	7.9
60	7.8	9.0
70	8.9	10.1

21. The FiTs will be on either firm or non-firm basis and will include the grid connection costs. The FiTs will also be stepped as necessary.
22. The Government of Kenya guarantees access to the grid (Transmission and Distribution) pursuant to the provisions of the Grid Code.
23. The duration of support for each RES-E technology will be determined by the economic life of the RES-E plant.

Feed-in-Tariff for Wind Energy Resource Generated Electricity

24. The Wind Energy Resource Atlas of Kenya gives indicative information about the wind potential in various parts of Kenya. The Atlas provides broad information on a national scale. Therefore detailed feasibility studies are required for each site, since wind energy resource potential is site-specific.
25. Substantial investments are required for carrying out detailed feasibility studies to establish the financial viability of wind power generation at promising sites having regard to the special characteristics of wind energy resources which, unlike hydro-power, can not be stored.
26. To attract private sector capital in wind resource electricity generation, the Ministry of Energy hereby establishes the Feed-in-tariff (FIT) for Wind Energy Resource generated electricity.
27. A fixed tariff not exceeding US Cents 9.0 per Kilowatt-hour of electrical energy supplied in bulk to the grid operator at the interconnection point.
28. This tariff shall apply to individual wind power plants (wind farms) whose effective generation capacity does not exceed 50MW, subject to clause 29.
29. This tariff shall apply to the first 150MW capacity of Wind power plants developed in the country.
30. This tariff shall apply for 15 years from the date of the first commissioning of the wind power plant.

Feed-in Tariff for Biomass Energy Resource Generated Electricity

31. For the purposes of this tariff, biomass refers to plant or animal based energy resource and includes agricultural waste, municipal waste, biofuels and fuel wood.

32. The Ministry of Energy has conducted a pre-feasibility study on cogeneration from bagasse i.e. sugarcane waste, and established that there is potential for immediate development of about 200 MW from the use of bagasse produced at the six sugar mills operating in Nyanza and Western Provinces.

33. Potential investors have also shown interest in other forms of biomass including biogas, agricultural waste, and municipal waste.

34. To attract private sector capital in biomass energy resource electricity generation, the Ministry of Energy hereby establishes the Feed-in-tariffs (FiT) for Biomass Energy Resource generated electricity.

35. A firm power fixed tariff not exceeding US Cents 7.0 per Kilowatt-hour of electrical energy supplied in bulk to the grid operator at the interconnection point. This tariff shall apply for 15 years from the date of the first commissioning of the Biomass power plant.

36. Where biomass is used together with fossil fuels for the purposes of producing firm power, Biomass shall contribute not less than 70% of the annual fuel consumption, otherwise non-firm power tariff shall apply.

37. The firm power tariff shall apply to the first 150MW of firm power generating, biomass based power plants developed in the country.

38. A non-firm power fixed tariff not exceeding US Cents 4.5 per Kilowatt-hour of electrical energy supplied in bulk to the grid operator at the interconnection point. This tariff shall apply for 15 years from the date of the first commissioning of the Biomass power plant.

39. The non-firm power tariff shall apply to the first 50MW of non-firm power generating, biomass based power plants developed in the country.

40. The tariffs shall apply to individual biomass power plants whose effective generation capacity does not exceed 40MW, subject to clause 37 and 39.

Feed-in Tariff for Small Hydro Power Resource Generated Electricity

41. For the purposes of this tariff, Small hydro power plant means the hydro based power plants whose installed capacity is greater or equal to 500kW but less than or equal to 10 MW.

42. An assessment of small hydro resource potential carried out by the Ministry of Energy indicates that there are suitable sites for small hydro power development in the country. Substantial investments are however needed to carry out detailed feasibility studies to establish the economic viability of the said sites for power genera-

tion.

43. To attract private sector capital in small hydro resource electricity generation, the Ministry of Energy hereby establishes the feed-in-tariffs (FIT) for small hydro power resource generated electricity.

44. A stepped fixed tariff for small hydro power generated electricity not exceeding the prices shown in the Table 2 below shall apply on electrical energy supplied in bulk to the grid operator at the interconnection point.

Table 2

Power Plant Effective Generation capacity (MW)	Firm Power Tariff (¢/kWh)	Non-Firm Power Tariff (¢/kWh)
< 1	12.0	10
1 - 5	10.0	8.0
5 - 10	8.0	6.0

45. The tariffs shall apply for 15 years from the date of the first commissioning of the small hydro power plant

46. The firm power tariff shall apply to the first 100MW of small hydro, firm power generating stations developed in the country.

47. The non-firm power tariff shall apply to the first 50MW of small hydro Non-firm power generating stations developed in the country.

48. The tariffs shall apply to individual small hydro power plants whose effective generation capacity does not exceed 10MW, subject to clause 46 and 47.

CONNECTION OBLIGATIONS

49. The Feed-in-Tariffs include interconnection costs - transmission, substations and associated equipment - therefore grid system operators shall connect plants generating electricity from renewable energy sources specified in this document.

50. Where necessary, the grid system operator shall construct or upgrade its grid at a reasonable economic expense to facilitate interconnection. The interconnection costs including transmission/distribution lines and substations construction or upgrading shall be recovered by the grid operators from the Feed-in-Tariff.

PURCHASE OBLIGATION

51. The grid system operators shall connect plants generating electricity from renewable energy sources and guarantee priority purchase, transmission and distribution of all electricity from renewable energy sources specified in this document.

52. Grid operators shall pay a tariff agreed upon between them and the power producer subject to the maximum tariffs and maximum capacities specified in this document.

53. Grid operators shall recover from electricity consumers the portion of the feed-in tariff that is in excess of US cents 2.6 per kWh or as may be directed by the Energy Regulatory Commission at the time of the approval of the PPA or review thereafter. This means that the grid operators shall treat the differential between the agreed tariff and US Cents 2.6 per kWh or the figure approved by the Energy Regulatory Commission after a subsequent review as a pass-through cost.

54. Power Producers and grid system operators may agree by contract to digress from the priority of purchases, if the plant can thus be better integrated into the grid system. The parties shall seek approval for such variations from the Energy Regulatory Commission.

IMPLEMENTATION PROCEDURES

55. The following procedures shall apply in the implementation of the Feed-in-Tariff.

- a) Private investors who wish to become power producers shall send an expression of interest (EOI) to the Ministry of Energy. The EOI shall include preliminary information such as the renewable energy source to be used, location in the country where the power plant is to be located, proposed installed capacity, indicative tariff, expected duration of plant development and any other information that the private investors wishes to disclose to facilitate decision making.
- b) A Feed-in-Tariff Committee comprising representatives of the Ministry of Energy, the grid operator (KPLC) and the Energy Regulator (ERC) will review the EOI. The purpose of the review is to determine how the proposed power plant can be integrated into the national power development plan and estimate suitability of proposed power plant location for interconnection including interconnection facilities and costs.
- c) The results of the review shall be communicated to the private investor by the Feedin-Tariff Committee within three months from the date of receipt of the EOI. The EOI may be accepted or rejected and where it is rejected, the reason for the rejection shall be provided.
- d) Where the EOI is accepted and no further studies are required, the applicant shall be asked to provide a detailed proposal describing the technical and financial viability of the project, proposed financing arrangements, etc.
- e) Where the EOI is accepted, the applicant shall be notified and given non-

renewable rights of first refusal for the use of the same technology for power generation at the same location for a period of two years.

- f) Where the EOI is accepted and further studies need to be carried out to determine project viability, the applicant shall be given 12 months to carry out and conclude the studies. Progress report shall be provided to the Feed-in-Tariff Committee after 6 months. Where the 6 months progress report shows that the project is not viable within the feed-in tariffs, the a project shall be abandoned and the rights of refusal will lapse.
- g) Where the detailed proposal received under (d) or feasibility studies carried out under (e) confirms that the project is viable within the feed-in tariffs, the applicant shall be given another 6 months to conclude the studies and project development engineering design, financing arrangements, and PPA (pro-forma/standard) negotiations with the grid operators etc.
- h) Construction works of all projects to be implemented under the Feed-in-Tariff system shall commence within 6 months from the date of the signing of the PPA. The project shall be completed and commissioned within a period of 24 months from the date of the signing of the PPA.

COMPLIANCE WITH TECHNICAL, LEGAL AND REGULATORY REQUIREMENTS

56. All projects implemented under the Feed-in-Tariff system shall comply with all other relevant technical, legal and regulatory requirements of the Republic of Kenya.

REVIEW OF THE FEED-IN-TARRIFS POLICY

57. This Feed-in-Tariffs policy shall be subject to review every three years from the date of publication. Any changes that may be made during such reviews shall only apply to RESE power plants that shall be developed after the revised guidelines are published. This means that the revised guidelines and tariffs shall only apply to PPA contracts that shall be entered into after the revised tariffs have been published.

Annex 6a

Prices for Renewable Energies in Europe – Feed-in tariffs versus Quota Systems – a comparison

Source: Doerte Fouquet EREF (European Renewable Energies Federation)

Austria

	Small Hydro	Wind
Price (€/MWh)	1 st GWh : 56,80* / 59,60** / 62,50*** next 4 GWh : 43,60* / 45,80** / 50,10 *** next 10 GWh : 36,30* / 38,10** / 41,70 *** next 10 GWh : 32,80* / 34,40** / 39,40 *** > 25 GWh : 31,50* / 33,10** / 37,80*** *Existing plants (licensed before 1 January 2003) **Plant after investment with at least 15% yield increase between 1 January 2003 and 1 January 2007 ***New plant or plant after investment with at least 50% yield increase between 1 January 2003 and 1 January 2007	78
Support scheme type	Feed-in tariffs	
Current applicable law	Green Electricity Act of 23 August 2002, Green Electricity Decree in the version of 12 August 2005	
Additional information	From 1 January 2005 on the feed-in tariffs have been standardised on national level. The previous tariffs regulated on Bundesland level continue to apply only to plants that were authorised before 1 January 2005. The above listed tariffs apply to new plants for a period of 15 years starting from the commissioning date. New plants are defined as plants that obtain license between 1 January 2003 to 31 December 2004 and start operating at the latest on 30 June 2006 (for solar PV, wind, geothermal and sewage gas) respectively on 31 December 2004 (for biomass, biogas, highly biogenous waste)	

	Biomass	Solar PV	Others
Price (€/MWh)	<u>Solid biomass:</u> < 2 MW: 160 > 2 MW to ≤ 5 MW: 150 > 5 MW to ≤ 10 MW: 150 > 10 MW: 102 all hybrid and mixed combustion plants: 650 <u>Highly biogenous waste:</u> same tariffs as for solid biomass with a reduction of 20 % respectively 35% depending on the type of combustibles <u>Liquid biomass:</u> ≤ 200 kW: 130 > 200 kW: 100 <u>Sewage gas:</u> ≤ 1MW: 60 > 1 MW: 30 <u>Biogas:</u> ≤ 100 kW: 165 / 123,75* > 100 kW to 500kW: 145 / 108,75* ≤ 500 kW to 1MW: 125 / 93,75* > 1 MW: 103 / 77,25* *co-fermentation	≤20 kW (peak): 600 >20 kW (peak): 470	<u>Geothermal:</u> 70
Support scheme type	Feed-in tariffs		
Current applicable law	Green Electricity Act of 23 August 2002, Green Electricity Decree in the version of 12 August 2005		
Additional information	From 1 January 2005 on the feed-in tariffs have been standardised on national level. The previous tariffs regulated on Bundesland level continue to apply only to plants that were authorised before 1 January 2005. The above listed tariffs apply to new plants for a period of 15 years starting from the commissioning date. New plants are defined as plants that obtain license between 1 January 2003 to 31 December 2004 and start operating at the latest on 30 June 2006 (for solar PV, wind, geothermal and sewage gas) respectively on 31 December 2004 (for biomass, biogas, highly biogenous waste)		

Belgium¹

I. Wallonia

		Small Hydro *	Wind *	Biomass *	Solar PV *	Others *
Price (€/MWh)*	(1)	Min. price GC : 50 Penalty price : 100	Min. price GC : 50 Penalty price : 100	Min. price GC : 20 Penalty price : 100	Min. price GC : 150 Penalty price : 100	Min. price GC : / Penalty price : 100
	(2)	30 – 40	27	37	150 **	
Support scheme type	Quota Obligation + Green certificates**					
Current applicable law	<ul style="list-style-type: none"> Royal Decree of 5th October 2005 modifying the Royal Decree of 16th July 2002 Royal Decree of 16th July 2002 regarding the establishment of mechanisms supporting the production of electricity from renewable energy sources (as amended) Regional Decrees: <ul style="list-style-type: none"> Decree of Wallon Government adopted on 12th April 2001, as amended. Establishes a legal scheme to give propulsion to the green electricity market. This decree has been amended in 2002, 2003 and 2005 Decree of Wallon Government adopted on 4th July 2002, regarding the promotion of green electricity (as amended) 					
Additional information	(1) Reference price of Green Certificates on the Wallon market for the period 2005/2006. From January 2005 to September 2006 the price of Green Certificates has been nearly constant, varying from a minimum price of 91,29 to a maximum price of 92,29 (2) Average market price for electricity (average price in 2006 for main producers in each sector) * 1 GC = 456 kg CO ₂ avoided. For Wind, Hydro and Solar PV = 1 MWh. For biomass CHP can be more than 1 GC / MWh – for fossil CHP is less than 1 GC / MWh ** This price is the same as the households pay at present for their electricity. In fact producers subtract their production from their consumption. If they produce 250 kWh with PV and the household consumption is 1000 kWh, the owner will pay only a 750 kWh bill. Therefore, the PV market price for electricity mentioned in this report is based on the average household consumption price (150 €/MWh). If the production exceed the consumption, the additional produced electricity is paid at market price before taxes *** In Wallonia the green certificate system started on 1st October 2002. It obliges all suppliers (retailers) to purchase a certain percentage of their total electricity sales from renewable sources or quality cogeneration. The percentage for the first period was 3% in 2005 and raise to 7% in 2007. For the second period the percentage will annually increase by 1% starting at 8% in 2008					

¹ In Belgium the regulation of renewable energy falls under the responsibility of its three Regions Wallonia, Flanders and Brussels-Capital. All regions have implemented a quota system with tradable green certificates. However, the market in Brussels-Capital plays only a marginal role due to the limited number of RES electricity projects.

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	and reach 12% in 2012. Each green certificate is valid five years. Those suppliers who fail to reach the target are charged with 100 € fine per missing green certificate. The money deriving from the fines are financing a public Fund promoting Renewable Energy Sources. Green electricity producers may sell their certificates to the Energy Authority at minimum price of 65 € per certificate.
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II. Flanders

		Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)*	(1)	<ul style="list-style-type: none"> 109,60 (market price Green Certificates with Guarantee of Origin) 110,04 (market price Green Certificates without Guarantee of Origin**) 			450	109,60 (GoO) 110,04
	(2)	163,47 = 109,60 + 53,87	163,47 = 109,60 + 53,87	163,47 = 109,60 + 53,87	503,87 = 450 + 53,87	163,47 = 109,60 + 53,87
Support scheme type	Quota obligation + Green Certificates***					
Current applicable law	<ul style="list-style-type: none"> Royal Decree of 5th October 2005 modifying the Royal Decree of 16th July 2002 Royal Decree of 16th July 2002 on the establishment of mechanisms supporting the production of electricity from renewable energy sources (as amended) Regional Decrees: <ul style="list-style-type: none"> Decree of the Flemish Government of 5th March 2004 regarding the promotion of production of electricity from RES, as amended (replacing the Decree of the Flemish Government of 28th September 2001) Decree of the Flemish Government of 17th July 2000 on the Green Certificates system, as amended Decree of the Flemish Government of 7th May 2004, which exempts supplies to major customers from the certificate obligation for a consumption between 20 and 100 GWh up to 25% and for a consumption exceeding 100 GWh up to 50 %. 					
Additional information	(1) Average price of Green Certificates in July 2006. (2) Total price = market price Green Certificate with Guarantee of Origin + market price for electricity (average price for the day 28 th November 2006) * For Wind, Hydro and Solar PV: 1 Green Certificate = 1 MWh. With reference to biomass more than 1 Green Certificate can be issued for 1 MWh has to be considered a minimum price ** Guarantee of origin: the guarantee of origin was introduced by the amendment of Decree of 5 th March 2004 in July 2005. The guarantees are divided in two categories: "none used" or "used". It is classified as "none used" when creating the green certificate. The status is "used" when the electricity covered by the guarantee is either consumed on the spot, exported or delivered to a final customer. In case of the latter the supplier has to declare his guarantees of origin as "used" up to the amount of electricity delivered thereby indicating the number of the respective customer. This system enables the customer to verify if the electricity he received from his supplier has been produced by RE sources. The statuses of the guarantees are published in a central data base for each guarantee.					

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III. Brussels-Capital

		Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)	(1)	70				
	(2)	123,87 = 70 + 53,87				
Support scheme type	Quota obligation* + Green Certificates					
Current applicable law	<ul style="list-style-type: none"> Royal Decree of 5th October 2005 modifying the Royal Decree of 16th July 2002 Royal Decree of 16th July 2002 on the establishment of mechanisms supporting the production of electricity from renewable energy sources (as amended) Regional Decree <ul style="list-style-type: none"> Decree of the Government of the Region of Brussels-Capital adopted on the 6th May 2004 Order of 19th July 2001 					
Additional information	(1) Average price of Green Certificates for the first trimester 2006 (2) Total price = market price Green Certificate + market price for electricity (average price for the day 28 th November 2006) * Quota obligations containing quality co-generation (the territory of this Region does not provide enough space for RES electricity plants)					

Bulgaria

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)*	n.a.	n.a.	n.a.	n.a.	n.a.
Support scheme type	Quota obligation + Green certificates				
Current applicable law	<ul style="list-style-type: none"> Energy Law Act (2005) Energy Efficiency Act (2004) Ordinance on Setting and Applying prices and Rates of Electric Energy Regulation for certification of the origin of electric power generated by renewable and/or combined generation sources, issuance of green certificates and their trading 				
Additional information	* Figures are not yet available Green Certificates scheme has been recently introduced (July 2006)				

Cyprus

	Small Hydro	Wind	Biomass	Solar PV (<5 kW)	Others
Price (€/MWh) *	64,19**	<u>Large scale</u> first 5 years: 93,7 following 10 years: 48,58 to 93,71 according to wind resource <u>Small scale</u> (< 30 kW) 64,19**	64,19**	208,25 (64,19 from EAC + 144,06 subsidy) for 15 years Only for households: 388 for 15 years	
Support scheme type	Feed-in tariffs				
Current applicable law	Law N33(I)/2003, of 18.4.2003, on promotion of the use of RES and Energy Conservation investments				
Additional information	* Grant scheme updated in January 2006 ** No subsidy; only fixed prices paid by the Electricity Authority of Cyprus (EAC). The EAC is obliged to buy RES-e at a fixed feed-in purchase price of 64 €/MWh (3.7 CYP cents/KWh)				

Czech Republic

	Plants commissioned	Small Hydro		Wind	
		Purchase prices**	Green premiums**	Purchase prices**	Green premiums**
Price (€/MWh)*	after 1 st January 2006	82,8	50,6	86,78	71,26
	1 st January—31 st December 2005	75,37	43,05	95,26	79,74
	1 st January—31 st December 2004	-	-	99,80	84,29
	before 1 st January 2005	58,67	26,46	-	-
	before 1 st January 2004	-	-	110,74	95,21
Support scheme type	Feed-in tariffs				
Current applicable law	<ul style="list-style-type: none"> Act No. 526/1990 on Prices (as amended)** Act. 265/1991 on the Competencies of the Czech Republic's Authorities in the Area of Prices Act No. 458/2000 on the Conditions for Business and State Administration in the Energy Industries and on Amendments to Certain Laws Act No. 180/2005 on Support for Electricity Generation from Renewable Energy Sources and on Changes to Certain Laws, Energy Regulatory Office (ERO) Price Decision No. 10/2005 of 30 November 2005 Laying down support for electricity generation from renewable energy sources, combined heat & power, and secondary sources 				
Additional information	* Prices excluding VAT. Exchange rate of September 2006				

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	<p>** Pursuant to Act 526/1990, as amended, two different schemes have been set up: purchase prices and green premiums.</p> <p><u>Purchase prices</u> apply to electricity supplied and metered at the delivery point between the generating plant and the respective distribution system operator's network, or the transmission system operator's network, which [the delivery point] appears in the clearing of imbalances to the entity subject to clearing ['cleared entity'] responsible for losses in the regional distribution system, or to the cleared entity responsible for losses in the transmission system.</p> <p><u>Green premiums</u> apply to electricity supplied and metered at the delivery point between the generating plant and the regional distribution system operator's network, or the transmission system operator's network, and supplied by the generator to an electricity trader or eligible customer, and also to the 'other house load' under a separate legal regulation.</p> <p>Within one generating plant, the method of purchase prices and the method of green premiums may not be combined</p>
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	Biomass			Solar PV		Geothermal		
	Plants Commissioned	Purchase Price**	Green Premiums**	Plants commissioned	Purchase Price **	Green Premiums**	Purchase Price**	Green Premiums**
Price (€/MWh)*	After 1 st January 2006			After 1 st January 2006	467,12	445,54	158,71	128,81
	O1 category	103,36	69,16	Before 1 st January 2006	222,24	200,65	128,81	98,37
	O2 category	91,75	57,48					
	O3 category	80,76	46,58					
	Before 1 st January 2006							
	O1 category	103,36	69,16					
O2 category	91,75	57,48						
O3 category	80,76	46,58						
Support	Feed-in tariffs							

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scheme type	
Current applicable law	<ul style="list-style-type: none"> Act No. 526/1990 on Prices (as amended) Act. 265/1991 on the Competencies of the Czech Republic's Authorities in the Area of Prices Act No. 458/2000 on the Conditions for Business and State Administration in the Energy Industries and on Amendments to Certain Laws Act No. 180/2005 on Support for Electricity Generation from Renewable Energy Sources and on Changes to Certain Laws, Energy Regulatory Office (ERO) Price Decision No. 10/2005 of 30 November 2005 Laying down support for electricity generation from renewable energy sources, combined heat & power, and secondary sources
Additional information	<p>* Prices excluding VAT. Exchange rate of September 2006</p> <p>** Pursuant to Act 526/1990, as amended, two different schemes have been set: purchase prices and green premiums.</p> <p><u>Purchase prices</u> shall apply to electricity supplied and metered at the delivery point between the generating plant and the respective distribution system operator's network, or the transmission system operator's network, which [the delivery point] appears in the clearing of imbalances to the entity subject to clearing ['cleared entity'] responsible for losses in the regional distribution system, or to the cleared entity responsible for losses in the transmission system</p> <p><u>Green premiums</u> shall apply to electricity supplied and metered at the delivery point between the generating plant and the regional distribution system operator's network, or the transmission system operator's network, and supplied by the generator to an electricity trader or eligible customer, and also to the 'other house load' under a separate legal regulation</p> <p>Within one generating plant, the method of purchase prices and the method of green premiums may not be combined</p>

Denmark

	Small Hydro	Wind
Price (€/MWh)*	<p>Plants connected to the grid</p> <p><u>Before 21st April 2004</u></p> <p>total tariff: 80,43 (for 20 years from date of grid connection)</p> <p><u>1st January 2004 - 21st April 2004</u></p> <p>total tariff: 80,43 (for at least 15 years)</p> <p><u>After 21st April 2004</u></p> <p>market price + 13,40 (for 20 years)</p>	<p><u>Turbines connected to the grid from January 2005:</u></p> <p>13,40: premium for 20 years 3,08: allowance for offset costs etc.</p> <p><u>Turbines connected to the grid in the period 2003-2004</u></p> <p>up to 13,40: premium for 20 years 3,08: allowance for offset costs etc. Total tariff (market price + premium) may not exceed 48,06</p> <p><u>Turbines connected to the grid in the period 2000-2002</u></p> <p>57,64: total tariff (market price + premium) for 22,000 full load hours [onshore] 13,40: premium after full load hours are used up, for turbines younger than 20 years 57,64: total tariff (market price + premium) for 10 years [off-shore] 3,08: Allowance for offset costs Total tariff (premium + market price) may not exceed 48,06</p> <p><u>Turbines acquired before end 1999</u></p> <p>for full load hours**: 80,43: total tariff (market price + premium)</p> <p>after full load hours are used up: 57,64€/MWh: total tariff for turbines younger than 10 years. 13,40€/MWh: premium of for turbines younger than 20 years 3,08 €/MWh: allowance of for offset costs Total tariff (premium + market price) may not exceed 48,06</p> <p><u>Turbines financed by electricity utilities (as a result of an order or special agreement)</u></p> <p><u>Onshore, connected to the grid as of 1 January 2000</u></p> <p>57,64: total tariff (subsidy + market price). Subsidy for turbines not older than 10 years.</p>

		<p>up to 13,40; premium for turbines older than 10 years and younger than 20 years. Total tariff (subsidy + market price) may not exceed 48,06.</p> <p>Offshore, connected to the grid after 1 January 2000 57,64; total tariff (subsidy + market price) for turbines not older than 10 years for 42,000 full load hours Up to 0,93; compensation if production is subject to a grid tariff</p> <p>up to 13,40; premium for turbine not older than 20 years after all full load hours are used up Total tariff may not exceed 48,06 €/MWh</p> <p>Wind turbines with removing certificates: extra premium</p> <p>Household turbines (25 kW or less): total tariff 80,43</p>
Support scheme type	Feed-in tariffs	Feed-in tariffs
Current applicable law	Danish Electricity Supply Act (Erforsyningloven) as amended	<ul style="list-style-type: none"> Danish Electricity Supply Act (Erforsyningloven) as amended Executive Order no.1365 of 15 December 2004 (Wind turbine executive order)
Additional information		<p>** Full load hours: turbines of 200 kW or less: 25,000 hours turbines of 201 kW-599 kW: 15,000 hours turbines of 600 kW and over: 12,000 hours</p> <p>*Tariff = price market + subsidy/premium. Exchange rate DKK to EUR of September 2006</p>

	Biomass		Solar PV	Others
	Biogas**	Biomass***		
Price (€/MWh)*	<p>80,43 for 10 years</p> <p>53,62 for following 10 years</p> <p>To be entitled to subsidies, the total use of biogas may not exceed 8 PJ/year</p>	<p>Plants connected to the grid</p> <p><u>Before 21st April 2004</u> total tariff: 80,43 (for 20 years from date of grid connection)</p> <p><u>1st January 2004 - 21st April 2004</u> total tariff: 80,43 (for at least 15 years)</p> <p><u>After 21st April 2004</u> market price + 13,40 (for 20 years)</p>	<p>Plants connected to the grid</p> <p><u>Before 21st April 2004</u> total tariff: 80,43 (for 20 years from grid connection and for at least 15 years if connected as of 1 January 2004)</p> <p><u>After 21st April 2004</u> market price + premium of 13,40 €/MWh for 20 years</p> <p>small solar cell systems less than 6kW not eligible for subsidy</p>	<p>Special RE plants of major importance to future exploitation of RE electricity (including wave power, solar energy etc), connected to the grid after 21st April 2004.</p> <p>80,43 €/MWh tariff for 10 years</p> <p>53,62 €/MWh tariff for the following 10 years</p>
Support scheme type	Feed-in tariffs (fixed-premium mechanism)	Feed-in tariffs (fixed-premium mechanism) Obligation for central power stations to use biomass	Feed-in tariffs (fixed-premium mechanism)	Feed-in tariffs (fixed-premium mechanism)
Current applicable law	Danish Electricity Supply Act (Erforsyningloven)	Danish Electricity Supply Act (Erforsyningloven) Biomass Agreement of 1993	Danish Electricity Supply Act (Erforsyningloven)	Danish Electricity Supply Act (Erforsyningloven)
Additional information	<p>* Tariff = price market + subsidy/premium. Exchange rate DKK to EUR of September 2006</p> <p>** Grid Connection between 22 April 2004 and 31 December 2008; prices for biogas used in combined heat and power plants (CHP)</p> <p>*** For biomass incinerators built by electricity utilities as result of an order or special agreement, the following special tariffs apply: 53,62 for the first 10 years (premium of up to 13,40 €/ton biomass up to a maximum of 4.021.529€/year) and premium of 13,40 for the following 10 years</p>			

Estonia

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)*			51,75**		
Support scheme type	Feed-in tariffs				
Current applicable law	Electricity Market Act as amended				
Additional information	<p>* Exchange rate EEK to € of September 2006</p> <p>** EEK 810/MWh</p>				

Finland

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)	74 (= 50 € market price + 7 € tax deduction + 17 € investment support*)				
Support scheme type **	Tax subsidies				
Current applicable law	Electricity Market Act				
Additional information	* The investment support is only granted for new technologies upon application ** According to Finnish law all tax subsidies are in force until further notice. The European Commission has authorised the tax subsidies for power production in Finland until the end of 2006. The authorisation for the refund scheme of energy-intensive consumers will expire by the end of 2011.				

