

# GLOBAL RENEWABLE ENERGY Guide

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- Uruguay

2013



**GLOBAL**  
**RENEWABLE**  
**ENERGY**  
**Guide**  
**2013**

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## FOREWORD

ÇAKMAK PUBLISHING is pleased to publish this 2013 edition of the *Global Renewable Energy Guide*, which has been published annually since 2010.

*Global Renewable Energy Guide* is designed to provide an overview of applicable legislation and available incentives to renewable energy companies worldwide. It will aid investors, lenders and government agencies in understanding and comparing relevant provisions from different jurisdictions.

The publication maintains a Q&A format with a common questionnaire set by the editors and answered by leading practitioners from 32 jurisdictions around the world.

The following are notable observations from this 2013 edition of the *Guide* regarding the regulatory regime and available incentives for renewable energies in the 32 jurisdictions explored:

- Most of the countries, 21 out of 32, have an independent regulatory authority to supervise and regulate the electricity sector, including renewable energies, while the remaining 11 countries opt for regulation of the electricity sector by a Ministry.
- Most of the countries, 21 out of 32, provide for tax advantages for the generation of electricity from certain or all types of renewable energy sources.
- Purchase and/or minimum price guarantees (feed-in tariffs) or similar support mechanisms are available in most of the countries, 28 out of 32.
- In 19 out of the 32 countries, priority for connection to and/or usage of the transmission and/or distribution system is provided for renewable energy companies.
- 10 countries provide for additional incentives for the domestic manufacturing of equipment and materials.

We gratefully acknowledge the contributions of all the authors of this publication, who have been selected for their recognized expertise in the field of renewable energy law, and thank them for making this Guide a reality.

Av. Mesut Çakmak  
Av. Dr. Çağdaş Evrim Ergün  
Editors  
Ankara, June 2013



# Andorra

Antoni López Montanya

ADVOCATS LOPEZ, JIMENEZ &  
RIBERAYGUA

## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

Andorra is a very small country, with only 464 Km<sup>2</sup>, and 78,115 inhabitants as of 2011. The generation of electricity is a state monopoly (by decision of the “Consell General”, the Andorran parliament, dated 14 January 1988) and is run by the public company “Forces Elèctriques d’Andorra” (“FEDA”).

There are only two electrical power stations in Andorra. The main one is hydroelectric (with a nominal power of 47 MWA). The other power station is located at the waste treatment centre, and is powered by the incineration of waste (with a nominal power of 5 MWA, partly for use within the plant itself).

As mentioned before, both power stations are run by FEDA. These power stations are run on renewable energies (the waste being considered as biomass), so the whole electricity generation of Andorra comes from renewable energies. However the local production only covers a small fraction of the demand (15.7% in 2011). The remainder is imported from Spain and France by FEDA.

No other company can generate electricity under Andorran law, except for small scale generating facilities (under 500 kW) powered on renewable energy. This exception has been created by the Law 85/2010, of the

18<sup>th</sup> of November, and is intended, basically, to allow the installation of solar panels on buildings.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

There is no legal definition of renewable energy.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

A general regulation of the renewable energy sector is currently under study.

There is a specific regulation regarding solar panels for domestic use:

- Decree of 24<sup>th</sup> October 2012, modified by another Decree of 13<sup>th</sup> March 2013, which approves the regulation for the generation of electric energy in photovoltaic facilities.
- Decree of 24<sup>th</sup> October 2012, modified by another Decree of 13<sup>th</sup> March 2013, which establishes the conditions of purchase of the electric energy generated by photovoltaic facilities.

### 4. What are the principal regulatory bodies in the renewable energy sector?

There is no regulatory body in the renewable energy sector in Andorra.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

No, there are no such tax advantages.

**6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

As said, the generation of electricity is a state monopoly. There is just a legal exception for small scale generating facilities (under 500 kW) powered on renewable energies, and there is a legal guarantee of purchase for the electricity generated by these facilities.

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

Yes, according to the Law 85/2010, of the 18<sup>th</sup> November, the Government shall establish a minimum price for the electricity generated by small scale generating facilities (under 500 kW) powered on renewable energies.

**8. Do the renewable energy based power plants have priority for connection to the grid?**

The small scale generating facilities (under 500 kW) powered on renewable energies are allowed to be permanently connected on the low-voltage supply grid (240/360 v) and, thus, they have in fact priority.

**9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

No, there is no such incentive applicable for domestic manufacturing.

**10. What are the other incentives available to renewable energy generation companies?**

There are no other incentives available.

## STATISTICS

**11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

According to the annual report of FEDA (2013), the figures for 2012 are as follows:

Generation (hydroelectricity)	:	76 GWh
Generation (biomass)	:	12 GWh
<b>Total local generation</b>	:	<b>88 GWh</b>
Importation	:	505 GWh
<b>Total consumption</b>	:	<b>593 GWh</b>

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

Austria's energy supply is based on a balanced mixture of energy sources in which the role of renewable energy is significant. Renewable energy supplies around a quarter of Austria's demand for energy - the second highest