France

	Small Hydro	Wind	
		Onshore	Offshore
Price (€/MWh)	Existing plants: 55.04 €/MWh (average) New plants: <500 kW: 74 €/MWh > 500 kW: 67.5 €/MWh	<p><u>For the first 10 years:</u> 82 €/MWh in the mainland</p> <p><u>For the next 5 years:</u> ≤2400 h/y: 82 €/MWh 2800 h/y: 68 €/MWh ≥3600 h/y: 28 €/MWh with linear interpolation in the mainland Annual depression 2%</p> <p><u>Overseas:</u> 110 €/MWh for 15 years independent from productivity *</p>	<p><u>For the first 10 years:</u> 130 €/MWh</p> <p><u>For the next 10 years:</u> ≤2800 h/y: 130 €/MWh 3200 h/y 90 €/MWh ≥3900 h/y 30 €/MWh with linear interpolation Annual depression 3%</p>
Support scheme type	Feed-in tariff	feed-in tariff based on annual productivity	
Current applicable law	Decree of 25 June 2001 A new decree is envisaged for October 2006: it shall increase tariffs by a small margin for smaller plants; plants exceeding 3 MW will have no change in tariff.	Decree of 10 July 2006 and articles 10 and 10-1 of the 2000-108 Law of 10 February 2000	
Additional information	The buy out obligation is limited to power plants under 12 MW. Contract duration: 15 or 20 years.	The buy out obligation is limited to wind farms established in wind development areas (ZDE) and plants with a capacity below 12 MW until 13 July 2007. Bigger wind farms follow a tender procedure. The contract duration is 15 years for onshore and 20 years for offshore installations. *The productivity is defined as producing time equivalent to the amount of generated	

	electricity at maximum output power
	Tariffs are indexed on labour price and industry production and services to enterprises prices. Other applicable laws changed 5 times in the past 5 years. EDF is the only firm which can benefit from a compensation fund furnished by end users, therefore EDF is the only firm able to buy green electricity; there is no French market for green electricity. Green electricity with certified origin is subject to import tax.

	Biomass		Solar PV	Others
Price (€/MWh)	<p>Biogas</p> <p>≤ 150 kW: 90 €/MWh in the mainland, 103 €/MWh overseas, ≤ 2 MW: 75 €/MWh in the mainland, 86 €/MWh overseas, with linear interpolation between</p> <p>energy efficiency-based premium between 0 (energy yield < 40 %) and 30 €/MWh (> 75 %) with linear interpolation between</p> <p>20 €/MWh methanisation premium for all biogas installations excepted for those based upon non hazardous waste storage facilities</p> <p>no annual degression</p>	<p>Combustion of animal or vegetable biomass material</p> <p>49 €/MWh in the mainland, 55 €/MWh overseas, these reference tariffs are modulated according to the averaged power delivered in comparison with the power guaranteed by the producer</p> <p>energy efficiency-based premium between 0 (energy yield ≤ 40 %) and 12 €/MWh (≥ 70 %), with linear interpolation between stages (5 €/MWh at 50 % and 10 €/MWh at 60 %)</p>	<p>300 €/MWh in the mainland, 400 €/MWh overseas and in Corsica</p> <p>Building frame integration premium: 250 €/MWh in the mainland, 150 €/MWh overseas and in Corsica</p> <p>no annual degression</p> <p>Tariff delivered until a ceiling is reached, defined as the product of the installation crest power and a 1500 h duration in the continental mainland (1800 h for other cases). Then electricity is bought out at a 50 €/MWh price.</p>	<p>geothermal: 120 €/MWh in the mainland, 100 €/MWh overseas</p> <p>energy efficiency-based premium between 0 (energy yield ≤ 30 %) and 30 €/MWh (≥ 50 %) with linear interpolation between</p>
Support scheme type	feed-in + premium	feed-in + premium	feed-in + premium	feed-in + premium
Current applicable law	Decree of 10.07.2006	Decree of 16.04.2002	Decree of 10.07.2006	Decree of 10.07.2006
Additional information	Contract for 15 years	Contract for 15 years	Contract for 20 years	Contract for 15 years

	Tariffs are indexed on labour price and industry production and services to enterprises prices. They are reviewed annually. Other applicable laws changed 5 times in the past 5 years. EDF for 95% of France and pre-existing local utilities in the remaining 5% are the only firms which can benefit from a compensation fund furnished by end users, therefore they are the only ones able to buy green electricity; there is no French market for green electricity. Green electricity with certified origin is subject to import tax.
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Germany

	Small Hydro	Wind
Price (€/MWh) *	<p>For new installed plants: 96,7 (≤ 500 kW), 66,5 (500 kW to 5MW)</p> <p>Modernisation of older plants: 75,1 (≤ 500 kW added), 6,51 (500 kW to 10 MW added)</p> <p>Degression rate**: 1,0%</p>	<p>For new installed plants:</p> <p>Onshore 52,8: basic tariff for new installations in 2006 85,6: initial tariff in 2006 (at least for 5 years; move down to basic tariff according to quality of site (actual yield of first five years / reference yield))</p> <p>Onshore - Repowering of old turbines Longer duration of initial tariff for repowering of turbines installed before end of December 1995; same tariffs as onshore in 2006, in addition prolongation of 2 months for each 0.6 % of the reference yield which their yield stays below 150 % of the reference yield.</p> <p>Offshore In 2006: for new installations 91 initial tariff, 61.9 basic tariff, initial tariff for 12 years. Prolongation of higher tariff according to distance from coast and water depth.</p> <p>Average tariff paid in Germany (for all wind turbines, new and existing ones): 90,0 in 2005, presumably 89,4 in 2006; calculation is based on the fact that older turbines still get a higher tariff according to the one that was valid in the year when they went into operation.</p>
Support scheme type	Feed-in Tariff	
Current applicable law	Erneuerbare-Energien-Gesetz (EEG) / Renewable Energies Act ***	
Additional information	<p>* These fixed prices are applied to plants commissioned in 2006 for a runtime of 20 years, except for hydropower whose runtime is 30 years for new plants and 15 years for modernised older plants.</p> <p>** Degression rate: the nominal remuneration rates for new plants decrease annually. There is no compensation for inflation, thus degression in real terms is higher – also for plants already in operation.</p> <p>***Next report on the EEG in 2007; next amendment-process will presumably start in 2008</p>	

	Biomass	Solar PV	Geothermal Energy
Price (€/MWh) *	<p>For new installed plants (general biomass): 111,6 (≤ 150 kW) 96,0 (≤ 500 kW) 86,4 (≤ 5 MW) 81,5 (≤ 20 MW)</p> <p>Landfill & sewage gas: 74,4 (≤ 500 kW) 64,5 (≤ 5 MW)</p> <p>Annual degression rate: 1,5%</p> <p>Energy Crop Bonus: ≤ 500 kW: 0,06 € 500-5 MW: 0,04 € > 5 MW: no Bonus. Cogeneration Bonus: 20 Innovation Bonus: 20</p>	<p>For new installations (rooftop): 518 (≤ 30 kW) 492,8 (between 30 and 100 kWh) 487,4 (> 100 kW)</p> <p>Facade bonus: 50,00</p> <p>degression rate**: 5,0%</p> <p>Open-space installations: 406,0</p> <p>Annual degression rate: 6,5%</p>	<p>For new installed plants: 150,0 (≤ 5 MW) 140,0 (≤ 10 MW) 89,5 (≤ 20 MW) 71,6 (> 20 MW)</p> <p>degression rate(22): 1,0% (starting 2010)</p>
Support scheme type	Feed-in Tariff		
Current applicable law	Erneuerbare-Energien-Gesetz (EEG) / Renewable Energies Act **		
Additional information	<p>* These fixed prices apply for plants commissioned in 2006 for a runtime of 20 years, except for hydropower whose runtime is 30 years for new plants and 15 years for modernised older plants.</p> <p>**Next report on EEG in 2007; next amendment-process will presumably start in 2008</p>		

Annex 6b

Samples of Feed – in – Tariffs in Europe

Great Britain

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)	(1)	59,95			
	(2)	115,26 = 59,95 + 55,31			
Support scheme type	Quota Obligation + Green Certificates (Renewable Obligation Certificates, ROCs)**				
Current applicable law	<ul style="list-style-type: none"> • Energy Act of 22 July 2004 • Sustainable Energy Act of 30 October 2003 • Renewables Obligation Order and following revisions 				
Additional information	(1) Average ROC price in July 2006 (2) Total price = market price Green Certificate + market price for electricity (average price for the day 28 th November 2006) ** Renewable energy is primarily supported by the Renewables Obligation and, to a lesser extent, through an exemption from the Climate Change Levy Additional capital grants for offshore wind and energy crops				

Greece

	Small Hydro (≤ 15 MW)	Wind		Biomass	Solar PV		Geothermal
		On-shore	Off-shore		≤ 100 kW _{peak}	> 100 kW _{peak}	
Price (€/MWh)							
Interconnected system (mainland)	75	75	90	73	450	400	73
Non-interconnected islands	84,6	84,6		84,6	500	450	84,6
Support scheme type	Feed-in						
Current applicable law	Greek Law 3468/06 on the Production of electricity from renewable energy sources and cogeneration						
Additional information	VAT (9%) is not included						

Hungary

	Small Hydro	Wind	Biomass	Solar PV	Others (geothermal)
Price (€/MWh)*	< 5 MW: 87,10 > 5 MW: 73,60 (peak) 36,80 (off-peak and lowest off-peak)	87,10	98,90 (peak) 87,10 (off-peak) 35,53 (lowest off-peak)	87,10	98,90 (peak) 87,10 (off-peak) 35,53 (lowest off-peak)
Support scheme type	Feed in tariffs (peak and off-peak)				
Current applicable law	<ul style="list-style-type: none"> • Ministerial Decree 55/1996 on the Establishment of the Purchase Price of Electricity by Public Power Stations • MoET Decree No. 56/2002 (XII. 29.) of the Minister for Economy and Transport concerning the rules governing the acceptance and the setting of prices for electricity covered by feed in obligation 				
Additional information	* VAT included. Conversion rate from HUF to EUR of 21 September 2006.				

Ireland

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)	72	Large scale: 57; Small scale: 59	Biomass landfill gas: 70 Other biomass: 72	-	
Support scheme type	Feed-in Tariffs			No tariff	
Current applicable law	Renewable Energy Feed In Tariff (REFIT) Programme, published by the Minister for Communications, Marine and Natural Resources on 1st May 2006				
Additional information					

Italy

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)		125,28		125,28	125,28
		199,95 = 74,67 + 125,28		199,95 = 74,67 + 125,28	199,95 = 74,67 + 125,28
Support scheme type	Quota obligation + Green Certificates			Quota obligation + Green Certificates Feed-in Tariffs possible upon application at the GSE* a) "exchange of electricity on the spot system" ** (for plants > 1 kW and < 20 kW) 445 or 589 (in case of architectural integration) b) Plants connected to the grid: → for plants < 50 kW: 400 or 506 (in case of architectural integration) → for plants > 50 kW and < 1000 kW: feed-in tariff is what asked by the applicant with a maximum ceiling of 490 or 539 (in case of architectural integration)	Quota obligation + Green Certificates
Current applicable law	Legislative Decree 79/1999 (Bersani Decree) as amended by Legislative Decree 387/2003 and by Law 239/04 (Marzano Law) Ministerial Decree of 24 October 2005			Legislative Decree 79/1999 (Bersani Decree) as amended by Legislative Decree 387/2003 and by Law 239/04 (Marzano Law) Ministerial Decree of 24 October 2005 Ministerial Decree 28/07/2005 (Official Gazette 181 of 5/08/2005) as amended by Ministerial Decree 6/02/2006	Legislative Decree 79/1999 (Bersani Decree) as amended by Legislative Decree 387/2003 and by Law 239/04 (Marzano Law) Ministerial Decree of 24 October 2005

Additional information		* only for Solar PV plants not eligible for Green Certificates. Incentives are given only to selected applicants. Tariffs given for 20 years ** "Scambio sul posto" system is a grid metering mechanism according to which a balance between energy supplied to the grid (by PV plants) and energy taken from the grid (by PV plants) is yearly calculated.	
	(1) Reference price for Green Certificates for the year 2006 given by GSE, VAT excluded. Price in €/MWh (1 Green Certificate = 50 MWh) (2) Total price = market price Green Certificate + market price for electricity (average price for the period January-October 2006)		

Latvia

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)	n.a.	n.a.	n.a.	n.a.	n.a.
Support scheme type	Quota obligation*				
Current applicable law	<ul style="list-style-type: none"> • Energy Law of September 1998 and following amendments (3 August 2000, 10 May 2001, 17 March 2005, 26 May 2005) • Electricity Market Law of 2005 • Regulations of the Cabinet of Ministers 2006, implementing provisions of Electricity Market Law 				
Additional information		The regions in Latvia with the highest estimated wind utilization potential are partly protected nature reservation territories and thus economic activities are restricted.			
<p>*Until 2005 a support scheme of fixed tariffs applied. The Electricity Market Law of 2005 provides for the mandatory purchase of electricity generated by RES. Now fixed tariffs are not applied any longer, although some RES-E producers still receive the price of the previous fixed tariffs if their contracts were concluded before the aforementioned law entered into force. The provisions of the Electricity Market Law were to be implemented by Regulations of the Cabinet of Ministers in first half of 2006. Art 29(2) of the Electricity Market Law provides that "A definite part of the total electricity consumption of the end users in Latvia shall be mandatory covered by the electricity, which is produced by using renewable energy resources. The Cabinet shall determine such part for each type of the renewable energy resources for a time period of five years, beginning with 1 January 2006, so that by 31 December 2010 the percentage proportion of such part in relation to the total electricity consumption reaches not less than 49.3 per cent." The share of renewable energy resources in electricity generation in Latvia is very significant. In 2004 it amounted up to 46.5%, but mainly due to the big hydropower plants belonging to Latvenergo, the state owned energy supply group.</p>					

Lithuania

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh) *	- 58	- 64	- 58	-	
Support scheme type	Feed-in tariffs				
Current applicable law	<ul style="list-style-type: none"> • Law on Energy No. IX-884 of 16 May 2002 • Law on electricity No. VIII -1881 of 20 July 2000 (amended by Law No. IX-408 of 26 June 2001) 				
Additional information	* Exchange rate LTL to € of September 2006				

Luxemburg

	Small Hydro	Wind	Biomass*	Solar PV	Others (Cogeneration)
Price (€/MWh)**	<p>≥1 kW and ≤500 kW 77.6 (+ 5)</p> <p>>0.5 MW and ≤3 MW decreasing from 77.6 to 62.8 (+ 25)</p> <p>>3 MW and ≤10 MW decreasing from 62.8 to 54.1</p>	<p>≥1 kW and ≤500 kW 77.6 €/MWh (+ 25)</p> <p>>0.5 MW and ≤5 MW decreasing from 77.6 to 56.0 (+ 25)</p> <p>>5 MW and ≤10 MW decreasing from 56.0 to 54.1</p>	<p>≥1 kW and ≤500 kW 102.6 (+ 25)</p> <p>>0.5 MW and ≤3 MW decreasing from 102.6 to 87.8 (+ 25)</p> <p>>3 MW and ≤10 MW decreasing from 87.8 to 79.1</p>	<p>private installations*** < 30 kW crest and put into service before 31 December 2007: 56 Communal installations put into service before 31 December 2007: 28 other PV installations: gross electricity market price</p>	<p>≥1 kW and ≤150 kW 73.1</p> <p>≥151 kW and ≤1500 kW 111.55 €/kW of installed capacity + 57 on day hours and 29.7 on night hours</p>
Support scheme type	Feed-in + premium****			Feed-in/market	Feed-in/subsidy
Current applicable law	<ul style="list-style-type: none"> Regulation of the Grand-Duchy (Règlement Grand-Ducal) adopted on 14 October 2005 on the supply of electricity from renewable energies modifying the Regulation of the Grand-Duchy of 30 May 1994 on the production of electricity from renewable energies or from co-generation and the Regulation of the Grand-Duchy of 22 May 2001 on the introduction of a compensation fund within the framework of the electricity market Regulation of the Grand-Duchy of 3 August 2005 on the promotion of electricity from wind power, hydropower, biomass and biogas. 				New regulation in progress
Additional information	<p>* Biomass, biogas, sewage and landfills gas ** Plants starting operation as of 1 January 2005 *** Natural persons who received investment subsidies according to the Regulation of the Grand-Duchy of 3 August 2005 **** Premium for a maximum of 10 years for installations starting operation between 1 January 2005 and 31 December 2007, has to be renewed on a yearly basis</p>				

Malta

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)	-	-	-	69.98	
Support scheme type	Tax incentives; a possible future change to feed-in tariffs was announced in August 2006			Feed-in tariff	
Current applicable law		Development Planning Act 1992, as amended (Regarding offshore wind farms)			
	L. N.186 of 2004 on the Promotion of Electricity produced from Renewable Energy Sources Regulations				
Additional information		The Government often expressed its concerns about wind power impacts on Maltese landscape		Fixed purchase price to be paid to the distribution system operator (Enemalta Corporation)	
	The Malta Resources Authority is the competent authority for the regulation of RES-Energies. It is competent to issue "guarantees of origin" of electricity produced from renewable energy sources. Other entities involved in RES issues are the Malta Environment and Planning Authority and the Minister for Resources and Infrastructure.				

Netherlands

	Small Hydro	Wind	Biomass			Solar PV	Others
Price (€/MWh) as for 01.07.2006 until 31.12.2007	97 €/MWh	offshore: 97 €/MWh	≤50 MW:	>50 MW:	Landfill gas: 13 €/MWh	97 €/MWh	Wave energy: 97 €/MWh waste incineration: 29 €/MWh until 1 July 2006; currently no data available for the next period
			Pure biomass, excluding landfill gas, sewage and wastewater biogas: 97 €/MWh	pure biomass, excluding landfill gas, sewage, wastewater biogas and animal fat: 66 €/MWh			
			onshore: 65 €/MWh	mixed biomass: 36 €/MWh	mixed biomass, excluding animal fat: 36 €/MWh animal fat: 30 €/MWh		
Support Scheme type	Feed-in tariffs						
Current applicable law	Environmental Quality of Electricity Production of 20 December 2004 / Regeling subsidiebedragen milieukwaliteit elektriciteitsproductie (MEP)						
Additional information	Under the MEP scheme Dutch RES electricity producers feeding into the public grid receive a fixed fee per kWh for a guaranteed period of ten years It must be noticed that the indicated tariffs are valid only for those having applied for MEP grant scheme before 18 August 2006. These tariffs- indicated in the current Ministerial MEP Grant Scheme Regulation- are currently due to change. The new government installed in November 2006 still has to take a decision with reference to new tariffs.						

Poland

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)*	(1)	Continuous quotation system* (average price): 59,2 Fixed price quotation system*: 59,25 OTC** (average price): 48,78			
	(2)	90,47 = 59,2 + 31,27			
Support scheme type	Quota obligation + Green Certificates***				
Current applicable law	<ul style="list-style-type: none"> Energy Law of 10 April 1997 and following amendments Act of the 4 March 2005 on the amendment of the Energy Law and the Environment Protection Law 				
Additional information	<p>(1) Results of the trading session of the Green Certificate Market of 20/09/2006. Conversion from PLN to EUR of September 2006</p> <p>(2) Total price = market price Green Certificate + market price for electricity (average price for the month of October 2006)</p> <p>* Green Certificates are quoted using the single-price auction system and continuous trading system, exclusively using the IT system of the Exchange</p> <p>** The off-session OTC transaction orders are entered exclusively using the Exchange IT system, a day prior to the trading day. An over-the-counter contract is a bi-lateral contract in which the two parties agree.</p> <p>***In April 2005 tradable Green Certificates have been introduced thanks to amendments to the Energy Law. These are issued by the Energy Regulatory Office (URE) from October 2005</p>				

Portugal

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh) *	85* ^ 85 for the first 42.5 MWh for each MW licensed** ^^^	88* ^ 73 for the first 33 MWh for each MW licensed** ^^^	108	Power <= 5 kW 420** Power > 5 kW 320**	
Support scheme type	Feed-in tariffs				
Current applicable law	<ul style="list-style-type: none"> Decree Law 339 C/2001 Decree Law 33 A/2005 		Decree Law 33 A/2005		
Additional information	* For all period of the license ** with a maximum of 15 years ^ Tariff indicated in DL 339C/01 and applied to projects starting before February 2007. Values are updated on a monthly basis. ^^ Tariff indicated in DL 33 A/05 and applied to projects starting after February 2007. Values are constant until the starting of the power plant and only afterwards updated monthly				

Romania

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)* (1)	45,29				
(2)	104,54 = 45,29 + 59,25				
Support scheme type	Quota obligation + Green certificates**				
Current applicable law	<ul style="list-style-type: none"> Electricity Law no. 318/2003 Government Decision no. 1535/2003 (on the approval of the Strategy for the use of renewable energy sources) Government Decision no. 445/2003 (on the promotion of electricity produced from RES) Government Decision no. 1429/2004 on the approval of the Regulation on the guarantee of origin for electricity produced from renewable energy sources Government Decision no. 1892/2004 on the system for promotion of electricity produced from renewable energy sources Secondary legislation by the Romanian Energy Regulatory Authority <ul style="list-style-type: none"> ANRE Order no. 15/2005 (organisation of the green certificates market) ANRE Order no. 19/2005 (minimum and maximum prices of green certificates) ANRE Order no. 20/2005 (minimum and maximum prices of green certificates) 				
Additional information	(1) Average price of green certificates in November 2006. (2) Total price = market price Green Certificate + market price for electricity (average price in November 2006) * Exchange rate RON to EUR of December 2006 ** Green certificates trade: either bilateral contracts concluded between producers and suppliers or centralized auction within the Centralized Market of Green Certificates (organized and administrated by OPCOM)				

Slovak Republic

	Small Hydro (up to 5 MW)	Wind
Price (€/MWh)*	plants starting operation before 1 January 2005: 51 plants starting operation after 1 January 2005: 61 reconstructed plant with capacity increase after 1 January 2005: 61	plants starting operation before 1 January 2005: 67 plants starting operation after 1 January 2005: 75 plants older then 3 years starting operation after 1 January 2005: 51
Support scheme type	Feed-in tariffs	
Current applicable law	<ul style="list-style-type: none"> Act No. 275/2001 Coll. Decree No. 2/2005 of 30 June 2005 issued by the Regulatory Office for Network Industries; effective since 1st January 2006 	
Additional information	* Rounded prices due to currency conversion. These prices are fixed prices which are calculated in order to allow a return of investment within 12 years. For 2007 they will be adapted to inflation according to inflation index published by the Statistical Office of the Slovak Republic. In case the purchase of a RES or co-generation plant was supported by state aid or an EU fund, the prices will be reduced by 15%.	

	Biomass	Solar PV	Others (geothermal energy)
Price (€/MWh)*	<ul style="list-style-type: none"> • electricity produced from combustion purpose-grown biomass: 80 • waste biomass for facilities starting operation before 1 January 2005: 53 • waste biomass for facilities starting operation after 1 January 2005: 72 • co-firing of biomass or waste with fossil fuels for plants starting operation before 1 January 2005: 53 • co-firing of biomass or waste with fossil fuels for facilities starting operation after 1 January 2005: 59 • combustion of biogas: 67 	213	93
Support scheme type	Feed-in tariffs		
Current applicable law	<ul style="list-style-type: none"> • Act No. 275/2001 Coll. • Decree No. 2/2005 of 30 June 2005 issued by the Regulatory Office for Network Industries, effective since 1st January 2006 		
Additional information	<p>* Rounded prices due to currency conversion.</p> <p>These prices are fixed prices which are calculated in order to allow a return of investment within 12 years. For 2007 they will be adapted to inflation according to inflation index published by the Statistical Office of the Slovak Republic. In case the purchase of a RES or co-generation plant was supported by state aid or an EU fund the prices will be reduced by 15%.</p>		

Slovenia

	Small Hydro	Wind	Biomass	Solar PV	Geothermal
Price (€/MWh)	Uniform annual price 61,58 (≤ 1MW) 59,41 (> 1MW ≤ 10MW)	Uniform annual price 60,75 (≤ 1MW) 58,66 (> 1MW)	Uniform annual price 94,15 (≤ 1MW) 91,23 (> 1MW)	Uniform annual price 374,41 (≤ 36 kW) 374,41 (> 36 kW)	Uniform annual price 58,66
	Uniform annual premium 24 (≤ 1MW) 21,83 (> 1MW ≤ 10MW)	Uniform annual premium 22,96 (≤ 1MW) 21,08 (> 1MW)	Uniform annual premium 56,57 (≤ 1MW) 53,65 (> 1MW)	Uniform annual premium 336,83 (≤ 36 kW) 336,83 (> 36 kW)	Uniform annual premium 21,08
Support scheme type	Feed-in Tariffs				
Current applicable law	The Energy Act (U.R.S., No. 26/05, official consolidated text - EZ-UPB1)				
Additional information	<p>The uniform annual price is the feed-in price. The uniform annual premium is the difference between the feed-in price and the average annual market price of electricity.</p> <p>Uniform annual prices and uniform annual premiums for electricity from qualified producers are fixed at least once a year by the Government.</p> <p>The figures of 2004 have not been changed, except for</p> <ul style="list-style-type: none"> • biomass: a 35% increase for annual biomass prices and a 50% increase for annual premiums • solar: a more than 5-fold increase for prices and premiums for installations > 36kW 				

Spain

	Small Hydro	Wind	Biomass	Solar PV	Solar Thermoelectric
Price (€/MWh)	FM <=25MW: 94 FM <=50MW: 86 RM <=25MW: 69 RM <=50MW: 61	FM <=50MW: 94 RM <=50MW: 69	- crops, agric. wastes, forests, biofuels, biogas: 94 (FM), 69 (RM) - agro-forest industries: 86 (FM), 61 (RM)	FM >100kW: 255 RM <=100kW: 440 RM >100kW: 229	FM: 255 RM: 229
Support scheme type	Feed-in tariffs				
Current applicable law	<ul style="list-style-type: none"> • Ley 54/1997 as amended • Real Decreto 436/1994 • Real Decreto 1556/2005 • Real Decreto-Ley 7/2006 				
Additional information	<p>There are two possibilities to sell renewable electricity: at the free market price (FM) or at regulated price (RM), both with premium.</p> <p>The prices listed above are assuming: a market price of 5,573 €/kWh and a mean reference tariff of 7,658801 €/kWh (there are other considerations to be considered regarding reactive power, etc.)</p> <p>Due to the high market prices during 2005, the government decided in July 2006 to put a cap on the selling prices. A new decree has been announced by a strong opposition of the industry sector (ASIF, AEE, ASIT).</p>				

Sweden

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh) (1)	67	75	67	67	67
Support scheme type	Quota obligation + Green Certificates				
Current applicable law	Lag (2003:113) om elcertifikat				
Additional information	(1) Green Certificates Total price = market price Green Certificate + market price for electricity (average price for the period January-October 2006) During the last year the electricity market price has varied between 3,5 and 7 eurocent/kWh and certificate price between 1,5 and 2,2 eurocent/kWh				

B. Neighbouring countries

Croatia

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)*	n.a.	n.a.	n.a.	n.a.	n.a.
Support scheme type	Feed-in tariffs				
Current applicable law	<ul style="list-style-type: none"> • Energy Law (2001 and amended in 2004) • Law on Electricity Market (2001, 2004 new) • Law on Regulation of Energy Activities (2001, 2004 new) 				
Additional information	* No further data available				

Turkey

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)	average wholesale price 45,02				
Support scheme type	Feed-in tariffs (and tax incentives)				
Current applicable law	<ul style="list-style-type: none"> • Law No. 5346 of 18 May 2005 (Law concerning the use of Renewable Energy Sources for the generation of electricity) • Electricity Market Law No. 4628 of March 2001, authorizing Energy Market Regulatory Authority to take the necessary measures to promote the utilization of renewable energy resources • Electricity Market Licensing Regulation [Article 12(4) exemption from the annual license fee payment requirement for a period of 8 years] 				
Additional information					

Former Yugoslav Republic of Macedonia

	Small Hydro	Wind	Biomass	Solar PV	Others
Price (€/MWh)	not yet available *	not yet available **			
Support scheme type	Feed-in tariffs				
Current applicable law	New Law on Energy 63/2006 adopted on 11 May 2006 (articles 133-142)				
Additional information	<p>* Energy Regulatory Commission is expected to issue feed-in tariffs by the end of 2006</p> <p>**The Energy Regulatory Commission is expected to establish preferential tariffs for RES-E producers</p> <p>Pursuant to article 133 of the Law 63/2006 a "Strategy for the exploitation of Renewable Energy Sources" shall be adopted, which will define transitional measures supporting RES-E, including preferential tariffs for preferential producers of electricity and other support mechanisms</p> <p>Pursuant to article 140 of the Law 63/2006, preferential producers of electricity are those entitled with a <i>guarantee of origin</i> for electricity produced from RES issued by the Energy Agency of the Republic of Macedonia</p> <p>Pursuant to article 141 of the Law 63/2006, the Market Operator is obliged to purchase all electricity produced from RES</p>				

Annex 7

Republic of South Africa

RENEWABLE ENERGIES PILOT PROJECT



- 1- OVERVIEW
- 2- MOTIVATIONS
- 3- DESCRIPTION
- 4- OVERSEAS EXAMPLE
- 5- FAQ
- 6- PROJECT DELIVERABLE
- 7- GLOSSARY
- 8- FURTHER INFORMATION

OVERVIEW

As part of its vision to promote the generation and use of renewable energy, the Nelson Mandela Bay Municipality alongside with the Nelson Mandela Metropolitan University is currently investigating on the feasibility to implement so called "small scale decentralized grid connected renewable energies" in the Municipality, and furthermore in South Africa.

Small scale, because the systems used are sized for household needs.

Decentralized, because the energy production is scattered amongst various households, instead of having only one large plant.

Grid-connected, so that the household can exchange electricity with the grid.

Renewable energies, because the electricity is produced from renewable sources (wind, sun...)

A typical domestic dwelling has been selected for the purpose, and a complete hybrid system comprising of solar panels, a wind turbine, battery storage and the necessary monitoring and control equipment has been installed.

In the aim of promoting renewable energy sources and giving public exposure to the project, a wind turbine will shortly be mounted on Hobie beach's pier (on the top of the ready existing mast). The electricity produced will be used to power a set of lights at the end of the pier.

WHAT ARE THE MOTIVATIONS FOR SUCH PROJECT?

- Worldwide environmental considerations. The use of renewable energies contributes to slow down the process of global warming and emission of *greenhouse gases* in the atmosphere.
- Fossil fuel shortage. We are already experiencing the up rise of costs for traditional energy sources in electricity production, sooner or later these sources will no longer be economically viable and alternative solutions will have to be considered.
- Alleviate households from grid dependence. By producing their own electricity, households are no longer impacted by load shedding or tariff rise.

The electricity produced from the renewable sources (here solar panels and a wind turbine) is converted in a 220V/50Hz sinewave by the grid manager/inverter (yellow on the scheme) so that it can be used as the regular supply. The excess energy produced (not consumed by the household) can be "fed" into the grid through a special feed-in meter.

The batteries can be used for backup purposes when the grid is down: they can be charged at day time by the renewable sources, and provide energy at night time.

OVERSEAS EXAMPLE

Renewable tariffs for decentralized sources have proven the most successful mechanism for stimulating investment in renewable electricity generation worldwide.

Such systems have already been implemented to a large extend in various countries overseas. Way ahead of all the others, Germany set up the first *feed-in* by-laws for decentralized grid-connection in 1990 (!). Nowadays in Germany, over 250.000 homes, businesses and farms have installed PV panels on their roofs, producing around 3900 MW (Mega Watts) of solar energy (5 times the needs for the whole Nelson Mandela Bay metropolis!).

FAQ

Isn't solar energy too expensive?

Solar energy production is still at its early stages, and the cost of the panels is still high. The reason why it is affordable in Europe and the US is because of attractive feed-in tariffs and/or subsidies as a result of political choices.

What is the future for solar energy?

Solar powering is a very rapidly growing market, and new technologies are constantly being developed. It is likely that prices will drop considerably throughout the next decade.

Aren't wind turbines too noisy?

They used to be, but nowadays sophisticated blade designs offer noise reduction down to the level of wind blowing through trees for small-scale turbines (under 3 kW).

Is there enough sun and wind in NMBM?

South Africa in general, and NMBM in particular, is a region of choice for both wind and sun. On the coastline, the windy city offers good conditions for turbines, and the irradiation is 95% of the world's most sunny regions.

Could I power my household using exclusively solar and wind power?

Yes, it is possible to do so, but connecting to the grid is cheaper. Indeed, these renewable sources have the inconvenience to be intermittent: sun only shines at daytime, and wind isn't continually blowing. So costly batteries are needed to stock energy for the times when the household does not produce it. This can be avoided by using the grid as a "backup". Ultimately, connecting to the grid enables to feed in to it, providing a steady income.

Can I implement such a system now in my house and run my consumption meter backwards?

Technically, yes. Legally, no, since there are yet no bylaws concerning decentralised production of energy and feeding into the grid. It is highly inadvisable to do so, since various security issues need to be taken into account before hand, hence the project we are working on.

PROJECT DELIVERABLE

If successful, this project will allow people to connect renewable sources of energy (e.g. wind turbines, solar panels...) to the public utility, and sell the excess energy produced (electricity which isn't consumed by the household) at a so-called "green feed-in tariff".

The scope of this green tariff is to make renewable energies affordable for everyone. Indeed, by selling back the energy into the grid at a higher price than that for consumption (currently R 0.42 per kWh), after a certain period of time the

overall income generated by the electricity production is sufficient to cover the initial costs of the systems. This period of time is called "break-even" period. It varies accordingly to many factors, mainly: the feed-in tariff, the amount of energy harvested per year, the type of systems used and the initial cost of the systems.

Following, a rough illustration of the mechanisms of feed-in tariffs:

Type of systems	1kW PV + 1kW wind (hybrid)		2kW PV		3kW Wind
	Planned	Unfavourable	Planned	France	Planned
Initial cost (R)	180500	180500	170000	100000	157500
Annual energy harvest (kWh)	4288	4288	2576	2000	5500
Annual income (R)	7718.4	1800.96	4636.8	11000	9900
Feed-in tariff (R/kWh)	1.8	0.42	1.8	5.5	1.8
Break-even time (years)	24	101	37	10	16

From this very simplified simulation of feed-in tariffs, it is possible to see the effect of the various factors on the break-even period. As shown above with France, a high feed-in tariff (around R 5.5 per kWh produced from PV source) encourages people to invest in such forms of energy, since they are assured of breaking even after around 10 years. Since PV panels have a life expectancy of 25 years, one can understand the popularity of such systems overseas...

Annex 8

Authorized Release: The Renewable Energy Law

The People's Republic of China (Full Text)

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Chapter 4	Promotion and Application
Chapter 5	Price Management and Fee Sharing
Chapter 6	Economic Incentives and Supervisory Measures
Chapter 7	Legal Responsibilities
Chapter 8	Miscellaneous

Chapter 1. General

Article 1—In order to promote the development and utilization of renewable energy, improve the energy structure, diversify energy supplies, safeguard energy security, protect the environment, and realize the sustainable development of the economy and society, this Law is hereby prepared.

Article 2—Renewable energy in this law refers to non-fossil energy of wind energy, solar energy, water energy, biomass energy, geothermal energy, and ocean energy, etc.

Application of this Law in hydropower shall be regulated by energy authorities of the State Council and approved by the State Council.

This Law does not apply to the direct burning of straw, firewood and dejecta, etc. on low-efficiency stove.

Article 3—This Law applies to territory and other sea area of the People’s Republic of China.

Article 4—The Government lists the development of utilization of renewable energy as the preferential area for energy development and promotes the construction and development of the renewable energy market by establishing total volume for the development of renewable energy and taking corresponding measures.

The Government encourages economic entities of all ownerships to participate in the development and utilization of renewable energy and protects legal rights and interests of the developers and users of renewable energy on the basis of law.

Article 5—Energy authorities of the State Council implement management for the development and utilization of renewable energy at the national level. Relevant departments of the State Council are responsible for the management of relevant development and utilization of renewable energy within their authorities.

Energy authorities of local people’s governments above the county level are responsible for the management of the development and utilization of renewable energy within their own jurisdiction. Relevant departments of local people’s governments above the county level are responsible for the management of relevant development and utilization of renewable energy within their authorities.

Chapter 2 Resource Survey and Development Plan

Article 6—Energy authorities of the State Council are responsible for organizing and coordinating national surveys and management of renewable energy resources, and work with related departments to establish technical regulations for resource surveys.

Relevant departments of the State Council, within their respective authorities, are responsible for related renewable energy resource surveys. The survey results will be summarized by the energy authorities in the State Council.

The result of the survey of renewable energy shall be released to the public, with the exception of confidential contents as stipulated by the Government.

Article 7—Energy authorities of the State Council sets middle and long-term target of the total volume for the development and utilization of renewable energy at the national level, which shall be implemented and released to the public after being approved by the State Council.

Energy authorities of the State Council shall, on the basis of the target of total volume in the previous paragraph, as well as the economic development and actual situation of renewable energy resources of all provinces, autonomous regions and municipalities, cooperate with people's governments of provinces, autonomous regions and municipalities in establishing middle and long-term target and release it to the public.

Article 8—Energy authorities of the State Council shall, on the basis of the middle and long-term total volume target of renewable energy throughout the country, prepare national renewable energy development and utilization plan, which is to be implemented after being approved by the State Council.

Energy authorities of the people's governments at the level of province, autonomous region and municipality shall, on the basis of the middle and long-term target for the development and utilization of renewable energy, cooperate with relevant authorities of the people's governments at their own level in preparing national renewable energy development and utilization plan for their own administrative regions, which shall be implemented after being approved by people's governments at their own level.

The approved plan shall be released to the public, with the exception of confidential content as stipulated by the government.

In case that the approved plan needs to be modified, approval of the original approving authorities shall be obtained.

Article 9—In preparing the plan for the development and utilization of renewable energy, opinions of relevant units, experts and the public shall be solicited and the scientific reasoning shall be done.

Chapter 3 Industry Guidance and Technology Support

Article 10—Energy authorities in the State Council shall, in accordance with the national renewable energy development plan, prepare and promulgate development guidance catalogs for renewable energy industries.

Article 11—Standardization authorities of the State Council shall set and publicize technical standard for renewable energy electric power and the technical standards for relevant renewable technology and products for which technical requirements need to be standardized at the national level.

For those technical requirements not dealt with in the national standard in the previous paragraph, relevant authorities of the State Council may establish relevant industrial standard, which shall be reported to the standardization authorities of the State Council for filing.

Article 12—The government lists scientific and technical research in the development and utilization of, and the industrialized development of, renewable energy, as the preferential area for hi-tech development and hi-tech industrial development in the national program, and allocates funding for the scientific and technical research, application demonstration and industrialized development of the development and utilization of renewable energy so as to promote technical advancement in the development and utilization of renewable energy, reduce the production cost of renewable energy products and improve the quality of products.

Education authorities of the State Council shall incorporate the knowledge and technology on renewable energy into general and occupational education curricula.

Chapter 4 Promotion and Application.

Article 13—The Government encourages and supports various types of grid-connected renewable power generation.

For the construction of renewable energy power generation projects, administrative permits shall be obtained or filing shall be made in accordance with the law and regulations of the State Council.

In the construction of renewable power generation projects, if there is more than one applicant for project license, the licensee shall be determined through a tender.

Article 14—Grid enterprises shall enter into grid connection agreement with renewable power generation enterprises that have legally obtained administrative license or for which filing has been made, and buy the grid-connected power produced with renewable energy within the coverage of their power grid, and provide grid-connection service for the generation of power with renewable energy.

Article 15—The Government supports the construction of independent renewable power systems in areas not covered by the power grid to provide power service for local production and living.

Article 16—The Government encourages clean and efficient development and utilization of biological fuel and encourages the development of energy crops.

If the gas and heat produced with biological resources conform to urban fuel gas pipeline networks and heat pipeline networks, enterprises operating gas pipeline networks and heat pipeline networks shall accept them into the networks.

The Government encourages the production and utilization of biological liquid fuel. Gas-selling enterprises shall, on the basis of the regulations of energy authorities of the State Council or people's government at the provincial level, include biological liquid fuel conforming to the national standard into its fuel-selling system.

Article 17—The Government encourages workplaces and individuals in the installation and use of solar energy utilization systems of solar energy water-heating system, solar energy heating and cooling system and solar photovoltaic system, etc.

Construction authorities of the State Council shall cooperate with relevant authorities of the State Council in establishing technical economic policies and technical standards with regard to the combination of solar energy utilization system and construction.

Real estate development enterprises shall, on the basis of the technical standards in the previous paragraph, provide necessary conditions for the utilization of solar energy in the design and construction of buildings.

For buildings already built, residents may, on the condition that its quality and safety is not affected, install solar energy utilization system that conform to technical standards and product standards, unless agreement has been otherwise reached between relevant parties.

Article 18—The Government encourages and supports the development and utilization of renewable energy in rural areas.

Energy authorities of local people’s governments above the county level shall, on the basis of local economic and social development, ecological protection and health need, etc., prepare renewable energy development plan for the rural area and promote biomass energy like the marsh gas, etc. conversion, household solar energy, small-scale wind energy and small-scale hydraulic energy, etc.

People’s government above the county level shall provide financial support for the renewable energy utilization projects in the rural areas.

Chapter 5 Price Management and Fee Sharing

Article 19—Grid power price of renewable energy power generation projects shall be determined by the price authorities of the State Council in the principle of being beneficial to the development and utilization of renewable energy and being economic and reasonable, where timely adjustment shall be made on the basis of the development of technology for the development and utilization of renewable energy. The price for grid-connected power shall be publicized.

For the price of grid-connected power of renewable power generation projects determined through tender as stipulated in the 3rd paragraph of Article 13 hereof, the bid-winning price shall be implemented; however, such a price shall not exceed the level of grid-connected power of similar renewable power generation projects.

Article 20—The excess between the expenses that power grid enterprises purchase renewable power on the basis of the price determined in Article 19 hereof and the expenses incurred in the purchase of average power price generated with conventional energy shall be shared in the selling price. Price authorities of the State Council shall prepare specific methods.

Article 21—Grid connection expenses paid by grid enterprises for the purchase of renewable power and other reasonable expenses may be included into the grid enterprise power transmission cost and retrieved from the selling price.

Article 22—For the selling price of power generated from independent renewable energy power system invested or subsidized by the Government, classified selling price of the same area shall be adopted, and the excess between its reasonable operation, management expenses and the selling price shall be shared on the basis of the method as specified in Article 20 hereof.

Article 23—The price of renewable heat and natural gas that enters the urban pipeline shall be determined on the basis of price management authorities in the principle of being beneficial to the development and utilization of renewable energy and being economic and reasonable.

Chapter 6 Economic Incentives and supervisory measures

Article 24—The Government budget establishes renewable energy development fund to support the following:

1. Scientific and technological research, standard establishment and pilot project for the development and utilization of renewable energy;
2. Construction of renewable energy projects for domestic use in rural and pasturing areas;
3. Construction of independent renewable power systems in remote areas and islands;
4. Surveys, assessments of renewable energy resources, and the construction of relevant information systems;
5. Localized production of the equipment for the development and utilization of renewable energy.

Article 25—Financial institutions may offer preferential loan with financial interest subsidy to renewable energy development and utilization projects that are listed in the national renewable energy industrial development guidance catalogue and conform to the conditions for granting loans.

Article 26—The Government grants tax benefits to projects listed in the renewable energy industrial development guidance catalogue, and specific methods are to be prepared by the State Council.

Article 27—Power enterprises shall authentically and completely record and store relevant materials of renewable energy power generation, and shall accept the inspection and supervision of power supervisory institutions.

Power supervisory institutions shall do the inspection in accordance with stipulated procedures, and shall keep commercial secret and other secret for inspected units.

Chapter 7 Legal Responsibilities

Article 28—If energy authorities of the State Council and the people’s governments above the county level as well as other relevant authorities breach this Law and have one of the following, people’s government of their own level or relevant authorities of the superior people’s governments may order them to make correction, and impose administrative penalty for competent personnel that are liable and other personnel directly liable; in case that such breaches constitute crime, criminal liabilities shall be legally pursued.

1. Failure to make administrative licensing decision in accordance with law;
2. Failure to make an investigation when illegal activities are discovered;
3. Other acts of not legally performing supervision and management responsibilities.

Article 29—If the power grid enterprises breach Article 14 hereof and fail to purchase renewable power in full, which results in economic loss to the renewable power generation enterprises, such power grid enterprises shall be liable for compensation, and the national power supervisory institutions shall order them to make correction within a stipulated period of time; in case of refusal to make correction, a fine of less than the economic loss of the renewable power generation enterprises shall be imposed.

Article 30—In case that enterprises of natural gas pipeline network and heat pipeline network breach paragraph 2 of Article 16 hereof and do not permit the connection of natural gas and heat that conform to the grid connection technical standard into the network, which results in economic loss to the gas and heat production enterprises, relevant enterprises shall be liable for compensation, and energy authorities of the people’s government at the provincial level shall order them to make correction within a stipulated period of time; in case of refusal to make correction, a fine of less than said economic loss shall be imposed against them.

Article 31—If gas-selling enterprises breach paragraph 3 of Article 16 hereof and fail to include biological liquid fuel that conforms to the national standard into its fuel-selling system, which results in economic loss to the biological liquid fuel production enterprises, relevant enterprises shall be liable for compensation, and energy authorities of the State Council or people’s government at the provincial level shall order them to make correction within a stipulated period of time; in case of refusal to make correction, a fine of less than said economic loss shall be imposed against them.

Chapter 8 Miscellaneous

Article 32—Terms used herein shall have the following meanings:

1. Biomass energy: means energy converted from natural plants, rejecta as well as urban and rural organic waste.
2. Renewable energy independent power system: means independent renewable power system not connected to the power grid.
3. Energy crop: means herbage and wood plants specially planted and used as raw materials of energy.
4. Biological liquid fuels: means methanol, ethanol, bio-diesel and other liquid fuels derived from biomass resources.

Article 33—This Law shall become effective on Jan 1st, 2006.

Annex 9

Policies to Promote Renewable Power Generation

Global Status Report

Policy Landscape / Power Generation Promotion Policies

At least 48 countries—34 developed and transition countries and 14 developing countries—have some type of policy to promote renewable power generation. The most common existing policy is the feed-in law, which has been enacted in many new countries and regions in recent years. The United States was the first country to enact a national feed-in law (PURPA), in 1978. (Several states actively implemented PURPA but most implementation was discontinued in the 1990s.) Feed-in policies were next adopted in Denmark, Germany, Greece, India, Italy, Spain, and Switzerland in the early 1990s. By 2005, at least 32 countries and 5 states/provinces had adopted such policies, more than half of which have been enacted since 2002.

1. Feed-in Tariffs

Among developing countries, India was the first to establish feed-in tariffs, followed by Sri Lanka and Thailand (for small power producers only), Brazil, Indonesia, and Nicaragua. Three states in India adopted new feed-in policies in 2004, driven by a 2003 national law requiring new state-level policies (the old feed-in laws during the 1990s were gradually discontinued). In the first half of 2005, feed-in policies were enacted in China, Ireland, Turkey, and the U.S. state of Washington. China's feed-in policy was part of a comprehensive renewable energy promotion law enacted in February 2005.

Feed-in tariffs have clearly spurred innovation and increased interest and investment, notably in Germany, Spain, and Denmark over the past several years. For example, power from eligible forms of renewable generation under Germany's feed-in law more than doubled between 2000 and 2004, from 14 TWh to 37 TWh. In several countries, feed-in policies have had the largest effect on wind power, but have also influenced biomass and small hydro development. (Most laws set a limit on maximum size of eligible hydro, for example 5 MW in Germany.) Most recently, Spain's feed-in tariff has helped new investment plans for solar thermal power generation (decisions for two 50 MW plants were expected in 2005).

Feed-in tariffs vary in design from country to country. Some policies apply only to certain technologies or maximum capacity. Most policies establish different tariffs for different technologies, usually related to the cost of generation, for example distinguishing between off-shore and onshore wind power. Some policies also differentiate tariffs by location/region, year of plant operation, and operational season of the year. Tariffs for a given plant may decline over time, but typically last for 15–20 years. Some policies provide a fixed tariff while

others provide fixed premiums added to market- or cost-related tariffs (or both, as in the case of Spain).

2. Renewables Portfolio Standards (RPS)

Renewables portfolio standard (RPS) policies are expanding at the state/provincial level in the United States, Canada, and India. At least 32 states or provinces have enacted RPS policies, half of these since 2003. Eight new U.S. states (and the District of Columbia) enacted RPS policies in 2004–2005, bringing to 20 the number of U.S. states with RPS. Likewise in India, five new states enacted RPS policies in 2004–2005, bringing the total number of states to six (the Indian 2003 Electricity Act allows states to set minimum shares from renewables). Canada has three provinces with RPS policies (and several more with planning targets). Most of the above RPS policies require renewable power shares in the range of 5–20 percent, typically by 2010 or 2012. Most RPS targets translate into large expected future investments. One study estimates that state RPS laws currently existing in the United States would require an additional 52 GW of renewable energy by 2020, which would more than double existing U.S. renewables capacity.***1**

There are also six countries with national RPS policies, all enacted since 2001. Australia's RPS (2001) requires utility companies to submit a certain number of renewable energy certificates each year (1.25 percent of generation was required for 2004, or about 2,600 GWh total); this requirement will be adjusted each year to eventually lead to Australia's national target of 9,500 GWh by 2010. The United Kingdom's RPS (2002) will lead to 10 percent by 2010 and then to 15 percent by 2015, continuing to 2027. Japan's RPS (2003) also requires a certain percentage from utilities, which increases over time to reach 1.35 percent by 2010. Sweden's RPS (2003) requires consumers, or electricity suppliers on their behalf, to purchase a given annual percentage, which increases yearly, through either electricity purchases or renewable certificate purchases. (Sweden sets penalties for noncompliance at 150 percent of the average certificate price of the prior period.) Poland's RPS (2004) will reach 7.5 percent by 2010. Thailand's RPS (2004) requires that 5 percent of all additional future generation capacity be renewables.***2**

3. Other Forms of Policy Support

There are many other forms of policy support for renewable power generation, including direct capital investment subsidies or rebates, tax incentives and credits, sales tax and VAT exemptions, direct production payments or tax credits (i.e., per kWh), green certificate trading, net metering, direct public investment or financing, and public competitive bidding for specified quantities of power generation. Some type of direct capital investment subsidy, grant, or rebate is offered in at least 30 countries. Tax incentives and credits are also common ways of providing financial support. Most U.S. states and at least 32 other countries offer a variety of tax incentives and credits for renewable energy.

Energy production payments or tax credits exist in several countries, with the U.S. federal production tax credit most significant in this category. That credit has applied to more than 5,400 MW of wind power installed from 1995 to 2004. Indexed to inflation, that credit started at 1.5 cents/kWh in 1994 and increased over time, through several expirations and renewals, to 1.9 cents/kWh by 2005, with expiration extended to 2007. The production tax credit has helped to make wind power a "mainstream" investment in the U.S. in recent years, capturing financier interest in the sector. Other countries with production incentives include Finland, the Netherlands, and Sweden.*3

Policies to promote rooftop grid-connected solar PV exist in a few countries and utilize either capital subsidies or feed-in tariffs, or both (along with net metering). These policies have been clearly responsible for the rapid growth of the grid-connected market in recent years. Japan's rooftop solar PV policies, which were to end in 2005, provided capital subsidies which started at 50 percent in 1994 but declined to around 10 percent by 2003 and 4 percent by 2005. Those policies resulted in over 800 MW—more than 200,000 homes. Germany, with more than 160,000 rooftop solar homes and almost 700 MW installed, provides a guaranteed feed-in tariff, and until 2003 also provided low-interest consumer loans. Continuing policies in California, other U.S. states, and several other countries (including France, Greece, Italy, Korea, Luxembourg, the Netherlands, Portugal, and Spain) provide capital subsidies (typically 30–50 percent) and/or favorable power purchase tariffs. Korea expects 300 MW by 2011 through its 100,000-rooftop program, which initially provides 70-percent capital subsidies that will decline over time. New solar PV rooftop programs have been announced in several countries, including Hungary and Thailand.

Some countries or states/provinces have established **renewable energy funds** used to directly finance investments, provide low-interest loans, or facilitate markets in other ways, for example through research, education, standards, and investments in public facilities. The largest such funds are the so-called "public benefit funds" in 14 U.S. states. These funds, often applied to energy efficiency as well as renewable energy, are collected from a variety of sources, with the most common being a surcharge on electricity sales. These 14 funds, all initiated between 1997 and 2001, are collecting and spending more than \$300 million per year on renewable energy. It is expected that they will collect upwards of \$4 billion for renewable energy through 2012. The India Renewable Energy Development Agency (IREDA) similarly provides loans and other project financing. China's 2005 renewable energy law calls for establishing a fund, and Mexico was considering a "green fund" in 2005 to finance renewable energy projects.

Net metering laws exist in at least 7 countries, 35 U.S. states, and several Canadian provinces. Four additional U.S. states had one or more electric utilities offering net metering. A form of net metering is also occurring in Japan on a voluntary basis. Net metering laws are being enacted regularly, with six new U.S. states passing such laws in 2004. Most recently, a 2005 U.S. federal law requires all U.S. electric utilities to provide net metering within three years. Net metering

has been particularly instrumental in facilitating grid-connected solar PV markets in the United States and Japan.

Policies for competitive bidding of specified quantities of renewable generation, originally used in the United Kingdom in the 1990s, now exist in at least seven other countries: Canada, China, France, India, Ireland, Poland, and the United States. China bid and awarded 850 MW of wind power in 2003–2004 and planned another 450 MW of bidding in 2005. The province of Ontario in Canada bid 1,000 MW of wind power in 2004, and other Canadian provinces were following suit. Utilities in many countries use competitive bidding to meet RPS requirements.

Other policies include **tradable renewable energy certificates**, typically used in conjunction with voluntary green power purchases or obligations under renewables portfolio standards. At least 18 countries had schemes and/or markets for tradable certificates. Many other regulatory measures, such as building codes, administrative rules and procedures, and transmission access and pricing, also serve important roles in promoting renewable power generation. Such regulatory measures can be steps towards future renewable energy markets, particularly in developing countries (Mexico and Turkey are examples of countries taking such regulatory measures). Policies for power-sector restructuring, carbon taxes, fossil fuel taxes, and many others can also affect the economic competitiveness of renewable energy.

Footnotes

***1** RPS percentages don't necessarily correspond to ambitiousness or level of effort required, as some states/provinces already have capacity close to their targets, while others are far below their targets. Further, some RPS policies set upper limits on the size of hydro eligible to fulfill the requirement. See Note 25 for a list of mandated percentages or capacity targets for individual countries.

***2** National targets from Table 3 and Figure 11 may be considered "binding," "planning," or "indicative" targets, but do not imply national RPS policies, which are legal mandates on specific classes of utility companies or consumers.

***3** Energy production incentives, which offer producers a payment per unit of energy produced (i.e., kWh), may appear similar to, and even be called, feed-in tariffs. The distinction is not simple, as the financing for production incentives may come from explicit utility surcharges or foregone tax revenues. The U.S. production tax credit could be considered a feed-in law under some definitions.

The definition used here is that feed-in tariffs should be revenue neutral to the government, with the difference paid implicitly by utility customers (as in the case of Germany and Spain), rather than explicitly through a special levy (as in the case of the Netherlands) or foregone tax revenue (as in the case of Finland).

Annex 10

PROJECT DEVELOPMENT AND PUBLIC POLICIES¹: **Feed-in Tariffs, Green Pricing, PBF, RPS (USA)**

INTRODUCTION

Different policy approaches lend themselves better to some project development approaches than others. In this report, we identify the most common elements of renewable energy (RE) project development, how they have been applied with various types of policy approaches and the critical factors affecting their use. (This paper only deals with larger (1 MW), grid-connected facilities.)

KEY ELEMENTS OF PROJECT DEVELOPMENT

For the purpose of this analysis, project development is defined as the process or manner in which a renewable energy generation project is developed and funded. Project development is made up of a number of elements described below.

Financing

The demands of the financial community drive all other considerations of project development. The cost of money to finance a project is directly related to the perceived risk of not having a sufficient revenue stream to recover all of the project costs. If the perceived risks and uncertainties are too great, financing simply will not be available. Common project risks include: equipment performance; accurate resource assessment and resource availability; interconnection, transmission and distribution costs and rules; sanctity of the contract; reliability of the revenue stream; and regulatory and political uncertainty. The lack of experience by a bank with new technologies (like renewable energy) may also make financing from that institution problematic and expensive. The following are the most common methods of financing electric generation projects.

Utility Rate-basing -- A utility-proposed renewable energy project that is to be constructed by the utility with the funds recovered through utility rates is one type of financing model used for project development. In the US this is called 'rate-basing'



because the facility costs are embedded in the general rates (or tariff structure) of the utility and are therefore paid for by all of the utility ratepayers. In some cases this may be the least expensive method of financing RE projects depending upon the type of utility, their experience with renewables and the regulatory environment. However under this approach, the risk of nonperformance is placed squarely on the utility and its ratepayers so that the utility's actual experience in building and operating such facilities becomes a key factor. Shifting some of the risk to equipment manufacturers or to experienced developers may be critical to project success.

Special Tariff Financing: If a utility is building or buying power from a renewable energy facility that is going to be sold through a special green tariff (e.g. through a green pricing program), the costs are sometimes recovered from only the specific customers who choose to pay directly for the renewable power (often at a premium price above the cost of regular electricity service). The actual facilities may be built and financed by the utility or built by RE developers. These special tariffs may be more risky for the utility since they depend upon the utility doing a good job of educating customers and marketing the power.

Project Financing: An independently developed project (i.e. one not being constructed by the local utility but by an independent company or joint venture) that is offered a utility power purchase agreement (PPA) may obtain project funding based upon the credit worthiness of the utility contract and/or the expected revenue stream of the project from other sources. The developer obtains the financing for the project on their own and recovers the funds through capacity/energy payments as agreed to in the utility power purchase agreement or through sales to retail marketers or wholesale buyers. When the financing is based only upon expected project revenues, and lenders have no recourse other than the project itself, this is called 'project financing.' It is typical to finance projects on this basis with 30-50% equity, and 50-70% debt. A power sales contract with a credit worthy utility in a stable regulatory environment is considered to be essential to reduce risk and financing costs under this type of arrangement. However, the risk of non-performance falls directly on the development company so their experience and past record are important elements in obtaining financing.

Corporate Finance: An independently developed project (i.e. one not being constructed by the local utility but by an independent company or joint venture) may, alternatively, use corporate finance to fund the development and construction costs of a renewable energy project. Unlike project finance, lenders in a corporate finance arrangement can call upon not only direct project revenue but also the holdings of the project owner (equity provider). This can reduce risk for the lender, but places more risk on the project owner. Corporate finance has become an increasingly common way to finance wind power projects in the U.S., and may lower the cost of capital relative to project finance. To ensure a stable revenue stream to service debt payments and meet equity return requirements, a PPA with a utility buyer is a common element of projects funded through corporate finance. However, merchant plants can also be financed on this basis.

Merchant Plant Financing: An independently developed project (i.e. a project proposed to be constructed by an independent company or joint venture) that is being constructed in advance of receiving a complete utility power purchase contract or a project that will sell its power into the wholesale market without major long-term contracts is called a 'merchant plant.' The developer will typically either finance the project itself with internal corporate funds or obtain funds from some type of venture capital or investment banking institution. 'Merchant plants' are the most difficult type of project to finance because they have the greatest risk of not being able to recover their investment costs. Right now in the United States it is virtually impossible to finance a merchant plant.

Ownership

As highlighted by the financing options described above, a power generation facility may be owned by either the utility or by an independent power producer. If owned by the utility, some type of tariff system is generally used to support financing. Utility ownership brings with it the risk of non-performance of the facility; this is a particular problem for technologies with which the utility has had no previous experience. Intermediate ownership options where independent developers with direct experience in building renewable facilities build the facility and then turn it over to the utility to operate at some later time can be used to mitigate some of these risks. These ownership strategies, each with a different risk profile, include: Build and Transfer (BT); Build, Own and Transfer (BOT); and Build, Own, Operate and Transfer (BOOT).

Power Sales

The basis for recovering the costs of developing, building, and operating any power generation facility is the sale of power from that facility into either wholesale or retail electricity markets. The utility recovers the costs of either building a new facility or purchasing power from someone else directly through their electricity rates (either general rates or a special renewable energy tariff). If the facility is not owned directly by the utility company, then some type of long-term power purchase agreement (PPA) is necessary (unless they are able to finance a merchant plant) to ensure the project sponsors and the financing community that the project's revenue will be sufficient to be able to repay its debts including a reasonable rate of return.

Power can be purchased through capacity and energy payments. Where electricity demand is greater than supply, a capacity payment is appropriate along with energy payments. For intermittent resource facilities like wind or solar, capacity payments are generally paid on an as-available basis.² Besides price, the key element of any

² i.e. The value of the capacity (let's say it is \$60/kW/yr) is spread over all the hours in the year (8,760 hrs/year) and paid out in a cents/kWh only during those hours when the facility is generating

PPA is the clarity of the terms and conditions under which payments will be made and a stable governmental environment that ensures the payments will be made and the contract will not be changed. A 'long-term contract' is usually considered to be between 10 and 30 years in length with a guaranteed purchase price for power at least as long as the period of debt service of the project.

Power Acquisition Process

Because renewable generation facilities are significantly different in both construction and operation from the more traditional thermal or large hydroelectric facilities, they are frequently built and operated by independent power producers who have experience with these technologies rather than by the local utility. The question then becomes the best mechanism for acquiring these resources. The following are some power acquisition methods.

Fixed-price contracts: When grid-connected renewable resources are in the early stages of development (e.g. there are few local RE development or manufacturing companies and the government is interested in stimulating the development of domestic RE companies and manufacturers), renewables may be purchased using a fixed price and a standard contract (e.g. European feed-in laws, California's standard offer contracts). A standard, fixed-price contract with guaranteed terms and conditions, reduces debt repayment risk and makes it easier to finance RE projects. This is particularly important when the industry is young and immature, financing costs are otherwise high and financing is very difficult to obtain.

Competitive Bidding: Once there are sufficient numbers of RE development and manufacturing companies with actual experience building and operating local facilities, competitive solicitations may be used. There are three primary reasons for using a bidding scheme:

- (1) to achieve more economic efficiency than is available through fixed-price purchases (i.e., to lower prices);
- (2) to allocate contracts when there are more potential suppliers than there is need for power; and
- (3) to identify cost effective resource options that may not have been identified through the resource planning process.

Bidding alone will not necessarily achieve economic efficiency. The goal of achieving economic efficiency assumes that costs (and profits) can be minimized through direct competition among potential suppliers of a product. Economic efficiency is most likely to be achieved when the cost of a product is known with some certainty, when

(as it is available). This capacity payment is in addition to the energy payment that is also paid on a cents/kWh basis.

the product is quite uniform and when there are significant numbers of competitors. Competitive bidding does not do a very good job of achieving economic efficiency when the final cost of the product is highly uncertain (as when the industry or resource area is new), when there are few competitors, or when there is considerable variation in the product being offered. For contract allocation among potential suppliers, bidding is one of several methods that can be used. Others include: first-come, first-served and a lottery method.

(A separate report on the issues and design of competitive bidding solicitations is being compiled.)

POLICY APPROACHES AND PROJECT DEVELOPMENT

In the following section, key renewable energy policy approaches and the typical project development practices used with each are discussed. We also analyze the critical factors affecting the design and use of these policies.

Mandatory Market Strategies

PURPA Standard Offer Contracts

The Public Utility Regulatory Policy Act (PURPA) is a mandatory market strategy that is price based - utilities are required to buy the power available from renewable resources at the utility's avoided cost of generating or purchasing the power themselves. The PURPA law and the "Standard Offer" contracts were used most notably in California during the 1980s when the renewable energy industry was just getting started. In 1981, when this system was initiated, there were few renewable generators in operation (except large hydro built and owned by the utilities). In fact, Congress passed PURPA for the express purpose of encouraging the development of non-large hydro, renewable generation by independent power producers (IPP). Since there were few IPP or renewable energy development companies at that time, the State of California enacted policies that would make it attractive for new companies and financial institutions to invest in building and operating renewable energy facilities in the state. The most important policy of the state was to require utilities to purchase renewable generation under a standard offer contract at a fixed price³ using standard contract terms.⁴ Through the use of this fixed price, standard

³ Since these contracts were signed during a time when there was a shortage of power in California, the generators were paid a fixed capacity price as well as a kWh price for energy. The fixed energy price actually only pertained to the first one third of the contract life (i.e. 5 to 10 years for 15 to 30 year contracts). The energy price during the last two thirds of the contract term was to be whatever the wholesale market price for energy was at that time. The fixed-price was calculated based on the avoided cost of what it would otherwise have cost the utility to build or buy that power themselves as indicated in their resource planning process.

offer contract, almost 5,000 MW of new renewable energy facilities were brought into operation in California between 1983 and 1993.

The success of this strategy was due to the perceived low risk of recovering the project costs during the period of debt service. Moreover, the stable and attractive PPAs allowed projects to attract project-specific debt and equity investors, and project finance was the dominant form of project funding.

In the early 1990s, California issued a Request for Proposals (RFP) for power based on the needs identified through the state's integrated resource planning process (Biennial Resource Planning Update - BRPU). At that point, there had been ten years of experience in California with the building and operation of renewable energy facilities. As a result, RE generators were able to be very competitive in the bidding process with more than 1400 MW of new RE generation bid at prices equal to or less than the California utilities had determined it would cost them to build new thermal facilities.⁵⁴

This bidding process was transparent (everyone understood exactly how the bids would be evaluated), and a standard contract with basic terms and conditions was used as the basis for the bids. Bids were received for more than three times the amount of power actually needed.

A primary problem with the California system was that there was no limit put on the amount of power that would be purchased at the fixed price. Once the system reached equilibrium (i.e. supply was sufficient for the demand), the value of new generation was less, however, there was no mechanism to reduce the price. Moreover, once a significant RE industry was established in the state, it was possible to purchase RE at a lower price than what had been originally set. However, the system had no mechanism to take advantage of these cost reductions until it went to a competitive bidding process with the BRPU.

Feed-in Laws

Feed-in laws are a similar price based policy to the one described above for California. They have been most successful in Germany, Denmark and Spain. They were initially designed at the beginning of renewable energy industry development in those countries just as in California. Their purpose, as in California, was to stimulate the development of new domestic RE companies and facilities. The primary difference was that the fixed price paid in the feed-in laws has often been based on a

⁴ The standard offer contract is a default contract that does not have to be negotiated with the utility unless the developer needs some special term or condition. The purpose of this strategy was to eliminate the absolute power of the utility in a contract negotiation and put the two parties on a more even footing.

⁵ Unfortunately, these projects were never built due to restructuring of California's electricity sector.

percentage of the retail electric tariff rather than being based on the wholesale cost of power to the utility as it was in the US. Just as in California, however, these feed-in laws have resulted in thousands of MW of renewable generation being brought into operation in a very short period of time in the countries that adopted them. The feed-in policies also stimulated the growth of a domestic RE industry in both countries. The success in bringing large amounts of RE into operation can be attributed to both the attractive fixed price⁶ and the stability and governmental guarantees that ensured the payments would be made. This reduced transactions costs and minimized any perceived risk, making investments in new renewable energy development very attractive to the European investment community. Renewable energy investments have come in the form of project finance, as well as more traditional cooperatively financed or individually owned projects.

Some of the feed-in laws in Europe were structured similarly to the CA standard offer such that they were unable to take advantage of market efficiencies. However, there have been fewer traditional resource technologies competing with the renewables and the policies have been amended over time to take advantage of falling costs for specific RE technologies.

Non-fossil Fuel Obligation (NFFO)⁷

The Non-fossil Fuel Obligation is a hybrid policy that is both price and quantity based. The UK NFFO Policy implemented competitive bidding orders for renewable electricity designed to bring on-line 1,500 MW of new renewable capacity, roughly three percent of the total UK electricity supply, over a ten-year period. As with the 1980s California Program and the 1990s feed-in Laws in Germany, Denmark and Spain, the 1990 UK NFFO policy was developed before any RE industry had been established in Britain. As a result, there were few local competitors available to bid for the government RE purchases. Moreover, there were few penalties for non-performance. Therefore, though the NFFO bidding process produced amazingly low bid prices for RE facilities, the policy resulted in only 21 percent of the projects actually becoming operational.⁸

⁶ Approximately 8 cents/kWh - about the same as the fixed energy prices for the early California projects.

⁷ The non-fossil fuel obligation was implemented in the UK in 1990. It began with fixed price payments for a specific quantity of RE but then moved to a bidding system for acquiring the appropriate supply. The money to pay the difference between the average wholesale cost of power and the cost of the renewables was collected through a special levy on electricity from fossil plants.

⁸ This was as of a report at the end of 1999: Mitchell, C. "The UK Non-Fossil Fuel Obligation: History and Lessons." Annual Review of Energy, December 1999. Mitchell, C. "Renewable Energy Policy in the UK - Obligation Options for the Future." Paper for the UK Department of Trade and Industry. Brower, Michael C., "The British Electric Utility Restructuring Experience: History and Lessons for the United

Because of its focus on cost reductions, the NFFO did not support a diverse set of renewable developers. There were few new, local entrants into the UK renewable energy market. The majority of NFFO power plants are owned by subsidiaries of the major generators, the retail electricity companies, or subsidiaries of privatized water companies. Because of the pressure to reduce costs, corporate finance has been the most common financing arrangement. More importantly, the NFFO did not create any kind of enhanced domestic manufacturing base for renewable technology. This is because in order to win an NFFO contract, the cheapest technology must be used and this tended to be from non-British sources.

In this example, all the elements were in place as required by the financial community (e.g. a guaranteed price, a long-term contract -- 15 years). However, using a competitive bidding acquisition strategy did not result in the development of a domestic RE industry infrastructure. As a result, the NFFO did not lay a sustainable framework for development of RE in Britain.

Renewable Portfolio Standard (RPS)⁹

The Renewable Portfolio Standard is a quantity based mandatory portfolio policy where the RE price varies with market demand. The interaction between RPS and project development is not entirely clear due to limited experience with fully implemented RPS programs. In Texas, where we have the most RPS experience to date, RE development has moved forward rapidly. This is partly due to the utilities, who are required to meet the mandatory targets, signing long-term contracts (10 to 25 years) for RE. These utilities issued RFPs and selected the bids offering the best prices and the highest likelihood of bringing the project to completion on schedule. These tended to primarily be bids for power from new wind projects that when they took into consideration the 1.5 cent US/kWh production tax credit, caused the wind prices to be almost as low as power from conventional plants. Wind power plants were constructed based on both corporate- and project-finance structures.

In addition, a robust competitive retail green market (and green pricing markets for the municipal utilities that have not been restructured) offers a variety of opportunities for RE in the state as well as in the region. All of this makes for attractive pro-

States." The Electric Industry Restructuring Series, National Council on Competition and the Electric Industry, 1996.

⁹ A Renewable Portfolio Standard is a policy that mandates a specified amount of power to be supplied by RE. These programs have been approved in 13 US states, Australia, Belgium, Italy and the UK. Sweden and Norway are also considering passage of an RPS mandate but it is still in the talking stage. For more information and background on the issues see papers prepared for China by Jan Hamrin and Ryan Wiser for the China Sustainable Energy Project and Ryan Wiser and Ole Langness, Renewable Portfolio Standard in Texas: An early assessment. LBNL-49107.

ject financing for independent RE developers with power sales contracts. We expect a similar pattern to develop in other states but we do not have sufficient information to know yet.

The sale of tradable renewable certificates (certificates) separate from the energy output of a renewable generation facility is an interesting outgrowth of the RPS concept. Though in the Texas example the RE power and certificates have often been bundled together, in other US states and Europe, certificates are also being sold separate from the power (particularly to larger commercial and industrial customers) as well as being converted into carbon emission offset credits. What this means for the development and financing of new RE projects is that there may develop an alternative revenue stream to support project finance. Though the market for certificates is new and uncertain at present, in the future this could become an important RE project element.

Customer Choice Policies: Green Pricing¹⁰ and Green Markets¹¹

The resource acquisition process associated with customer choice programs is more variable than for other policy strategies. Since the renewable power is offered to the customers by their monopoly utility provider, the utility may

- (1) build the RE facilities themselves,
- (2) go out to bid for a 'turnkey' project that they eventually own or
- (3) buy the power from an independent producer. In this last case, the RE utilities or marketers usually either buy excess RE from facilities that have already been built but that have excess power beyond what is being sold under utility supply contracts or have been able to increase generation at an existing facility to serve the green market.

All three processes have been used with varying success depending upon the circumstances.¹² New facilities are typically only built once a contract has been signed with either a utility or a marketer for the majority of the facility's anticipated output. Though merchant plants could be built to serve these markets, generally the risk

¹⁰ Green Pricing is where a monopoly utility offers its customers the choice of renewable energy or conventional energy, with the RE option often costing more than the conventional.

¹¹ This refers to the 'direct access' programs in reformed electricity markets where customers have both the choice of the company who will supply their power as well as the type of power they will buy (e.g. Renewable resources).

¹² For a good discussion of the advantages and disadvantages for utilities of buying versus building RE facilities see Mark Bolinger, Ryan Wiser, and Bill Golove Revisiting the "Buyversus Build" Decision for Publicly Owned Utilities in California Considering Wind and Geothermal Resources. LBNL-48831, October 2001.

and uncertainty are too great to allow them to be financed.

In the US, about 650 MW of new RE has been constructed and another 440 MW of new RE is under construction specifically to serve the US green customer choice markets . With both of these types of green programs, they were developed after there was an established RE industry in the US with plenty of competitors to provide the RE supply. Financing and building RE facilities for competitive green markets is more risky than with a utility long-term power purchase agreement since neither green marketers nor utility green pricing purchasers tend to sign contracts for longer than five years. However, depending upon the extent of the future local market opportunities, a five-year, guaranteed price contract in a maturing RE industry may sometimes be sufficient to support new RE development. All the examples we have to date indicate that new RE development under this scenario will be much slower than under standard contract or feed-in law strategies.

Investment Incentives and Funds

Public Benefit Funds¹³

In the United States there are 14 states with Public Benefit Funds used wholly or in part for supporting renewable energy development. These funds have most often been developed in conjunction with the reform of the electricity sector in that state but they can also be used under traditional utility structures. In the US, they were all developed after there was a well established RE industry. States are adopting a wide variety of approaches to using these funds. Two states are using funds to provide low-interest loans in an investment model approach. Seven states are using the funds as financial incentives, either as production incentives or grants to directly stimulate renewable energy project installation by reducing the costs.

Building industry infrastructure is especially important where limited renewable energy project experience exists. Three states are offering business development grants; two states are providing funds for consumer financing programs; four states are providing funds to support renewable energy marketing; two to support broad-based consumer education; and two states are using funds for detailed resource assessment.

These funds have achieved their most visible success in providing funding for large-scale renewable generation projects. It is possible that more than 1,100 MW of new RE capacity will be installed over the next few years as a result of these clean en-

¹³ Public Benefit Funds are pots of money collected through a small surcharge on electricity sales and used exclusively for funding public interest programs in electricity such as renewable energy, energy efficiency, research & development, and low-income family assistance. For an excellent overview of these funds see Mark Bolinger and Ryan Wiser, et. al. Clean Energy Funds: An Overview of State Support for Renewable Energy, LBNL - 47705, April 2001.

ergy investments. Most states have used competitive bidding mechanisms to solicit project proposals and to determine how financial incentives will be distributed (particularly for large, grid-connected projects). Most of the financial incentives are provided through some type of performance-based program. Finally, to maximize the impacts of their efforts, state PBF administrators are exploring the interactions between their own funds and other RE programs including state RPS policies, tax credits and various regulatory rules.

These funds can be particularly valuable in supporting the development of a local RE industry and in reducing the overall cost of RE so it is more competitive with the cost of conventional technologies. Such incentives will not achieve their goals unless they are tied to policies and programs that provide a reasonable price for power through a medium to long-term power purchase agreement. In California, though funds have been awarded to 1300 MW of potential new RE projects between 1998 and 2001, only 200 MW of those projects have actually been completed primarily due to the lack of a power purchase agreement from a credit worthy utility purchaser (thus making it impossible to get project financing).

Tax Policies

Beneficial tax policies of various types can be very useful in conjunction with other RE policies. To the extent that favorable tax policies reduce the cost of the renewable energy facility, they help make the facility more cost competitive with traditional power generation technologies. However, favorable tax policies are not typically sufficient in themselves to justify financing and building a new RE facility. There must be the ability to sell the power that is generated into an electricity market. In addition, it is necessary to be able to interconnect the facility to the transmission/distribution system under conditions that do not jeopardize the payments for power or the overall project revenue stream.

Public Education

Though RE public education programs are extremely important, as with the tax policies discussed above, they have only a secondary effect on the ability to finance and build RE facilities. To the extent that public education programs educate public officials and help to mobilize public support, they can lay the groundwork for good public policy and for a receptive competitive market.

CONCLUSIONS

Because the needs of the financial community so strongly influence RE development, any policies or programs that reduce the cost of RE facilities, or reduce the perceived risks of not receiving an adequate revenue stream, will make financing easier and less costly.

Mandatory market strategies build a market for renewables while reducing the transactions costs and risks associated with early commercialization of RE. Standard-offer contracts and feed-in laws are excellent tools for rapidly mobilizing the renewable energy industry in a new region. They are easily implemented under any industry model and will result in a lot of renewable generation coming into operation rapidly. Once a RE industry is established, competitive bidding processes can be used to obtain more economically efficient results.

An RPS policy is also designed to quickly develop a market for RE, though RPS programs require very careful design and implementation to achieve their goals. Because the price for the RE is uncertain under an RPS structure, project development and financing may be less attractive under this policy than it is under a standard-offer contract or feed-in law approaches. An RPS policy may also require a stronger legal system and stable electricity regulatory framework than other policy approaches.

Most renewable energy projects are built by independent power producers (IPP) rather than by the local utility. As a result, support for IPPs is critical for renewable energy industry growth. Such policy support includes a reformed utility structure that allows independent producers to build, own and operate renewable energy facilities, interconnect to the grid, and provides guidelines favorable for the pricing and purchase of the power from these facilities by the electric company. Other important supporting policies include tax incentives, standard contracts, resource assessment and equitable resource laws, and fair and reasonable interconnection and transmission rules. Renewable energy costs are typically lowered through manufacturing volume, renewable energy industry infrastructure development and project development experience. These cost reductions can only be realized from the development of a robust market for renewable energy.

Annex 11

**FEDERAL MINISTRY
OF POWER AND STEEL FEDERAL
REPUBLIC OF NIGERIA**

**Renewable Electricity Policy Guidelines
December 2006**

Chatti Plaza, 6 Sapele Street, Garki II – Abuja

Tel/Fax: +234 9 234 8525

Email: info@iceednigeria.org

www.iceednigeria.org

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Abbreviations and Acronyms

BPE	Bureau of Public Enterprises
CDM	Clean Development Mechanism
CET	Central External Tariff
CHP	Combined Heat and Power
CIDA	Canadian International Development Agen-
ECN	Energy Commission of Nigeria
EPSR	Electric Power Sector Reform Act 2005
ETF	Education Trust Fund
FMPS	Federal Ministry of Power and Steel
FMW	Federal Ministry of Works
FMWR	Federal Ministry of Water Resources
GEF	Global Environmental Facility
GW	Gigawatt
GWh	Gigawatt hour
KW	Kilowatt
KWh	Kilowatt hour
MDGs	Millennium Development Goals
MW	Megawatt
MWh	Megawatt hour
NEEDS	National Empowerment and Economic Develc
EP	National Energy Policy
NEPA	National Electric Power Authority
NEPP	National Electric Power Policy
NERC	Nigerian Electricity Regulatory Commission
NPIRD	National Policy on Integrated Rural Devel-
PBF	Public Benefit Fund
PHCN	Power Holding Company of Nigeria
PV	Photovoltaic
RE	Renewable Electricity
REA	Rural Electrification Agency

REAP	Renewable Electricity Action Program
REF	Rural Electrification Fund
RETF	Renewable Electricity Trust Fund
REMP	Renewable Energy Master Plan
REP	Rural Electrification Policy
RPS	Renewable Portfolio Standard

1.0. Background

The Policy Guidelines on Renewable Electricity (herein referred to as the Policy Guidelines) is the Federal Government of Nigeria's overarching policy on all electricity derived from renewable energy sources. The Policy Guidelines sets out the Federal Government's vision, policies and objectives for promoting renewable energy in the power sector.

The Policy Guidelines is drawn primarily from the Constitution of the Federal Republic of Nigeria (1999), the National Energy Policy (2003), the National Electric Power Policy (2001), Electric Power Sector Reform Act (2005), the Renewable Energy Master Plan (2005), the draft Rural Electrification Policy and the National Economic Empowerment and Development Strategy (NEEDS).

Access to electricity services is critical to achieving economic and social development targets outlined in the NEEDS and the Millennium Development Goals (MDGs). The Federal Government of Nigeria is therefore committed to reaching these sustainable development targets through the full mobilization of the electricity sector. Renewable energy presents unique opportunities to scale up access to electricity services nationwide. In the pursuit of these objectives, the Federal Government seeks the implementation of the policy on renewable electricity in collaboration with other levels of government, communities and the private sector for the following specific reasons:

First and foremost, renewable energy represents an important tool in the Government's overall effort to expand access to electricity services nationwide. Improving access to electricity is consistent with NEEDS and MDG targets in stimulating economic growth, employment creation and poverty reduction. The policy enables the government to align and mainstream renewable energy development in the country with these broader national development aspirations.

Second, rural electricity access in Nigeria is less than 20%. By their nature, renewable electricity technologies are generally modular and are ideal candidates for improving rural electricity access situations in the country. Grid power extensions over long distance to serve low load densities are usually technical and financial a poorer option than decentralized renewable electricity.

Third, until now, renewable electricity has never really been part of the national power planning process. The policy guideline provides a common framework to integrate renewables into the energy technology mix in meeting national electricity supply.

Fourth, renewable electricity provides more diversity and improves the reliability of electricity supply through the grid. This could potentially be important in ensuring the stability of grid electricity supply, especially in times of localized disruption of sources of power supply.

Fifth, renewable energy is environmentally friendly being mostly carbon neutral. This reduces indoor and urban pollution as well as emission of greenhouse gases that cause global warming.

1.1 Vision

The Federal Government of Nigeria's vision of renewable energy in the power sector is the achievement of accelerated sustainable development through increased share of renewable electric power to the national electricity supply.

1.2 Electricity situation in Nigeria

Nigeria is endowed with sufficient energy resources to meet its present and future development requirements. The country possesses the world's sixth largest reserve of crude oil. It is increasingly an important gas province with proven reserves of nearly 5000 billion cubic meters. Coal and lignite reserves are estimated to be 2.7 billion tons, while tar sand reserves represent 31 billion barrels of oil equivalent. Identified hydroelectricity sites have an estimated capacity of about 14,250MW. Nigeria has significant biomass resources to meet both traditional and modern energy uses, including electricity generation. The country is exposed to a high solar radiation level with an annual average of 3.5 – 7.0kWh/m²/day. Wind resources in Nigeria are however poor - moderate, and efforts are yet to be made to test their commercial competitiveness.

The current installed capacity of grid electricity is about 6000MW, of which about 67 percent is thermal and the balance is hydro-based. Between 1990 and 1999, there was no new power plant built and the same period witnessed substantial government under-funding of the utility for both capital projects and routine maintenance operations. Generating plant availability is low and the demand – supply gap is crippling. Poor services have forced most industrial customers to install their own power generators, at high costs to themselves and the Nigerian economy.

By 2005, the transmission network consisted of 5000km of 330 kV lines, and 6000km of 132 kV lines. The 330 kV lines fed 23 substations of 330/132 kV rating with a combined capacity of 6,000 MVA or 4,600 MVA at a utilization factor of 80%. In turn, the 132 kV lines fed 91 substations of 132/33 kV rating with a combined capacity of 7,800 MVA or 5,800 MVA at a utilization factor of 75%.

The distribution grid consisted of 23,753 km of 33 kV lines and 19,226 Km of 11 kV lines. In turn, these fed 679 substations of 33/11kV rating and 20,543 substations of 33/0.415 and 11/0.415 kV ratings. In addition, there were 1,790 distribution transformers and 680 injection transformers.

The transmission network is overloaded with a wheeling capacity less than 4,000 MW. It has a poor voltage profile in most parts of the network, especially in the North, inadequate dispatch and control infrastructure, radial and fragile grid network, frequent system collapse, exceedingly high transmission losses.

PHCN's business operations are inefficient. The system suffers from chronic under-investment, poor maintenance, un-recorded connections and under-billing arising from its ability to serve customers satisfactorily has been consistently poor.

Access to electricity services is low. About 60 percent of the population – Over 80 million people are not served with electricity. Per capita consumption of electricity is approximately 100kWh against 4500kWh, 1934 kWh and 1379kWh in South Africa, Brazil and China, respectively. Under a business-as-usual scenario, the proportion of Nigerians without access to electricity services will continue to increase over time. The Rural Electrification Program began in 1981 focuses exclusively on grid extension; costs per connection remain high and annual rate of connection is low. With the chronic shortage of available generating capacity and low tariffs for rural areas, there is little incentive for PHCN to champion an expansion program. In all, rural electricity capital assets continue to deteriorate through neglect, vandalism and theft.

The chronic shortage of available generating capacity has negatively affected the industrial and manufacturing sectors. With self-generation prevalent in the industrial, commercial and domestic sub-sectors, the electrical energy demand in Nigeria currently estimated at 10,000 MW is actually not known.

The Federal Government is undertaking comprehensive reforms to address the electricity situation in the country. The enactment of the Electricity Power Sector Reform Act (2005), establishment of the Nigerian Electricity Regulatory Commission and the unbundling of PHCN are concrete legal, regulatory and institutional steps that will begin to address the challenges of the sector. Presently, a new wave of investments in the power generation championed both by the government and the private sector has commenced.

The government has invested in generation expansion targeting a cumulative capacity of over 10,000 MW by the end of 2007. Expansion of transmission lines within the target period will increase to over 15,000 km from about 11,000km. The capacity of available transformers will double (10,444MVA – 22,414MVA).

1.3 The role of renewable electricity

Increased power generation from conventional sources and grid extensions alone will not achieve electricity access expansion targets rapidly and cost-effectively. Accelerating rural electrification coverage will require an aggressive deployment of multiple supply options and business delivery systems. Consistent with the provisions of the EPSR Act, the Federal Government will seek to meet national electricity access targets through the following strategies:

- Grid-based extension for proximate areas;
- Independent mini-grids for remote areas with concentrated loads where grid service is not economic or will take many years to come; and
- Standalone renewable electricity systems for remote areas with scattered small loads.

Non-conventional or renewable energy is a key element in the overall strategy of the Federal Government in rapidly expanding access to electricity services in the country. Beyond large hydropower, the current total contribution of renewable

energy in Nigeria's electricity industry is about 35MW composed of 30MW small hydropower and 5MW the country.

1.4 Barriers to the renewable electricity industry

Specific policy, regulatory, financing and investment, technological, public awareness, quality and standards, poor resource database and intermittency of resource availability confront the development of the market for renewable electricity.

a) Policy and regulatory barriers

The focus of national policy has consistently been on centralized conventional sources of electric power. Several incentives were established to promote investments in conventional power generation. Subsidizing grid power has so far penalized investments in alternative energy solutions. This lack of a level playing field for all energy sources and technologies has constituted a formidable barrier to the growth of alternative electricity services.

Until lately, the Power Holding Company of Nigeria (PHCN) was the only entity legally permitted to produce and distribute electricity. Under the 2005 Act, independent power producers are permitted to operate, however, the legal framework for successfully implementing PPA is still evolving. The perception of significant regulatory risks by potential investors and financial institutions compound the challenges faced by potential renewable electricity investors. Moreover, guaranteed access to the grid is an important element of an investment decision to embark on grid-connected power projects. At present, a non-discriminatory open access to the national electricity grid, for renewable power, is not assured.

b) Financing and Investment barriers

Renewable energy projects have high initial costs. This affects the overall cost of energy produced per kWh. Investors will not be favorably disposed to wind, small hydro or power from cogeneration plants if they will not make profit by selling the electricity. Average electricity tariff in Nigeria is put at about N6:75 per KW-h (approximately 5 cents per kWh). Average cost of typical sources of renewable power for mini hydro is 5-10 cents; solar PV: 20-40 cents; biomass power: 5-12cents; wind power: 6-10 cents. Without adequate financial incentives market entry will be difficult.

Renewable electricity projects are not common practice, therefore bankers perceive a higher degree of risk and are reluctant to lend – instead they give preference to large-scale conventional electricity investments. Interest rates are generally high and the appetite for long term credits are low among financial institutions, especially for non-business-as-usual projects as small scale renewable power projects.

Nigeria has no significant manufacturing capacity for components of renewable energy technologies. The existing capacity in solar PV and small hydro plants is limited. Significant supply chain constraints include long project implementation

periods, high import tariffs, bottle-necks in the customs clearing of goods and the issue of corruption.

c) Technological Barrier

As noted in the 2005 National Renewable Energy Master Plan¹ supplies and servicing for renewable electricity projects are not readily available in Nigeria. Therefore, potential IPPs may face significant logistical challenges in procuring equipment and maintenance support for renewable electricity projects.

Beyond the local availability of supplies, there are significant gaps in the capacity for manufacture and maintenance of system components such as small hydro and wind turbines. In most cases, the choice and design of turbines are site-specific. With no local turbine manufacturers available in Nigeria, this adds to project complexity and costs. The simple fact that the project will be dependent on manufactures of the turbines for spares and major maintenance presents a major technical challenge. To compound these barriers, these projects are often located in remote areas and therefore face significant challenges in attracting competent and qualified manpower for operations.

d) Public awareness

There is limited public awareness of the potentials of renewable electricity in meeting some of the energy and development challenges facing the country. The inadequacy of awareness creates a market distortion which results in higher risk perception for potential renewable electricity projects. The general perception is that these forms of energy technologies are not mature and only suited for niche markets.

e) Standards and quality control

A major constraint to the development of the renewable energy market in Nigeria is the poorly established standard and quality control of locally manufactured and imported technologies. Creating quality assurance is a precondition for building consumer confidence and in growing the market for renewable energy. Two important dimensions to issues of quality include the perception of potential users, poorly developed regime for standards setting, testing and certification as well as professionalism among operators.

f) Inadequate resource assessment

The growth of the renewable power industry will depend to a large extent on the availability of a solid resource database. Reliable and up-to-date sources of data will assist investors in making decisions on renewable electricity.

g) Intermittency of resource availability

An underlying barrier affecting all renewable electricity resources is the intermittency of their availability. The challenge of energy storage and system management presents a major challenge and adds to the complexity and costs of renewable electricity.

The Policy Guideline establishes a framework to address the above barriers. It creates measures that enable market expansion and private sector participation in renewable electricity business. It further facilitates grid-connected and off-grid operations as well as increased role for renewable electricity in rural electrification.

2.0 Definition of renewable electricity

“Renewable electricity” refers to electric power obtained from energy sources whose utilization does not result in the depletion of the earth’s resources. Renewable electricity also includes energy sources and technologies that have minimal environmental impacts, such as less intrusive hydro and certain biomass combustion. These sources of electricity normally will include solar energy, wind, biomass co-generation and gasification, hydro, geothermal, tide, wave and hydrogen energy. Based on the resource situation and the technological base of the country, the Policy Guideline focuses on hydropower, biomass co-generation, solar PV and wind energy for electricity production.

Small, Mini and Micro Hydropower – Small hydropower is defined by the Renewable Energy Master Plan as all hydroelectricity schemes below 30 MW, mini below 1MW, micro below 100kW and pico below 1kW.

Biomass electricity – Green plants converting sunlight into plant material through photosynthesis produce biomass energy. Biomass cogeneration is the predominant process of producing both thermal energy and electrical energy from biomass-fuelled boilers, with excess steam above that required for electricity being used for other purposes such as process heat, district heating and cooling plants, or even sold off to third parties requiring such services.

Solar energy – Electricity is generated from solar energy predominantly through photovoltaic materials (cells or modules) that converts sunlight directly into electricity. Solar thermal electricity technologies are also available whereby solar energy are concentrated unto boilers to produce vapor which could then be used in a conventional steam power plant. In Nigeria, solar photovoltaic technologies are used for small-scale power supply in some rural electrification programs of some States of the federation.

Wind energy – The energy contained in the movement of air in form of wind is used to turn the blades of windmills or wind turbines which in turn could be used to drive electrical generators to produce electricity. Large modern wind turbines operate together in “wind farms” to produce electricity for utilities, while small turbines are used to meet localized and small energy needs.

3.0 Review of existing policies

Several policy documents have provisions that are relevant to the development of the Policy Guideline. These include the 1999 Constitution of the Federal Republic, the National Economic Empowerment and Development Strategy (2004), the National Electric Power Policy (2001), Electric Power Sector Reform Act 2005 and the National Energy Policy (2003).

3.1 1999 Constitution of the Federal Republic of Nigeria

The 1999 Constitution of the Federal Republic of Nigeria places electricity generation, transmission and distribution on the Concurrent Legislative List. This allows all tiers of government to be involved in most aspects of the electricity supply industry.

3.2 National Economic Empowerment and Development Strategy

The National Economic Empowerment and Development Strategy (NEEDS), Chapter 5, proposes a set of targets to be met by the power sector before 2007, among which are:

- Increase generation capacity from 4,200 MW to 10,000 MW (138% increase)
- Increase transmission capacity from 5,838 MVA to 9,340 MVA (60% increase)
- Increase distribution capacity from 8,425 MVA to 15,165 MVA (80% increase)
- Reduce transmission and distribution losses from 45% to 15%

The NEEDS document also highlights the Federal Government's mandate to the former public utility NEPA, some of which are:

- Expeditiously implement the electric power sector reform program
- Generate 10,000 MW by 2007, from existing plants, new host generation, and reasonably priced independent power plants.
- Develop the capacity to transmit and distribute the higher level of generation.
- Explore alternative energy sources, such as coal, solar power, wind power, and hydropower.
- Deregulate the power sector to allow increased private sector participation.

3.3 National Electric Power Policy and Electric Power Sector Reform Act

The National Electric Power Policy (NEPP) of 2001 was the precursor to the Electric Power Sector Reform (EPSR) Act of 2005. Indeed most of the significant provisions of NEPP are included in the EPSR.

The Electric Power Sector Reform (EPSR) Act, 2005, emphasizes the role of renewable electricity in the overall energy mix, especially for expanding access to rural and remote areas. In Part IX under Rural Electrification, Section 88 (9) stipulates that information shall be presented to the President by the Minister of Power and Steel on, among others:

- (a) expansion of the main grid
- (b) development of isolated and mini-grid systems, and
- (c) renewable energy power generation

The REA is mandated to provide a strategy and plan for expanding access to electricity, including the use of renewable energy.

3.4 National Energy Policy

In the Policy Overview of the National Energy Policy, NEP, of August 2003, the overall thrust of the energy policy is stated as "optimal utilization of the nation's energy resources for sustainable development". The following are the relevant provisions of the NEP for the development of the Policy Guideline:

3.4.1 Hydropower

Policies

- (i) The nation shall fully harness the hydropower potential available in the country for electricity generation
- (ii) The nation shall pay particular attention to the development of the mini and micro hydropower schemes
- (iii) The exploitation of the hydro power resources shall be done in an environmentally friendly manner
- (iv) Private sector and indigenous participation in hydropower development shall be actively promoted

Objectives

- (i) To increase the percentage contribution of hydro electricity to the total energy mix
- (ii) To extend electricity to rural and remote areas, through the use of mini and micro hydro power schemes
- (iii) To conserve non-renewable resources used in the generation of electricity
- (iv) To diversify the energy resource base
- (v) To ensure minimum damage to the ecosystem arising from hydropower development
- (vi) To attract private investments into the hydropower sub-sector

Strategies

- (i) Establishing and maintaining multilateral agreements to monitor and regulate the use of water in international rivers flowing through the country
- (ii) Ensuring increased indigenous participation in the planning, design and construction of hydropower stations
- (iii) Providing basic engineering infrastructure for the production of hydropower plants, equipment and accessories
- (iv) Encouraging private sector, both indigenous and foreign, in the establishment and operation of hydropower plants
- (v) Encouraging private sector, both indigenous and foreign, for the local production of hydropower plants and accessories
- (vi) Ensuring that rural electricity boards incorporate small-scale hydropower plants in their development plans
- (vii) Promoting and supporting R&D activities for the local adaptation of hydropower plant technologies
- (viii) Initiating and updating data on the development of the hydro potential of our rivers and identifying all possible locations for dams

3.4.2 Solar

Policies

- (i) The nation shall aggressively pursue the integration of solar energy into the energy mix
- (ii) The nation shall keep abreast with worldwide developments in solar energy technology

Objectives

- (i) To develop the nation's capability in the utilization of solar energy
- (ii) To use solar energy as a complimentary energy resource in the rural and urban areas
- (iii) To develop the market for solar energy technologies
- (iv) To develop solar energy conversion technologies locally

Strategies

- (i) Intensifying R&D in solar energy technology
- (ii) Promoting training and manpower development

- (iii) Providing adequate incentives to local manufacturers for the production of solar energy systems
- (iv) Providing adequate incentives to suppliers of solar energy products and services
- (v) Introducing measures to support the local solar energy industry
- (vi) Setting up extension programs to introduce solar technology into the energy mix
- (vii) Providing fiscal incentives for the installation of solar energy systems
- (viii) Setting up and maintaining a comprehensive information system on available solar energy resources and technologies

3.4.3 Biomass

Policies

- (i) The nation shall effectively harness non-fuelwood biomass energy resources and integrate them with other energy resources
- (ii) The nation shall promote the use of efficient biomass conversion technologies

Objectives

- (i) To promote biomass as an alternative energy resource especially in the rural areas
- (ii) To promote efficient use of agricultural residues, animal and human wastes as energy sources
- (iii) To reduce health hazards arising from combustion of biomass fuel

Strategies

- (i) Developing extension programs to facilitate the general use of new biomass energy technologies
- (ii) Promoting R&D in biomass energy technology
- (iii) Establishing pilot projects for the production of biomass energy conversion devices and systems
- (iv) Providing adequate incentives to local entrepreneurs for the production of biomass energy conversion systems
- (v) Training of skilled manpower for the maintenance of biomass energy conversion systems
- (vi) Developing skilled manpower and providing basic engineering infrastructure for the local production of components and spare parts for biomass systems

3.4.4 Wind

Policies

- (i) The nation shall commercially develop its wind energy resources and integrate this with other energy resources into a balanced energy mix
- (ii) The nation shall take necessary measures to ensure that this form of energy is harnessed at sustainable costs to both suppliers and consumers in the rural areas

Objectives

- (i) To develop wind energy as an alternative energy resource
- (ii) To develop local capability in wind energy technology
- (iii) To use wind energy for provision of power in rural areas and remote communities far removed from the national grid
- (iv) To apply wind energy technology in areas where it is technically and economically feasible

Strategies

- (i) Encouraging R&D in wind energy utilization
- (ii) Developing skilled manpower for provision of basic engineering infrastructure for local production of components and spare parts of wind power systems
- (iii) Intensifying work in wind data acquisition and development of wind maps
- (iv) Training of skilled craftsmen to ensure the operation and maintenance of wind energy systems
- (v) Providing appropriate incentives to producers, developers and consumers of wind energy systems
- (vi) Developing extension programs to facilitate the general use of wind energy technology

These enabling policy provisions provided the impetus for the Federal Ministry of Power and Steel to embark on the development of National Policy Guideline for Renewable Electricity and Renewable Electricity Action Program. This document pertains to the National Policy Guidelines on Renewable Electricity.

4.0 Objectives of policy guidelines

The overall objective of this Policy Guideline is to expand the role of renewable electricity in sustainable development through effective promotional and regulatory instruments. The policy guideline seeks to achieve the following specific objectives:

- Expand electricity generating capacity to meet national economic and social development goals;
- Encourage the diversification of sources of electricity supply through renewable energy, and as such improve the energy security of the country;
- Increase access to electricity services nationwide, especially in rural areas;
- Stimulate growth in employment generation through an expanded renewable electricity industry;
- Enhance technological development through increased domestic manufacturing of renewable electricity components;
- Stimulate competition in the delivery of renewable electricity;
- Promote rapid expansion of renewable-based electricity market through cost-reducing supply side and demand side incentives.
- Develop regulatory procedures that are sensitive to the peculiarities of renewable energy based power supply;
- Create stable and predictable investment climate in renewable electricity market;
- Provide effective protection of electricity consumers through effective regulation; and
- Reduce household and outdoor air pollution as well as contribute to the abatement of greenhouse gas emissions, and thus contribute to improved health and overall social development.

5.0 Renewable electricity promotion and regulatory policies

In growing the market for renewable electricity in Nigeria, the Federal Government sets the following policies and regulatory measures:

5.1 Market expansion

Policy 1: The Federal Government of Nigeria shall expand the market for renewable electricity to at least five percent of total electricity generating capacity and a minimum of 5TWh of electric power production, excluding large hydropower by 2016.

These policy targets shall be achieved through the following strategies:

5.1.1: Licensing and fees schedule: Applicable licensing and fees schedule shall be revised and where necessary, simplified to provide additional incentives for eligible renewable electricity investments.

5.1.2: Local manufacture and assembly. Tax exemptions for a period not less than five years shall apply to new investments in the manufacture and assembly

of renewable electricity components. Eligible investments include the manufacture and assembly of solar cells and modules, manufacture of electrical turbines of less than 30MW capacity and other components that may be approved by the Federal Government.

5.1.3: Subsidies. The Federal Government seeks to reduce the upfront costs for consumers of renewable energy technologies through subsidies for the following technologies: solar PV component, including deep cycle batteries, all electro-mechanical components of SHP technology, wind power, boilers and turbines for cogeneration of less than 30MW. Subsidies shall meet incremental costs of producing agreed quantity of renewable electricity through approved sources. To ensure an efficient allocation of resources, subsidies shall be allocated through competitive bidding.

5.1.4: Technical standards and certification of personnel. NERC shall ensure the development of technical standards and certification procedures for technical personnel participating in renewable electricity projects. Categories of certification procedures may be delegated to other agencies, including the REA.

5.1.5: Public awareness. The Federal Government shall raise public awareness of the benefits and opportunities of renewable electricity. Annual budgets shall be available for public awareness purposes. Government agencies or other stakeholders may carry out these public awareness activities.

5.2 Grid-connected operations

Grid-based renewable electricity is crucial in promoting the development and utilization of electricity, diversifying the sources of electricity supplies, strengthening energy security, expanding electricity access and improving the environment.

Policy 2: The Federal Government shall establish stable and long-term favorable pricing mechanisms and ensure unhindered access to the grid. Grid operators must guarantee the purchase and transmission of all available electricity from renewable electricity producers. While renewable electricity plant owners bear the cost of connection, grid operators must ensure the necessary system upgrade. All upgrade costs must be declared to ensure the necessary transparency.

The following strategies will support grid-connected operations:

5.2.1: Feed-in tariffs. To ensure a stable pricing policy, the Federal Government introduces feed-in tariffs for small hydro schemes not exceeding 30MW, all biomass cogeneration power plants, solar and wind-based power plants, irrespective of their sizes. Specific tariff regimes formulated by NERC shall be long term, guarantee buyers under standard contract and provide reasonable rate of return.

5.2.2: Access to the grid. NERC shall promote the generation of electricity through renewable sources by providing suitable commercial and technical measures for connectivity to the grid and sale of electricity to any persons. Commercial regulations encompass permitted renewable energy fuels, application and connection procedures, costs incurred by each party, tariffs, and billing arrangements. The technical regulations shall specify the requirements for a renewable energy generator to connect to the grid. These include responsibilities of each party; criteria for synchronization (acceptable voltage levels, frequency, power factor, etc.) required protection relays, and provisions for emergency disconnect.

5.2.3: Development of a Standard for Power Purchase Agreements. NERC shall develop an appropriate standard or model for PPAs. The PPA sets the terms by which power is marketed and/or exchanged. It shall determine the delivery location, power characteristics, price, quality, schedule, and terms of agreement and penalties for breach of contract. It shall among other things, ensure that prices provide an adequate return on investments in renewable electricity; standardizes and simplifies contractual relationships; and protects investors, utilities and consumers.

5.2.4: Tariff regulation. Subject to the provisions of this Policy Guideline, NERC shall specify the terms and conditions for the determination of tariff, and in so doing shall be guided by the promotion of renewable sources in electricity production.

5.3 Off-grid Operations

Off-grid renewable electricity operations are vital to meeting the Federal Government's policy on the electric power sector and expanding access to rural areas, in particular.

Policy 3: The Federal Government supports the construction of independent renewable electricity systems in areas not covered by the electricity grid to provide power service for local economic activities and sustainable living.

Off-grid renewable electricity operations shall be expanded through the following strategies:

5.3.1: Mini-grid concessions. In developing mini-grid concessions, NERC shall select a company to exclusively serve a specific geographical location with obligation to serve all customers that request service. The agency shall provide subsidies and shall regulate the fees and operations of the concession. Electricity service concessions may employ a mixture of energy sources to serve customers.

NERC shall develop light-handed measures for awarding renewable electricity concessions for the production and distribution of electricity within mini-grids generating electricity exceeding 1 MW and distributing electricity above 100 KW in aggregate at a site.

5.3.2: Stand-alone systems standards: Technical specifications and codes for stand-alone solar PV, micro hydro and wind power will be developed as well as a process of certification for technical personnel.

5.4 Rural electrification

Renewable electricity offers cost effective, modular and decentralized options for extending electricity and stimulating sustainable development in rural areas. Consistent with the EPSR Act, off-grid renewable electrification is a key component of the Federal Government's policy on expanding access to energy services to rural areas.

Policy 4: The Federal Government will develop innovative, cost-effective and practical measures to accelerate access to electricity services in rural areas through renewable sources.

5.4.1: Rural business development. The Federal Government shall promote the role of the private sector in the delivery of rural electrification through renewable sources. This will be achieved through the support of entrepreneurship, training, marketing, feasibility studies, business planning, management, financing, and connection to banks and relevant institutions. This approach includes integrating renewable electricity provision with other services, including water, telecommunication, fertilizers, pumps, generators, batteries, kerosene, LPG, electronics.

5.4.2: Comparative line extension analysis. All new grid extension proposals must include information about on-site renewable energy technology options and a cost/benefit analysis comparing proposed grid extension and decentralized renewable electricity.

6.0 Financing renewable electricity

Financing is crucial to realizing the Federal Government's policy thrust on renewable electricity. The Government's primary instrument for funding renewable electricity is through the establishment of a fund to stimulate the expansion of the renewable electricity market.

Policy 5: There shall be a Renewable Electricity Trust Fund which shall be set up under the Rural Electrification Fund.

6.1 Renewable Electricity Trust Fund

The purpose of the Renewable Electricity Fund (RETF) shall be to promote, support and provide renewable electricity through private and public sector participation. The RETF seeks to provide support to the following:

- Construction of independent renewable electricity projects, especially in rural and remote areas;
- Establishment of domestic production of technologies for the development and utilization of renewable electricity;
- Provision of resources for micro financing to stand-alone systems under 20kW capacity
- Support to research and development and construction of pilot projects;
- Promote training and capacity building in renewable electricity technology and business development;
- Encourage public awareness initiatives; and
- Provision of surveys and assessments of renewable electricity resources and other relevant information.

Support from the RETF shall be guided by the following principles:

- **Support shall be temporary and targeted** – They must have a clear phase-out scheme or timetable and should have an attainable target within that time frame.
- **Support shall be spread out over time** – Facilitating producers and investors to plan. This will create dependability of support and enable short processing procedures.
- **There shall be competition in the financial support system** – This assists in preparing the producers of plants for the market and increases efficiency of the allocation of resources from the fund.
- **Support to projects shall be subject to continuous reviews and evaluations** – Reviews and evaluations of support should be an on-going process to determine their impact and eliminate waste.

6.1.1 Source of funds – The Renewable Electricity Trust Fund is a proportion of the Rural Electrification Fund which consists of the following capital and assets:

- Monies appropriated by the National Assembly
- Revenue from surcharge on eligible consumer of electric power as may be determined by the NERC
- Donations, gifts and loans from all eligible local and international sources

6.1.2 The Rural Electrification Trust Fund and the Renewable Electricity Fund

The sources of funds for the Renewable Electricity Trust Fund is a proportion of the Rural Electrification Fund as may be determined by the Honorable Minister of Power and Steel in addition to other donations, gifts and loans dedicated to renewable electricity from local and international sources.

6.1.3 Management of the Renewable Electricity Trust Fund

The Renewable Electricity Trust Fund shall be managed under the Rural Electrification Fund.

6.1.4 Funding guidelines – Priorities shall be given to the following projects:

- “Low hanging fruits” projects requiring minimal subsidies to accomplish;
- Economic and financial viability of projects beyond the initial support;
- The demonstration effect of projects, especially in terms of rapid scale up;
- Investor commitment in terms of equity and independent loan financing.

Consistent with the EPSR Act and the Draft Rural Electrification Policy, eligible projects must be demand-driven with proven investor or community support.

6.2 Other sources of financing

The Federal Government shall continuously improve the climate for enhanced funding of renewable electricity through equity, debt financing, grants and micro finance.

6.2.1 Equity Investments – The Federal Government shall continuously review the conditions for effective private sector participation in renewable electricity investments with a view to improving the attractiveness of the sub-sector.

6.2.2 Debt Financing – A key component of the Federal Government’s policy is the improvement of the overall macro-economic and financial framework that ensures the availability and affordability of long-term funding for investors in re-

newable electricity. The Renewable Electricity Trust Fund and other measures shall assist in lowering the cost and improving access to funding for these projects.

6.2.3 Grants – The Federal Government is committed to mobilizing resources through international cooperation towards the development of renewable electricity for sustainable development in Nigeria. Grant financing from agencies of government and independent foundations shall also be promoted.

6.2.4: Micro credit for Renewable Electricity Systems – As a result of the high upfront cost of renewable electricity systems, the Federal Government shall provide resources through the Renewable Electricity Trust Fund for micro credit to buyers of standalone systems, especially in rural areas.

7.0 Policy and regulatory institutions

The Federal Government seeks to implement the Policy in close partnership with other stakeholders, particularly state agencies and the private sector. The following institutions will be responsible for the implementation of the Policy and Regulatory Guideline:

Policy 6: The Federal Government is committed to a multi-stakeholder partnership in the delivery of renewable electricity to meet national development goals.

7.1 The Federal Executive Council

The Federal Executive Council will:

- Provide the overall direction for the development of the electricity industry in Nigeria
- Ensure the general consistency of electric power policy with all other national policies and, specifically, with other aspects of energy policy;
- Facilitate the alignment of the policy and regulatory guideline on renewable electricity with Nigeria’s international obligations, especially on climate change; and
- Enact promptly the necessary laws, regulations and other measures required to support the policy guideline.

7.2 Federal Ministry of Power and Steel

The Federal Ministry of Power and Steel will have the overall responsibility for formulating electric power policy, including the policy on renewable electricity.

The specific functions of the Ministry will include:

- Proposing policy options and recommendations to the Federal Government concerning legislation, policy and investment on renewable electricity;
- Monitoring and evaluation of implementation and performance of the policy within governmental agencies and in the electricity market;
- Establishing, monitoring and evaluating the performance of renewable electricity policy on increasing the access to electricity in rural areas;
- Facilitating the close coordination of renewable electricity activities among agencies of the Federal Government;
- Ensuring that Nigeria’s renewable electricity policy is consistent with national obligations in regional and international organizations; and liaising with the National Assembly on matters relating to renewable electricity production and use.

7.3 Nigerian Electricity Regulatory Commission

The promotion of a growing market for renewable electricity requires an effective and independent regulatory agency. The Nigerian Electricity Regulatory Commission (NERC) is established by the EPSR Act 2005 to carry out the following functions:

- To create, promote, and preserve efficient industry and market structures, and to ensure the optimal utilization of resource for the provision of electricity services;
- To maximize access to electricity services, by promoting and facilitating consumer connections to distribution systems in both rural and urban areas;
- To ensure that an adequate supply of electricity is available to consumers;
- To ensure that the prices charged by licensees are fair to consumers and are sufficient to allow the licensees to finance their activities and to allow for reasonable earnings for efficient operation;
- To ensure the safety, security, reliability, and quality of service in the production and delivery of electricity to consumers;
- To ensure that regulation is fair and balanced for licensees, consumers, investors, and other stakeholders; and
- To present quarterly report to the President and National Assembly on its activities.

In discharging its regulatory functions, NERC shall in respect of renewable electricity seek to perform the following functions:

- Develop simplified licensing procedures for renewable energy investments;
- Develop a framework for power purchase agreement that ensures access to grid-based renewable electricity;

- Ensure preferential prices for renewable electricity to cover additional costs due to size, technology, location and the intermittent nature of the particular renewable electricity resource base;
- Lower licensing charges for renewable electricity licensees
- Develop and maintain quality standards for renewable electricity equipments and installations;
- Lessen the regulatory compliance and reporting burden;
- Ensure that appropriate Environmental Impact Assessments are conducted prior to award of licenses; and
- Report specifically on the status of the renewable electricity industry in its quarterly report to the President and the National Assembly.

7.4 Rural Electrification Agency

The Rural Electrification Agency was established by the EPSR Act 2005. The primary function of the REA includes the following:

- Extension of the main grid
- Development of isolated and mini-grid systems; and
- Renewable energy power generation.

In promoting renewable electric power supply, the REA shall carry out the following functions:

- Serve as an implementation agency for the Policy Guideline;
- Provide a coordinating point for renewable electricity activities among state and federal agencies; and
- Carry out such duties as may be assigned by the Honorable Minister.

7.5 Energy Commission of Nigeria

Energy Commission of Nigeria was established by Act 62 of 1979 as amended by Acts 32 of 1988 and 19 of 1989 and is charged with the responsibility of conducting strategic planning and coordination of national policies in the field of energy in all its ramifications. The major objectives of the Commission are to:

- Guarantee increased contribution of the energy sector to national income and the economy;
- Guarantee adequate, sustainable and optimal supply of energy at appropriate cost and in an environmentally responsible manner to the various sector of the economy by utilizing all viable energy resources in a optimal mix;
- Promote an efficient consumption pattern of energy resources;
- Promote indigenous acquisition of energy technology and managerial expertise as well as indigenous participation in the energy sector industries; and

- Promote increased investment and the development of energy sector industries with private sector participation.

In promoting renewable electricity, the Commission will among other things:

- Ensure that evolving policies conform and are harmonized with the overall thrust of the National Energy Policy;
- Ensure broad-based participation by key stakeholders in the energy sector; and
- Provide overall coordination of renewable electricity within the broader energy sector.

7.6 Other Agencies

The following agencies and organizations shall be consulted in the implementation of the policy:

- Other relevant Federal Government agencies;
- State Rural Electrification Boards and relevant State ministries;
- Organized private sector; and
- NGOs and CBOs.

8.0 International cooperation

International cooperation is crucial for the development of renewable electricity in Nigeria for several reasons: First, the country requires significant foreign direct investment to enable the emergence and growth of the renewable electricity industry. Second, international cooperation will trigger sources of concessionary funding through multilateral and bilateral development cooperation. Third, the concern over global warming resulting from increasing emissions of greenhouse gases creates a renewed interest in the potential of renewable energy in addressing these concerns. Fourth, international cooperation will enhance technological development and market deployment of renewable electricity technologies; and Fifth, international cooperation is essential for reforms and implementation activities through the adaptation of best practices.

Policy 7: Nigeria is committed to broadening international cooperation in expanding the role of renewable electricity in meeting national development goals as well as contributing to global efforts in addressing climate change.

This policy will be met through the following instruments:

8.1 Deepening domestic economic reforms

The Federal Government is committed to far reaching reforms of the domestic economy to among other things, encourage international investment in electricity services. These reforms include continuous improvements in legal, regulatory

and financial frameworks to ensure high returns for local and international investors.

8.2 Clean Development Mechanism

Nigeria is a signatory to the Kyoto Protocol and eligible to participate in the Clean Development Mechanism (CDM). The CDM provides opportunities for increased international investment in renewable energy and energy efficiency while it allows Nigeria contribute to reducing greenhouse gas emissions. The Federal Government will continuously develop national capacity to participate in the CDM.

8.3 International institutions

Nigeria supports the strengthening of renewable energy portfolios within existing international institutions such as the World Bank and UNDP. In partnership with other countries, the Nigeria will work towards the establishment of an International Renewable Energy Agency.

8.4 Knowledge-based networks

Nigeria seeks to expand the scope of national participation in collaborative R&D renewable electricity activities, including NGO movements and international organizations.

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The consultation process

In the process leading to the development of this draft policy guidelines, the following stakeholders were consulted:

- Federal Ministry of Power & Steel
- Federal Ministry of Water Resources
- UNIDO Regional Centre on Small Hydro
- Energy Commission of Nigeria
- Federal Ministry of Agriculture and Rural Development
- Federal Ministry of Environment
- Power Holding Company of Nigeria (Abeokuta, Calabar & Enugu)
- First Bank Plc
- Bank of Industry
- Energy Commission of Nigeria
- Nigerian Electricity Supply Company Limited, Jos
- Canadian International Development Agency
- World Bank
- United States Agency for International Development
- Presidential Implementation Committee on Climate Change

Status of renewable technologies -- characteristics and cost for hydro power only

Technology	Typical Characteristics	Typical Energy Costs (cent/kWh)	Cost Trends and Potential for Cost Reduction
Power Generation			
Large hydro	Plant size: 10 MW-18,000 MW	3-4	Stable
Small hydro	Plant size: 1-10 MW	4-7	Stable
Rural (off-grid) Energy			
Mini-hydro	Plant capacity: 100-1,000 kW	5-10	Stable
Micro-hydro	Plant capacity: 1-100 kW	7-20	Stable to moderately declining with efficiency improvements.
Pico-hydro	Plant capacity: 0.1-1 kW	20-40	Stable to moderately declining with efficiency improvements.

Annex 12

Act revising the legislation on renewable energy sources in the electricity sector of 21 July 2004

The *Bundestag* has adopted the following act:

Section 1

Act on granting priority to renewable energy sources (Renewable Energy Sources Act)

Article 1

Purpose

(1) The purpose of this act is to facilitate a sustainable development of energy supply, particularly for the sake of protecting our climate, nature and the environment, to reduce the costs of energy supply to the national economy, also by incorporating long-term external effects, to protect nature and the environment, to contribute to avoiding conflicts over fossil fuels and to promote the further development of technologies for the generation of electricity from renewable energy sources.

¹ Act implementing 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 (OJ L 283 p. 33), as last amended by the Acts of Accession of 16 April 2003 (OJ L 236 p. 586).

(2) This act is further intended to contribute to the increase in the percentage of renewable energy sources in power supply to at least 12.5 per cent by 2010 and to at least 20 per cent by 2020.

Article 2

Scope of application

(1) This act regulates

1. priority connections to the grid systems for general electricity supply of plants 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 and transmission of, and payment for, such electricity by the grid system operators and
3. the nation-wide equalisation scheme for the quantity of electricity purchased and paid for.

(2) This act shall not apply to plants of which over 25 per cent are owned by the Federal Republic of Germany or one of its *Länder* and which were commissioned prior to the 1 August 2004.

Article 3

Definitions

(1) Renewable energy sources shall mean hydropower including wave power, tidal power, salt gradient and flow energy, wind energy, solar radiation, geothermal energy, energy from biomass including biogas, landfill gas and sewage treatment plant gas as well as the biodegradable fraction of municipal and industrial waste.

(2) Plant shall mean any independent technical facility generating electricity from renewable energy sources or from mine gas. Several plants generating electricity from equivalent renewable energy sources or from mine gas, if constructed within the territorial application of this act and directly attached to building structures and commonly used installations technically required for operation shall be considered as one plant if Articles 6 to 12 do not provide for otherwise; inverters, access ways, grid connections as well as measuring, administrative and control facilities in particular are not technically required for such operation.

(3) Plant operator shall mean anyone who, notwithstanding the issue of ownership, uses the plant for the purpose of generating electricity from renewable energy sources or from mine gas.

(4) Commissioning shall mean the first time a plant is put into operation, following establishment of operational readiness or its modernisation, if modernisation costs amount to at least 50 per cent of the investment costs required to build a completely new plant including all building structures and installations technically required for its operation.

(5) Capacity of a plant shall mean the effective electrical capacity which the plant may technically produce without time restrictions during regular operation irrespective of shortterm deviations. When the relevant capacity is determined to calculate the fees, the standby capacity shall not be considered.

(6) Grid system shall mean all the interconnected facilities used for the transmission and distribution of electricity for general supply.

(7) Grid system operators shall mean the operators of all types of voltage systems for general electricity supply. The transmission system operators shall be the responsible grid system operators of high-voltage and extra-high-voltage systems which are used for the supraregional transmission of electricity to downstream systems.

Article 4

Obligation to purchase and transmit electricity

(1) Grid system operators shall immediately and as a priority connect plants generating electricity from renewable energy sources or from mine gas to their systems and guarantee priority purchase and transmission of all electricity from renewable energy sources or from mine gas supplied by such plants . After establishment of a register of installations pursuant to Article 15(3), such obligation for the purchase pursuant to the first sentence above shall apply only if the plant operator has submitted an application for entry into the register. Notwithstanding Article 12(1), plant operators and grid system operators may agree by contract to digress from the priority of purchase, if the plant can thus be better integrated into the grid system. When determining the charges for use of the grid, grid system operators may add any costs incurred in accordance with a contractual agreement pursuant to the third sentence above, provided that such costs are substantiated.

(2) The obligation under paragraph (1) first sentence above shall apply to the grid system operator that is most closely located to the plant site and is in possession of a grid technically suitable to receive electricity if there is no other grid with a technically and economically more suitable grid connection point. A grid shall be deemed to be technically suitable even if – notwithstanding the priority established under paragraph (1) first sentence above – feeding in the electricity requires the grid system operator to upgrade its grid at a reasonable economic expense ; in this case, the grid system operator shall upgrade its grid without undue delay, if so requested by a party interested in feeding in electricity. If the plant must be licensed in accordance with any other legal provisions, the obligation to upgrade the grid in accordance with the second sentence above shall only apply if the plant operator submits either a license, a partial license or a preliminary decision. The obligation to upgrade the grid shall apply to all technical facilities required for operating the grid and to all connecting installations which are owned by or passed into the ownership of the grid system operator.

(3) The obligation for priority connection to the grid system pursuant to paragraph (1) first sentence above shall apply even if the capacity of the grid system or the area serviced by the grid system operator is temporarily entirely taken up by electricity produced from renewable energy sources or mine gas, unless the plant does not have a technical facility for reducing the feed-in in the event of grid overload. The obligation pursuant to paragraph (1) first sentence above for priority purchase of the electricity produced in these plants shall apply only if the capacity of the grid system or the area serviced by the grid system operator is not already used up by electricity produced in other plants generating electricity from renewable energy sources or mine gas which were connected prior to these plants; the obligation to upgrade the grid system without undue delay pursuant to paragraph (2) second sentence above shall remain unaffected. In the event of non-purchase of such electricity, the grid

system operator shall, if so requested by the plant operator, provide proof of fulfilment of the conditions set out in the second sentence above in writing within four weeks and produce verifiable calculations.

(4) The relevant data on the grid system and on the electricity generation plants, which are required to test and verify the grid compatibility, shall be presented upon request within eight weeks where this is necessary for the grid system operator or the party interested in feeding in electricity to do their planning and to determine the technical suitability of the grid.

(5) The obligation for priority purchase and transmission of electricity in accordance with paragraph (1) first sentence above shall also be applied, if the plant is connected to the grid of a plant operator or a third party who is not a grid system operator within the meaning of Article 3(7) and if the electricity is offered to a grid system in accordance with Article 3(6) via a merely budgeted transit through this grid system.

(6) The upstream transmission system operator shall guarantee priority purchase and transmission of the quantity of energy purchased by the grid system operator in accordance with paragraph (1) or (5) above. If there is no domestic transmission system in the area serviced by the grid system operator entitled to sell electricity, the most closely located domestic transmission system operator shall purchase and transmit electricity in accordance with the first sentence above. The first sentence above shall apply *mutatis mutandis* to other grid system operators.

Article 5

Obligation to pay fees

(1) Pursuant to Articles 6 to 12, the grid system operators shall pay fees for electricity generated in plants exclusively using renewable energy sources or mine gas and purchased in accordance with Article 4(1) or (5). The obligation in accordance with the first sentence above shall only apply to plants with a capacity of over 500 kilowatts where the capacity is measured and recorded.

(2) Pursuant to Articles 6 to 12, the upstream transmission system operator shall pay for the quantity of energy which the grid system operator has purchased in accordance with Article 4(6) and paid for in accordance with paragraph (1) above. Any avoided charges for use of the grid system, calculated in accordance with good professional practice, shall be deducted from the fees. Article 4(6) second sentence shall apply *mutatis mutandis*.

Article 6

Fees paid for electricity produced from hydropower

(1) The fees paid for electricity generated in hydroelectric power plants with a capacity up to and including 5 megawatts shall be

1. at least 9.67 cents per kilowatt-hour for plants with a capacity up to and including 500 kilowatts and
2. at least 6.65 cents per kilowatt-hour for plants with a capacity up to and including 5 megawatts.

The first sentence above shall apply to run-of-river power plants with a capacity of up to 500 kilowatts licensed after 31 December 2007 only if they

1. were constructed in the spatial context of an existing barrage weir or dam which wholly or partly existed before or was newly built primarily for purposes other than the generation of electricity from hydropower or
 2. without complete weir coverage,
- and if this has demonstrably brought about a good ecological status or a substantial improvement in relation to the previous status.

(2) Fees for electricity generated in hydroelectric power plants with a capacity ranging from 5 megawatts up to and including 150 megawatts shall only be paid for in accordance with the provisions of this act if

1. the plant was modernised between 1 August 2004 and 31 December 2012,
2. the modernisation has resulted in an increase in the electrical energy of at least 15 per cent and if

3. such modernisation has demonstrably brought about a good ecological status or a substantial improvement in relation to the previous status.

Notwithstanding Article 3(4), hydroelectric power plants with a capacity of over 5 megawatts which meet the requirements of the first sentence above shall be deemed to have been newly commissioned. The first commissioning of a plant in the spatial context of an existing barrage weir or a dam shall also be deemed to represent modernisation within the meaning of the first sentence above. Fees shall only be paid for the additional electricity generated due to modernisation.

Such fees shall be

1. at least 7.67 cents per kilowatt-hour up to and including an increase in capacity of 500 kilowatts,

2. at least 6.65 cents per kilowatt-hour up to and including an increase in capacity of 10 megawatts,

3. at least 6.10 cents per kilowatt-hour up to and including an increase in capacity of 20 megawatts,

4. at least 4.56 cents per kilowatt-hour up to and including an increase in capacity of 50 megawatts and

5. at least 3.70 cents per kilowatt-hour if the increase in capacity exceeds 50 megawatts.

If the plant had a capacity of up to and including 5 megawatts prior to 1 August 2004, the

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quantity of electricity corresponding to this share of capacity shall in addition be paid for in accordance with paragraph (1) above.

(3) Presentation of an official authorisation under water law shall be deemed to be proof of achievement of a good ecological status or of a substantial improvement of the ecological status compared to the previous status in accordance with paragraph (1) second sentence and paragraph (2) first sentence No. 3 above.

(4) As of 1 January 2005, the minimum fees specified in paragraph (2) above shall be reduced for new plants commissioned after that date by one per cent annually of the relevant value for new plants commissioned in the previous year; the amounts payable shall be rounded to two decimals.

(5) Paragraphs (1) to (4) shall not apply to electricity produced from storage power stations.

Article 7

Fees paid for electricity produced from landfill gas, sewage treatment plant gas and mine gas

The fees paid for electricity from landfill gas, sewage treatment plant gas and mine gas shall be

1. at least 7.67 cents per kilowatt-hour up to and including a capacity of 500 kilowatts and

2. at least 6.65 cents per kilowatt-hour up to and including a capacity of 5 megawatts.

The fees paid for electricity from mine gas plants with a capacity of over 5 megawatts shall be 6.65 cents per kilowatt-hour.

Gas withdrawn from a gas network shall be deemed to be landfill gas, sewage treatment plant gas or mine gas if the thermal equivalent of the withdrawn quantity of such gas corresponds to the quantity of landfill gas, sewage treatment plant gas or mine gas fed into the gas network elsewhere within the territorial application of this act.

(2) The minimum fees in accordance with paragraph (1) above shall be increased by 2 cents per kilowatt-hour if the gas fed in pursuant to paragraph (1) third sentence above has been processed to reach the quality of natural gas or if the electricity is produced by fuel cells, gas turbines, steam engines, organic Rankine cycles, multi-fuel plants, especially Kalina cycles, or Stirling engines. For the purpose of adapting this provision to the state of the art, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is authorised to issue, in agreement with the Federal Ministry of Consumer Protection, Food and Agriculture and the Federal Ministry of Economics and Labour, an ordinance detailing

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further processes or techniques referred to in the first sentence above or exempting some of these processes or techniques from the scope of the first sentence above.

(3) As of 1 January 2005, the minimum fees specified in paragraph (1) above shall be reduced for new plants commissioned after that date by 1.5 per cent annually of the relevant value for new plants commissioned in the previous year; the amounts payable shall be rounded to two decimals.

Article 8

Fees paid for electricity produced from biomass

(1) The fees paid for electricity produced in plants with a capacity of up to and including 20 megawatts using exclusively biomass as defined in an ordinance adopted pursuant to paragraph (7) below shall be

1. at least 11.5 cents per kilowatt-hour up to and including a capacity of 150 kilowatts,
2. at least 9.9 cents per kilowatt-hour up to and including a capacity of 500 kilowatts,
3. at least 8.9 cents per kilowatt-hour up to and including a capacity of 5 megawatts and
4. at least 8.4 cents per kilowatt-hour for a capacity of over 5 megawatts.

Notwithstanding the first sentence above, the fee shall be 3.9 cents per kilowatt-hour if the plant also uses waste wood classified in categories A III and A IV set out in the Waste Wood Ordinance of 15 August 2002 (BGBl. I p. 3302). Gas withdrawn from the gas network shall be deemed to be biomass if the thermal equivalent of the withdrawn quantity of such gas corresponds to the quantity of biogas from biomass fed into the gas network elsewhere within the territorial application of this act.

(2) The minimum fees in accordance with paragraph (1) first sentence Nos. 1 and 2 above shall be increased by 6 cents per kilowatt-hour, and the minimum fees in accordance with paragraph (1) first sentence No. 3 above, by 4 cents per kilowatt-hour, if

1. all electricity was produced

- a) from plants or parts of plants which have originated from agricultural, silvicultural or horticultural operations or during landscaping activities and which have not been treated or modified in any way other than for harvesting, conservation or use in the biomass plant,
- b) from manure within the meaning of Regulation (EC) No 1774/2002 of the European Parliament and of the Council of 3 October 2002 laying down health rules concerning animal by-products not intended for human consumption (OJ L 273 p. 1), as amended by Commission Regulation (EC) No 808/2003 of 12 May 2003 (OJ L 117 p.1), or from vinasse
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generated at an agricultural distillery pursuant to Article 25 of the Spirits Monopoly Act as promulgated in the Federal Law Gazette Part III No. 612-7, last amended by Article 2 of the Act of 23 December 2003 (BGBl. I p. 2924), if that vinasse is not subject to any other recovery requirements pursuant to Article 25(2) No. 3 or paragraph (3) No. 3 of that Article of the Spirits Monopoly Act or

c) from both substance categories;

2. the biomass plant has been licensed exclusively for operation with substances pursuant to No. 1, or, where such a licence is not available, the plant operator provides proof, by keeping a record of the substances used with details and documentation of the type, quantity and origin of the substances used, that no other substances are used and if

3. there are no other biomass plants on the same site which produce electricity from other substances.

Notwithstanding the first sentence above, the minimum fees pursuant to paragraph (1) first sentence No. 3 shall be increased by 2.5 cents per kilowatt-hour if the electricity is produced by burning wood. The obligation to pay increased minimum fees in accordance with the first sentence above shall apply as of the date on which the requirements of the first sentence above are fulfilled. The right to payment of increased fees shall finally expire when the requirements of the first sentence above are no longer fulfilled.

(3) The minimum fees in accordance with paragraph (1) first sentence above shall be increased by 2 cents per kilowatt-hour in the case of electricity within the meaning of Article 3(4) of the Combined Heat and Power Generation Act and where proof can be furnished to the grid system operator in accordance with the *Arbeitsblatt FW 308 - Zertifizierung von KWK-Anlagen – Ermittlung des KWK-Stromes* of November 2002 (*Bundesanzeiger* No. 218a of 22 November 2002) published by the *Arbeitsgemeinschaft für Wärme und Heizkraftwirtschaft* –

AGFW e.V.. For series-produced combined heat and power stations with a capacity of up to and including 2 megawatts, suitable documentation available from the manufacturer, stating the thermal and electrical capacities and the electricity coefficient, may be furnished instead of proof in accordance with the first sentence above.

(4) The minimum fees in accordance with paragraph (1) first sentence Nos. 1 to 3 above shall be increased by another 2 cents per kilowatt-hour if the electricity was produced in plants using combined heat and power generation and if the biomass was converted by thermochemical gasification or dry fermentation and if the gas used for power generation was processed to reach the quality of natural gas or if the electricity is produced by fuel cells, gas turbines, steam engines, organic Rankine cycles, multi-fuel plants, especially Kalina cycles, or Stirling engines. For the purpose of adapting this provision to the state of the art, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is authorised to issue, in agreement with the Federal Ministry of Consumer Protection, Food and Agriculture and the Federal Ministry of Economics and Labour, an ordinance detailing further processes or techniques referred to in the first sentence above or exempting some of these processes or techniques from the scope of the first sentence above.

(5) As of 1 January 2005, the minimum fees specified in paragraph (1) above for new plants commissioned after that date shall be reduced by 1.5 per cent annually of the relevant value for new plants commissioned in the previous year; the amounts payable shall be rounded to two decimals.

(6) The obligation to pay fees shall not apply to electricity produced from plants commissioned after 31 December 2006 where, for the purposes of priming or supporting fuels, biomass within the meaning of the ordinance pursuant to paragraph (7) below or vegetable oil methyl ester is not used exclusively. For plants commissioned prior to 1 January 2007, the share to be attributed to the necessary priming and supporting fuels from fossil fuels shall continue to be deemed to be electricity from biomass after 31 December 2006.

(7) The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is authorised to issue, in agreement with the Federal Ministry of Consumer Protection, Food and Agriculture and the Federal Ministry of Economics and Labour and with the consent of the *Bundestag*, an ordinance with provisions as to which substances shall be deemed to be biomass within the meaning of this provision, which technical processes may be used to produce electricity and which environmental standards must be complied with.

Article 9

Fees paid for electricity produced from geothermal energy

(1) The fees paid for electricity generated in geothermal energy plants shall amount to

1. at least 15 cents per kilowatt-hour up to and including a capacity of 5 megawatts,
2. at least 14 cents per kilowatt-hour up to and including a capacity of 10 megawatts,
3. at least 8.95 cents per kilowatt-hour up to and including a capacity of 20 megawatts and
4. at least 7.16 cents per kilowatt-hour for a capacity of 20 megawatts and over.

(2) As of 1 January 2010, the minimum fees specified in paragraph (1) above for new plants commissioned after that date shall be reduced by one per cent annually of the relevant value for new plants commissioned in the previous year; the amounts payable shall be rounded to two decimals.

Article 10

Fees paid for electricity produced from wind energy

(1) The fees paid for electricity generated by wind-powered plants shall amount to at least 5.5 cents per kilowatt-hour except as provided in paragraph (3) below. For a period of five years starting from the date of commissioning, the fees shall be increased in accordance with the first sentence above by 3.2 cents per kilowatt-hour for electricity generated in plants which during this period of time achieve 150 per cent of the reference yield calculated for the reference plant as defined in the annex to this act. For any other plants, this period shall be extended by two months for each 0.75 per cent of the reference yield which their yield stays below 150 per cent of the reference yield.

(2) In derogation of paragraph (1) third sentence above, the period stated in paragraph (1) second sentence above shall be extended for electricity generated by plants which

1. replace or modernise existing plants in the same rural district (*Landkreis*), which were commissioned no later than 31 December 1995 and which

2. at least triple the installed capacity (repowering plants)

by two months for each 0.6 per cent of the reference yield which their yield stays below 150 per cent of the reference yield.

(3) The fees paid for electricity generated in offshore wind-power plants which are located at least three nautical miles seawards from the shoreline shall be at least 6.19 cents per kilowatt-hour.

This shoreline shall be the shoreline as represented on map No. 2920 “*Deutsche Nordseeküste und angrenzende Gewässer*”, 1994 edition, XII, and map No. 2921 “*Deutsche Ostseeküste und angrenzende Gewässer*”, 1994 edition, XII, issued by the Federal Maritime and Hydrographic Agency on a scale of 1: 375,000².

For electricity generated by plants commissioned no later than 31 December 2010, the fees to be paid in accordance with the first sentence shall be increased by 2.91 cents per kilowatt-hour for a period of twelve years starting from the date of commissioning. For electricity generated by plants located at least twelve nautical miles seawards and in a water depth of at least 20 metres, such period shall be extended by 0.5 months for each full nautical mile beyond 12 nautical miles and by 1.7 months for each additional full metre of water depth.

(4) In derogation of Article 5(1) the grid system operators shall not be obliged to pay for electricity generated by plants that have not proved prior to commissioning that they are able to achieve at least 60 per cent of the reference yield at the intended site. The plant operator shall furnish relevant proof of this to the grid system operator by submitting a technical expertise as defined in the annex to this act and commissioned to a technical expert in agreement with the grid system operator. If the grid system operator fails to give his consent within four weeks following the plant operator’s request, the Federal Environmental Agency shall name the technical expert after consulting the *Fördergesellschaft Windenergie e.V. (FGW)*. The plant operator and the grid system operator shall bear 50 per cent of the costs each.

(5) As of 1 January 2005, the minimum fees specified in paragraph (1) above, and as of 1 January 2008, the minimum fees specified in paragraph (3) above, for new plants commissioned after these dates shall be reduced by 2 per cent annually of the relevant value for new plants commissioned in the previous year; the amounts payable shall be rounded to two decimals.

(6) For the purpose of implementing paragraphs (1) to (4) above, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is authorised to issue an ordinance regulating the calculation and application of the reference yield.

(7) Paragraphs (1) to (6) above shall not apply to electricity generated by wind-powered plants whose construction was licensed after 1 January 2005 in an area of Germany’s exclusive economic zone or coastal waters which has been declared a protected area of nature and landscape in accordance with Article 38 in conjunction with Article 33(2) of the Federal Nature Conservation Act or in accordance with *Land* legislation. The first sentence above shall also apply to such areas which the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety has notified to the Commission of the European Communities as sites of Community importance or as European bird sanctuaries, until they have been declared protected areas.

Article 11

Fees paid for electricity produced from solar radiation

(1) The fees paid for electricity generated by plants using solar radiation shall amount to at least 45.7 cents per kilowatt-hour.

(2) If the plant is attached to or integrated on top of a building or noise protection wall, the fees shall be

1. at least 57.4 cents per kilowatt-hour up to and including a capacity of 30 kilowatts,

2. at least 54.6 cents per kilowatt-hour for a capacity 30 kilowatts and over, and

3. at least 54.0 cents per kilowatt-hour for a capacity of 100 kilowatts and over.

The minimum fees in accordance with the first sentence above shall each be increased by 5.0 cents per kilowatt-hour if the plant is not integrated into the roof or designed to be the roof of the building and if it forms a substantial part of the building. Buildings shall be understood as meaning roofed building structures that can be independently used and entered by humans and are suitable for or designed for the purpose of protecting humans, animals or objects.

(3) In cases where the installation is not attached to or integrated on top of a building structure used primarily for purposes other than the generation of electricity from solar radiation, the grid system operator shall only be obliged to pay fees if the installation was commissioned prior to 1 January 2015

1. within the scope of application of a local development plan within the meaning of Article 30 of the Federal Building Code or

2. on a site for which a procedure in accordance with Article 38 first sentence of the Federal Building Code was carried out.

(4) For electricity generated in an installation in accordance with paragraph (3) above erected within the scope of application of a local development plan drawn up or amended at least also for this purpose after 1 September 2003, the grid system operator shall only be obliged to pay fees if the installation is located on

1. plots of land which were already sealed when the decision on drawing up or amending the local development plan was adopted,

2. land converted from economic or military use or

3. on green areas designated for the construction of this installation in the local development plan and used as cropland at the point in time when the decision on drawing up or amending the local development plan was adopted.

(5) As of 1 January 2005, the minimum fees pursuant to paragraph (1) and paragraph (2) first sentence above paid for new plants commissioned after that date shall be reduced by five cent annually of the relevant value for new plants commissioned in the previous year; the amounts payable shall be rounded to two decimals. As of 1 January 2006, the relevant percentage pursuant to the first sentence above for plants specified in paragraph (1) above shall be increased to 6.5 per cent.

(6) For the purposes of calculating the amount of the fees in accordance with paragraph (2) above for the installation which was commissioned most recently, and in derogation of Article 3(2) second sentence, several photovoltaic installations attached to or on top of the same building and commissioned within six consecutive calendar months shall be deemed to be one installation even if they are not directly attached to building structures and installations that are commonly used and are technically necessary for operation.

Article 12

Common provisions for purchase, transmission and payment of fees

(1) Grid system operators shall not make the fulfilment of their obligations under Articles 4 and 5 conditional upon the conclusion of a contract.

(2) Where Articles 6 to 11 provide for different minimum fees depending on the plant's capacity, the amount of the fees shall be determined according to the share of the plant's capacity in relation to the threshold value to be applied. For the purpose of attribution to the threshold values referred to in Articles 6 to 9 and notwithstanding Article 3(5), capacity within the meaning of the first sentence above shall be understood as meaning the ratio of the total kilowatt-hours to be purchased in the calendar year in question pursuant to Article 4(1) or (5) to the total number of full hours for that calendar year less the number of full hours prior to commissioning and after final decommissioning of the plant.

(3) The minimum fees shall be paid from the date of commissioning for a period of 20 calendar years as well as for the year of commissioning. Notwithstanding the first sentence above, the minimum fees for electricity generated in plants in accordance with Article 6(1) shall be paid for a period of 30 years and for electricity generated in plants in accordance with Article 6(2) shall be paid for a period of 15 years, as well as for the year of commissioning, respectively.

(4) The set-off of payment claims by the plant operator in accordance with Article 5 against a

claim by the grid system operator shall only be permissible where the claim is undisputed or has been legally established. The ban on setting off such claims, laid down in Article 31 of the Ordinance on general conditions for the supply of electricity to tariff customers of 21 June 1979 (BGBl. I p. 684), as last amended by Article 1(1) No. 11 of the Ordinance of 5 April 2002 (BGBl. I p. 1250), shall not be applicable where a set-off against claims arising from this Act takes place.

(5) Upon request of the plant operator, the court responsible for the principal case may, at its own discretion and in consideration of the merits of the individual case, order the debtor of the claims referred to in Articles 4 and 5 by way of a preliminary injunction to connect the plant temporarily and purchase the electricity generated by it and make an advance payment of an equitable and fair amount of money. The preliminary injunction may be issued even if the preconditions set out in Articles 935 and 940 of the Code of Civil Procedure are not applicable.

(6) Electricity fed in from several plants may be billed via a shared metering device. In this case, the capacity of each individual plant shall be deemed relevant for calculating the amount of differentiated minimum fees. If electricity generated by several wind-powered plants to which different rates of minimum fees are applicable is billed via a common metering device, the quantities of electricity are attributed to the wind-powered plants in proportion to their reference yields.

(7) The minimum fees in accordance with Articles 6 to 11 shall not be deemed to include value-added tax.

Article 13

Grid costs

(1) The costs associated with connecting plants generating electricity from renewable energy sources or from mine gas to the technically and economically most suitable grid connection point and with installing the necessary measuring devices for recording the quantity of electrical energy transmitted and received shall be borne by the plant operator. In the case of one or several plants with a total capacity of up to 30 kilowatts located on a plot of land which already has a connection to the grid, this plot's grid connection point shall be deemed to be its most suitable connection point; if the grid system operator establishes a new connection point for the plants, he shall bear the resulting incremental cost. Implementation of this connection and the other installations required for the safety of the grid shall meet the plant operator's technical requirements in a given case as well as the provisions of Article 16 of the Energy Industry Act. The plant operator may have the connection and the installation and operation of measuring devices implemented either by the grid system operator or by a qualified third party.

(2) The costs associated with upgrading the grid in accordance with Article 4(2) that solely result from the need to accommodate new, reactivated, extended or otherwise modernised plants generating electricity from renewable energy sources or from mine gas for the purchase and transmission of electricity produced from renewable energy sources shall be borne by the grid system operator whose grid needs to be upgraded. He shall specify the required investment costs in detail. The grid system operator may add these costs when determining the charges for use of the grid.

Article 14

Nation-wide equalisation scheme

(1) The transmission system operators shall record the different volumes of and periods of generation of energy paid for in accordance with Article 5(2) as well as the fees paid, and provisionally equalise such differences amongst themselves without undue delay and settle the accounts with regard to the quantities of energy and the fees paid pursuant to paragraph (2) below.

(2) By 30 September of each year, the transmission system operators shall determine the quantity of energy purchased and paid for in the previous calendar year in accordance with Article 5 and provisionally equalised in accordance with paragraph (1) above, and the percentage share of this quantity in relation to the total quantity of energy delivered to final

consumers by the utility companies in the area served by the individual transmission system operator in the previous calendar year. If transmission system operators have purchased quantities of energy that are greater than this average share, they shall be entitled to sell energy to and receive fees from the other transmission system operators in accordance with Articles 6 to 12, until the other grid system operators have purchased a quantity of energy equal to the average share.

(3) Utility companies which deliver electricity to final consumers shall purchase and pay for that share of the electricity which their regular transmission system operator purchased pursuant to the provisions of paragraphs (1) and (2) above in accordance with a profile made available in due time and approximated to the actually purchased quantity of electricity pursuant to Article 4 in conjunction with Article 5. The first sentence above shall not apply to utility companies which, of the total quantity of electricity supplied by them, supply at least 50 per cent in accordance with the provisions of Articles 6 to 11. The share of the electricity to be purchased by a utility company in accordance with the first sentence above shall be placed in relation to the quantity of electricity delivered by the utility company concerned and shall be determined in such a way that each utility company will receive a relatively equal share. The compulsory quantity to be purchased (share) shall be calculated as the ratio of the total quantity of electricity paid for in accordance with Article 5(2) to the total quantity of electricity sold to final consumers. The fees as specified in the first sentence above shall be calculated as the expected average fees per kilowatt-hour paid by all grid system operators combined two quarters earlier in accordance with Article 5, less the charges for use of the grid avoided pursuant to Article 5(2) second sentence. The transmission system operators shall assert claims held against the utility companies in accordance with the first sentence above that arise from equalisation in accordance with paragraph (2) above by 31 October of the year following the feeding-in of electricity. Equalisation for the actual energy quantities purchased and the fees paid shall take place in monthly instalments before 30 September of the following year. Electricity purchased in accordance with the first sentence above may not be sold below the fees paid in accordance with the fifth sentence above if it is marketed as electricity produced from renewable energy sources or as comparable electricity.

(4) If a valid court decision in the principal case issued after a billing statement pursuant to paragraph (2) first sentence or paragraph (3) above leads to any changes regarding the quantities of energy to be billed or the payments of fees due, such changes shall be taken into account in the next billing statement.

(5) Monthly instalments shall be paid on the expected equalisation payments.

(6) Grid system operators that are not transmission system operators and utility companies shall without undue delay make available the data required to perform the calculations referred to in paragraphs (1) to (5) above and present their final accounts for the previous year by 30 April. Grid system operators and utility companies may request that final accounts pursuant to the first sentence above be certified by 30 June and final accounts pursuant to paragraph (2) above by 31 October by a chartered or certified accountant. Plant operators shall make the data required for the final accounts of the previous year available by 28 February of the following year.

(7) Final consumers who purchase electricity not from a utility company but from a third party are placed on an equal footing with utility companies as defined in paragraphs (2) and (3) above.

(8) The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is authorised, in agreement with the Federal Ministry of Economics and Labour, to issue an ordinance setting out the provisions on

1. the organisational and temporal framework for equalisation pursuant to paragraph (1) above, in particular with a view to determining the responsible party and ensuring optimum and equal forecasting options with regard to the quantities of energy to be equalised and burden trends;
2. determining or identifying a uniform profile in accordance with paragraph (3) above, on the question of when, including the run-up period, and how such a profile and the underlying data are made available and on
3. the specification of the data required in accordance with paragraph (6) above and how

such data are to be made available.

Article 15

Transparency

(1) Grid system operators and utility companies, and any alliances formed by them, which deliver electricity to final consumers shall be entitled to give notice to any third parties of the difference between the fees paid in accordance with Article 14(3) first and fifth sentences and their own average purchase costs per kilowatt-hour or the average purchase costs per kilowatt-hour incurred by the utility companies connected to their grid system during the last closed financial year (differential cost), where they provide proof of this by presenting a certificate by a chartered or certified accountant which will be published. When giving notice of the differential cost, the number of kilowatt-hours of electricity produced from renewable energy sources and from mine gas on which the calculation pursuant to the first sentence above is based must also be stated. Costs that may be added to the charges for use of the grid shall not be shown separately.

(2) The grid system operators shall publish the data necessary to determine the energy quantities and the fee payments to be equalised in accordance with Article 14 by 30 September of the following year. Such data must show whether the grid system operators have purchased the energy quantities from a downstream grid and whether they have sold the electricity to final consumers, grid system operators or utility companies delivering electricity to final consumers or used it themselves. The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is authorised, in agreement with the Federal Ministry of Consumer Protection, Food and Agriculture and the Federal Ministry of Economics and Labour, to regulate the details of the publication requirements in an ordinance.

(3) For the purpose of increasing transparency and simplifying the nation-wide equalisation mechanism, a public register may be established through an ordinance pursuant to the third sentence below in which installations for the generation of electricity from renewable energy sources and mine gas are to be registered (register of installations). Registration may be subject to a fee as defined in an ordinance pursuant to the third sentence below. The Federal

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Ministry for the Environment, Nature Conservation and Nuclear Safety is authorised to issue an ordinance that entrusts a subordinate federal authority or a legal person under private law with the keeping of the register of installations and to determine any details regarding the register, the information to be registered, the registration procedure, data protection requirements, publication of data and the charging and level of fees.

Article 16

Special equalisation scheme

(1) The Federal Office of Economics and Export Control shall upon request limit for a delivery point the share of the quantity of electricity in accordance with Article 14(3) first sentence which is delivered by the utility companies to the final consumers which are manufacturing enterprises or rail operators, thus reducing the costs arising for such enterprises from delivering the electricity quantities, in so far as this is compatible with the purposes of the act and the limit imposed is still compatible with the interest of the electricity users as a whole.

(2) In the case of manufacturing enterprises, a limit shall be set only where they furnish proof that and to what extent, in the last closed financial year,

1. the electricity purchased from a utility company and consumed by the enterprises themselves exceeded 10 gigawatt-hours at a certain delivery point,
 2. the ratio of the enterprise's electricity costs to its gross value added as defined by the Federal Statistical Office (*Fachserie 4*, series 4.3 of June 2003³), exceeded 15 per cent,
 3. an individual share of the electricity in accordance with Article 14(3) first sentence has been delivered to and consumed by the company, and that
 4. the enterprise has paid for that share a differential cost within the meaning of Article 15(1).
- Upon request of the enterprise, the utility companies shall without undue delay furnish proof to the Federal Office of Economics and Export Control of the share of electricity

delivered and the differential cost including the data used to calculate the differential cost by submitting a certificate by a chartered or certified accountant for the last closed financial year; the costs for such a certificate shall be borne by the end-consumer enterprise. Proof of the requirements pursuant to the first sentence No. 3 above and of the differential cost incurred shall be furnished by submission of the certificate; proof of the other requirements

3 Official information: This publication can be ordered from *Statistisches Bundesamt*, D-65180 Wiesbaden.

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pursuant to the first sentence above shall be furnished by producing the contracts on electricity supply and the electricity bills for the last closed financial year and the audit by a chartered or certified accountant based on the financial statement of the last closed financial year. Delivery points shall be deemed to mean all spatially connected electrical installations of the enterprise at a given industrial site which is connected to the grid of the grid system operator by one or several withdrawal points. The first to fourth sentences above shall apply to the independent parts of the enterprise *mutatis mutandis*.

(3) Paragraph (2) first sentence Nos. 1, 3 and 4 above and the second to fourth sentences of that paragraph shall apply *mutatis mutandis* to railway operators, with the following provisions:

1. Account will be taken only of those quantities of electricity which are directly used for rail transport operations.

2. The delivery point shall be understood as meaning the total of the consumption points in the company's rail transport operations.

(4) To limit the share of the electricity forwarded a certain percentage shall, in accordance with paragraph (2) first sentence No. 1 or paragraph (3) No. 2 above, be fixed for the delivery point in question. The percentage shall be fixed in such a way that the differential cost for the share of the quantity of electricity forwarded, if calculated on the basis of the expected fees to be paid in accordance with Article 14(3) first and fourth sentences, amounts to 0.05 cents per kilowatt-hour. In the case of enterprises for which the purchased quantity of electricity referred to in paragraph (2) first sentence No. 1 above is below 100 gigawatt-hours or for which the ratio of electricity costs to gross value added is below 20 per cent, and in the case of railway operators, this provision shall only apply to the total quantity of electricity exceeding 10 per cent of the electricity purchased and consumed at that delivery point in the last closed financial year in accordance with paragraph (2) first sentence No. 3 or paragraph (3) No. 2 above; provision of proof that these values have been exceeded shall be subject, *mutatis mutandis*, to paragraph (2) third sentence above. If the enterprise is serviced by several utility companies when furnishing proof in accordance with paragraph (2) second sentence above, the limit under the first sentence above shall be shared by the utility companies in according to the individual quantities which they deliver to this final consumer at the delivery point; the enterprise shall make available to the utility companies the necessary information for the calculation of the individual shares. If the preferential treatment granted to all railway operators on the basis of this provision exceeded a total of 20 million euro, the percentage to be applied to railway operators shall, notwithstanding the provisions of the second sentence above, be uniformly defined not to exceed that total.

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(5) Where the product of the share in accordance with Article 14(3) fourth sentence and the average fee in accordance with Article 14(3) fifth sentence would rise by more than 10 per cent as a result of the application of this rule in relation to the data for the year preceding the decision for those final consumers who do not benefit from this rule, the percentage in accordance with paragraph (4) second sentence above shall be calculated and, notwithstanding the provisions of paragraph (4) fifth sentence above, shall be fixed in the same way for all enterprises whose applications pursuant to paragraph (6) below comply with the requirements under paragraph (2) or (3) above, so as to ensure that this value is not exceeded. The quantity of electricity already favoured by a decision valid beyond 31 December 2004 pursuant to Article 21(6) shall be taken into consideration.

(6) The application including the complete application documents in accordance with paragraph (2) or (3) above and the information about the utility company and the regular transmission system operator shall be submitted by 30 June of the present year (preclusive

period). The decision shall be binding to the applicant, the utility company and the regular transmission system operator. It shall take effect on 1 January of the following year for the duration of one year. The effects caused by a prior decision shall not be taken into account in calculating the ratio of electricity costs to gross value added pursuant to paragraph (2) first sentence No. 2 and paragraph (4) third sentence above.

(7) In the performance of the duties assigned to it by this act, the Federal Office of Economics and Export Control shall be supervised by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

(8) The claim by the regular transmission system operator responsible for the end-consumer applicant arising from Article 14(3) first sentence against the utility company concerned shall be limited in accordance with a decision by the Federal Office of Economics and Export Control in accordance with paragraphs (1) to (6) above; the transmission system operators shall take such limits into consideration as required by Article 14(2).

(9) Application of paragraphs (1) to (8) above shall be the subject of the progress report in accordance with Article 20.

Article 17

Guarantee of origin

(1) Plant operators may request a person or organisation entitled to act as an environmental verifier or environmental verification organisation in the field of electricity production in accordance with the Environmental Audit Act to issue a guarantee of origin for electricity produced from renewable energy sources.

(2) Such guarantee of origin must specify

1. the energy sources from which the electricity was produced, listed according to type and major components, including the information to what extent the electricity was produced from renewable energy sources within the meaning 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 (OJ L 283 p. 33), as last amended by the Acts of Accession of 16 April 2003 (OJ L 236 p. 586),
2. where biomass is used, whether it is exclusively biomass within the meaning of the ordinance pursuant to Article 8(7),
3. the name and address of the plant operator,
4. the quantity of electricity generated in the plant, the period in which it was produced and to what extent it was paid for in accordance with Articles 5 to 12 and
5. the place, the capacity and the date of commissioning of the plant.

(3) Such guarantees of origin shall only be used if the information required in paragraph (2) above is complete.

Article 18

Prohibition of multiple sale

(1) Electricity produced from renewable energy sources and from mine gas or landfill gas, sewage treatment gas, mine gas or gas from biomass fed into a gas network may not be sold or otherwise transferred more than once.

(2) Plant operators who received payment in accordance with Articles 5 to 12 shall not forward any guarantees for electricity produced from renewable energy sources and from mine gas. If a plant operator forwards such a guarantee for electricity produced from renewable energy sources or from mine gas, the electricity shall not be paid for in accordance with Articles 5 to 12.

Article 19

Clearing house

The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety may establish a clearing house to settle any disputes and issues of application arising under this act, which may involve the parties concerned.

Article 20

Progress report

(1) The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety shall, in agreement with the Federal Ministry of Consumer Protection, Food and Agriculture and the Federal Ministry of Economics and Labour, report to the *Bundestag* by 31 December 2007 and subsequently every four years thereafter about the state of affairs with regard to the introduction to the market of plants generating electricity from renewable energy sources and from mine gas and about the development of electricity production costs in such plants and shall if necessary propose an adjustment of the amount of the fees to be paid in accordance with Articles 6 to 12 and of the degressive rates, in line with the development of technology and markets for plants commissioned after that date. The progress report shall also assess the storage technologies and the ecological effects of the use of renewable energy sources on nature and landscapes.

(2) For the purpose of spot checks of electricity production costs within the meaning of paragraph (1) above and in order to ensure the functioning of the equalisation scheme pursuant to Article 14, plant operators whose plants were commissioned on or after 1 August 2004 and who have received payment of fees in accordance with Articles 5 to 12, and grid system operators shall, upon request, provide the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and its authorised representatives with truthful and accurate information about all facts that may be relevant for the assessment of electricity production costs and of equalised energy quantities and payments of fees in accordance with Article 14. If the plant operators and grid system operators are traders within the meaning of the Commercial Code, the account books shall in addition be disclosed upon request where they may give information about facts that may be relevant for assessing the electricity production costs and the equalised energy quantities and payments of fees. The principles of data protection shall be observed.

Article 21

Transitional provisions

(1) In the case of electricity generated in plants commissioned prior to 31 July, the provisions on fee rates, duration of the claim to payment and the availability of measuring data previously in force shall apply under the following conditions:

1. In the case of electricity generated in hydroelectric power plants, the provision previously in force shall only apply up to and including a capacity of 5 megawatts;
2. Electricity generated in run-of-river power plants that had a capacity of up to and including 5 megawatts prior to 1 August 2004 shall be subject to the provisions of Article 6 if the plant was modernised and such modernisation has demonstrably brought about a good ecological status or a substantial improvement of the previous status. Article 6(3) shall apply *mutatis mutandis*. Notwithstanding Article 3(4), such plants shall be deemed to have been newly commissioned once the modernisation work has been completed;
3. Electricity generated in biomass plants commissioned after 31 December 2003 as of 1 August 2004 shall be subject to the fees under Article 8 of this act;
4. In the case of electricity generated in biomass plants commissioned prior to 1 January 2004, the minimum fees paid shall be increased as specified in Article 8(2) of this act;
5. Electricity generated in biomass plants commissioned prior to 1. August 2004 shall be subject to Article 8(6) second sentence of this act;
6. In the case of electricity generated in wind-powered plants commissioned after 31 March 2000, the annex to Article 10(1) of this act shall be applied to calculate the reference yield;
7. Electricity from plants generating electricity from solar radiation and commissioned prior to 1 January 2004 shall be subject to the provisions of Article 8 of the Renewable Energy Sources Act of 29 March 2000 (BGBl. I p. 305), last amended by the Act of 22 December 2003 (BGBl. I p. 3074) as promulgated on 22 July 2003;
8. Electricity from plants generating electricity from solar radiation and commissioned after 31 December 2003 shall be subject to the provisions of Article 8 of the Renewable Energy Sources Act of 29 March 2000 (BGBl. I p. 305), last amended by the Act of 22 December 2003

(BGBl. I p. 3074) as promulgated on 1 January 2004, with Articles 8(3) and 8(4) applying only to electricity generated in plants commissioned after 30 June 2004.

(2) Article 4(1) second sentence shall only apply to electricity from plants commissioned within three months of the notice of establishment of a register of installations in the Federal Gazette (*Bundesanzeiger*). Electricity generated in any other plants shall be subject to the provisions of Article 4(1) second sentence for a period of three months after receipt of a separate written notice requesting registration from the grid system operator, specifying contact details of the register and stating the legal consequences of failure to submit an application.

(3) Electricity from biomass plants that also use waste wood classified in categories A III and A IV set out in the Waste Wood Ordinance of 15 August 2002 (BGBl. I p. 3302) and were commissioned prior to 30 June 2006 shall be subject to the provisions of Article 8(1) first sentence, instead of Article 8(1) second sentence.

(4) Article 10(4) shall only apply to plants commissioned after 31 July 2005.

(5) Until the ordinance referred to in Article 8(7) has been issued, if reference is made to such ordinance under this act, the Biomass Ordinance of 21 June 2001 (BGBl. I p. 1234) shall apply in its place. Article 8(6) shall remain unaffected. (6) Notwithstanding Article 16(6) first sentence, the application for 2004 shall be submitted by 31 August. Applications to limit the share of the energy quantity under the special equalisation scheme in accordance with the Renewable Energy Sources Act of 29 March 2000 (BGBl. I p. 305), last amended by the Act of 22 December 2003 (BGBl. I p. 3074), which are submitted prior to 1 August 2004 shall be processed and decided upon in accordance with the provisions in force, if they have not been submitted by companies, for which the share of the electricity has already been limited beyond 1 August 2004. Decisions by the Federal Office of Economics and Export Control to limit the share of electricity in application of the provisions specified in the second sentence above, of which the applicant was informed prior to 1 August 2004, shall be extended until 31 December 2004 notwithstanding the fourth sentence above. Decisions within the meaning of the third sentence above that are valid beyond 31 December 2004, shall become ineffective on 1 January 2005 if the company submits an application in accordance with Article 16(1) of this act prior to 1 September 2004 and if such application has not been finally rejected.

Annex (to Article 10(1) and (4))

1. The reference plant shall be a wind-powered plant of a specific type for which a yield at the level of the reference yield can be calculated on the basis of the P-V curve (power-wind speed curve) measured by an authorised institution at the reference site.
2. The reference yield shall be the quantity of electricity which each specific type of windpowered plant, including its hub height, would, if calculated on the basis of measured P-V curves, yield during five years of operation if it were built at the reference site. The reference yield shall be calculated in accordance with the generally accepted rules of technology; the generally accepted rules of technology shall be assumed to have been complied with if the procedures, foundations and calculating methods set out in the *Technische Richtlinien für Windenergieanlagen* (Technical guidelines for wind-powered plants), Part 5, published by the *Fördergesellschaft Windenergie e.V. (FGW)*⁴, in the version applicable at the time of calculating the reference yield, have been used.
3. The type of a wind-powered plant shall be defined by the type designation, the swept rotor area, the rated power output and the hub height as specified by the manufacturer.
4. The reference site shall be a site determined by means of a Rayleigh distribution with a mean annual wind speed of 5.5 metres per second at a height of 30 metres above ground level, a logarithmic wind shear profile and a roughness length of 0.1 metres.
5. The P-V curve shall be the correlation between wind speed and power output (irrespective of hub height) determined for each type of wind-powered plant. P-V curves shall be determined in accordance with the generally accepted rules of technology; the generally accepted rules of technology shall be assumed to have been complied with if the procedures, foundations and calculating methods set out in defined in the *Technische Richtlinien für Windenergieanlagen* (Technical guidelines for wind-powered plants), Part 2, published by the *Fördergesellschaft Windenergie e.V. (FGW)*⁵, in the version applicable at the time of calculating

the P-V curves, have been used. P-V curves which were determined by means of a comparable procedure prior to 1 January 2000 can also be used instead of P-V curves as specified in the second sentence above, provided that no construction of wind-powered plants of the type to which these curves apply is commenced within the territorial scope of this act after 31 December 2001.

6. Technical expertises in accordance with Article 10(4) to prove that the plant may at least achieve 60 per cent of the reference yield at the intended site shall include a physical site analysis and use site-specific wind measurements or extrapolatable operational data from a neighbouring wind park and relate them to data from existing wind data bases to obtain a long-term prognostic assessment. Calculation of the energy yield shall be based on the flow speed to which the wind-powered plant is exposed.

7. For the purposes of this act, measurements of the P-V curves in accordance with No. 5 above and calculations of the reference yields of different types of wind-powered plants at reference sites in accordance with No. 2 above, and the determination of possible energy yields at the intended site in accordance with No. 6 may be carried out by institutions which

⁴ Official information: This publication can be ordered from *Windenergie e.V.*, Stresemannplatz 4, D-24103 Kiel.

⁵ Official information: This publication can be ordered from *Windenergie e.V.*, Stresemannplatz 4, D-24103 Kiel.

are properly accredited in accordance with the *Allgemeine Anforderungen an die Kompetenz von Prüf- und Kalibrierlaboratorien* (General requirements for the competence of testing and calibration laboratories) (DIN EN ISO/IEC 17025) of April 2000⁶ by an accreditation body which is officially recognised or has been evaluated with the involvement of public authorities.

Section 2

Amendment of the Environmental Audit Act

The following German sentence shall be added to Article 15(9) of the Environmental Audit Act as promulgated on 4 September 2002 (BGBl. I p. 3490):

“Paragraph (6) above shall apply *mutatis mutandis* to the activities of environmental verifiers or environmental verification organisations on the grounds of any other legal provisions.”

Section 3

Amendment of the Combined Heat and Power Generation Act

In accordance with Article 4(3) second sentence of the Combined Heat and Power Generation Act of 19 March 2002 (BGBl. I p. 1092), as last amended by Article 136 of the Ordinance of 25 November 2003 (BGBl. I p. 2304), the following sentence will be added:

“The usual price shall in each case be understood as meaning the average price of baseload electricity at the EEX electricity exchange in *Leipzig* in the previous quarter.”

Section 4

Entry into Force, Expiry

This act shall enter into force on the day following its promulgation. At the same time, the Renewable Energy Sources Act of 29 March 2000 (BGBl. I p. 305), last amended by the Act of 22 December 2003 (BGBl. I p. 3074), shall expire.

Annex 13

The main features of the (German) Act on granting priority to renewable energy sources (Renewable Energy Sources Act) of 21 July 2004

The Renewable Energy Sources Act of 21 July 2004

We cannot imagine life without an energy supply. To secure our own well-being and protect the natural foundation of life for future generations, a sustainable energy system must exhibit a number of characteristics: it must be climate friendly, resource saving, low risk, and socially sound; it must offer energy supply security, cost effectiveness and be acceptable to society. Renewable energies can meet these demands to a particularly high degree. In Germany, the Act on Granting Priority to Renewable Energy Sources (Renewable Energy Sources Act - EEG) is an effective and efficient instrument for increasing the use of renewable energies on the road towards a sustainable energy system.

How the EEG works

The core elements of the EEG are:

- the priority connection of installations for the generation of electricity from renewable energies and from mine gas to the general electricity supply grids
- the priority purchase and transmission of this electricity and
- a consistent fee for this electricity paid by the grid operators, generally for a 20-year period, for commissioned installations. This payment is geared around the costs
- the nationwide equalization of the electricity purchased and the corresponding fees paid.

The fee paid for the electricity depends on the energy source and the size of the installation. The rate also depends on the date of commissioning; the later an installation begins operation, the lower the tariff (degression).

The EEG ensures the increased use of environmentally friendly renewable energies, not through subsidies but through apportioning the costs. The grid operators and energy supply companies can pass on the difference in costs for electricity from renewable energies to the final consumer.

The effects and advantages of the EEG

The EEG is very effective. From 2000 to 2004 the volume of electricity generated from renewable energies supported by this Act increased from around 13.6 TWh to 34.9 TWh.

During the same period the Act resulted in the volume of electricity generated from wind and biomass more than doubling, and brought about a nine-fold increase in

electricity generated from photovoltaic systems in Germany. A total of around 70 million tonnes of carbon dioxide were already saved in 2004, with 33 millions tonnes of these being attributable directly to the EEG.

The EEG is very efficient, because the costs for renewable energies hinge largely on investment security. If an investment is high risk, banks demand high interest rates for the loan and the investors demand high-risk mark-ups. Since the structure of the EEG guarantees a particularly high investment security, credit interest rates and risk mark-ups are low compared with other instruments. Furthermore, the lowering of fees as laid down in the EEG for installations commissioned at a later date ensures further price reductions.

This degeneration has already had an impact: The costs for installing photovoltaic systems dropped by 25% between 1999 and 2004; for wind turbines, costs were reduced by 30% between 1993 and 2003.

The degeneration also leads to installations being constructed as quickly as possible, in order to obtain a high payment level. This rules out the possibility of operators waiting until installations become cheaper. The EEG ensures very high-quality installations as – because payment is made per kilowatt-hour produced - there is great incentive for operators to run their installations efficiently and with as little interruption of operation as possible, at least during the usual 20-year payment period. Operators therefore demand high standards from the installation manufacturers.

The amendment to the EEG

In order to continue advancing the positive development of renewable energies in all sectors, and to adapt the EEG to this development, the Act was amended on 1 August 2004. The particular aims of the amended EEG are to increase the share of renewable energies in the total electricity supply to at least 12.5% by the year 2010 and to at least 20% by the year 2020, and the further development of technologies for the generation of electricity from renewable energies, thus contributing to the reduction in costs.

The EEG amendment also assists the implementation of the September 2001 European Union directive on the promotion of renewable energies in the electricity sector, ensuring that all the renewable energies defined in the directive fall under the scope of the EEG.

However payments are only compulsory if the electricity is generated exclusively from renewable energies.

The EEG regulations in detail

Obligation to purchase and transmit Grid operators must give immediate priority to connecting installations for the generation of electricity from renewable energies or from mine gas to their grid and to purchasing and transmitting all the electricity available from these installations.

Installation operators bear the costs of connection. Grid operators take on the necessary costs for upgrading the grid. They can take these costs into consideration in their charges for use of the grid. The grid upgrading costs must be declared to

ensure the necessary transparency. This obligation aims, in the interests of consumer protection, to prevent costs being shifted unfairly to the electricity purchaser. The amendment creates incentives for operators of installations for the utilisation of renewable energies to agree on generation management with the grid operators in their mutual interest. This is especially relevant for grid upgrading and stand-by energy. Such an agreement can take the at times fluctuating electricity supply into consideration in a way that enables the costs for grid upgrades, reserves and stand-by energy to be minimised. To facilitate better integration of renewable energies into the electricity system, the amendment to the EEG contains an obligation to measure and record the capacity for installations with a capacity of 500 kilowatts or more.

Fees

The EEG prescribes fixed tariffs which grid operators must pay for the feed-in of electricity from hydropower, landfill gas, sewage treatment and mine gas, biomass, geothermal and wind energy and solar radiation. The minimum payments, which are differentiated according to energy source, vary depending on the size of the installation, and, in the case of wind energy, on the local wind conditions on site and whether it is generated on land or offshore. For 2005, fees under the new EEG range from 5.39 euro cents/kWh for electricity from wind energy (basic payment) and 6.65 euro cents / kWh for electricity from hydropower, to 59.53 euro cents / kWh for solar electricity from small façade systems. In principle the guaranteed payment period is 20 calendar years, for hydropower 15 or 30 years. The fee valid for the year of commissioning remains constant for this period, with the exception of wind energy. For wind-generated electricity, special regulations are laid down which deviate from the fixed fees for other energy sources. Electricity from wind energy is paid for with two different rates: for an onshore wind park, a starting fee is paid for electricity produced for the first five years after commissioning, thereafter a lower basic fee. The period of higher starting fees can be extended according to the wind conditions at the site, the total payment period is still restricted to 20 years. For offshore wind parks, starting fees are paid for 12 years. This period is extended for installations located further from the coastline and erected in deeper water. In order to take account of technological developments and their economic efficiency, and to optimise the use of cost reduction potential, the tariffs for most branches are degressive in structure. The degression annually lowers the payment rates in all branches for new installations (except small hydropower plants). For installed plants, the fee valid for the respective year of commissioning applies for the entire payment period. For geothermal and offshore wind installations, degression takes effect later.

Compared with the previous EEG, the amendment provides for a more differentiated fee structure, taking account of efficiency aspects. In particular, the payment conditions for geothermal energy and biomass were improved. If existing large hydropower plants are modernised or expanded, the additional electricity generated is included in the fee. The degressive structure was strengthened and further developed.

For the area of bioenergy, in addition to the minimum fees laid down, the new version of the EEG provides for additional fees (bonuses), if the electricity is exclusively produced from self-regenerating raw materials, combined heat-power, or if the biomass was converted using innovative technologies (e.g. thermal chemical

gasification, fuel cells, gas turbines, organic Rankine systems, Kalena cycle plants or Stirling engines). The bonuses can be used cumulatively.

The payment rate for wind energy on land was lowered in the amendment. Wind parks which could not achieve at least 60% of the reference yield at the planned location can no longer claim payment under the 2004 law. For coastal sites in particular there are new incentives for so-called repowering - the replacement of old, smaller installations with modern, more efficient ones. The higher starting fees for offshore wind parks will now be paid for installations commissioned before 2010 (previously 2006).

Equalisation scheme

Due to wind conditions, considerably more electricity is generated from wind power in northern Germany than in the south. To prevent regional inequality in the treatment of electricity consumers, the transmission grid operators must undertake a nationwide equalisation of the electricity volumes purchased under the EEG and the corresponding fees.

Supplementary regulations

The new EEG gives greater consideration to aspects of nature conservation, in particular with regard to the use of hydropower, photovoltaics and wind energy. To improve transparency, the new EEG introduces an obligation on the part of the grid operators to publish energy volumes and payment figures. To improve information on the increased use of renewable energies even further in future, an installation register will be created.

Since July 2003 there has been an equalisation regulation for electricity intensive companies in the producing sector. This regulation is expanded in the amended EEG. Electricity intensive companies in the producing sector and environmentally friendly railways can be included under the equalisation regulation if their electricity consumption is higher than 10 Gigawatt (previously 100 gigawatts) and the ratio of electricity costs to gross value added exceeds 15% (previously 20%). The amendment to the EEG limits the total relief volume. This limits the extra costs incurred by non-privileged companies due to the equalisation scheme. The electricity volumes which are distributed among the non-privileged electricity consumers are limited to a maximum of 10% above the share calculated pursuant to the EEG.

In accordance with the provisions laid down by the European Union, the new EEG allows authorised bodies to issue guarantee of origin for electricity from renewable energies. This promotes consumer information and protection. The prohibition of multiple sales makes plain that the positive environmental characteristics of electricity from renewable energies may not be sold multiple times. The ban includes relevant guarantees and the simultaneous payment for and passing on of guarantees for the same electricity.

To clarify issues of application and to solve basic disputes, a clearing house can be established.

The Federal Environment Ministry must make regular reports to the German Bundestag on the impact of the EEG. This aims i.a. at enabling payment structures to be adapted where necessary to the actual circumstances. This reporting obligation

was expanded to include the impacts of the EEG on environmental protection and nature conservation.

Table I: payment rates for new installations commission in 2004 (from 1.8.) for Hydro Power only).

Branch	Installation capacity	Fee paid (ct/kWh)	Capacity range	Degression ¹	Comments
hydro power	up to 5 MW	9.67 6.65	up to 500 kW from 500 kW to 5 MW	-	as of 2008 certain site restrictions
<i>hydro power</i>	from 5 MW to 150 MW	7.67 6.65 6.10 4.56 3.70	up to 500 kW from 500 kW to 10 MW from 10 MW to 20 MW from 20 MW to 50 MW from 50 MW to 150 MW	1%	only in case of modernisation and only payment for the capacity increase

¹ The rate of payment also depends on the year of commissioning. For newly commissioned installations, the rate is reduced annually (degression) not for micro hydro power plants. This provides a continual incentive to improve efficiency and reduce costs.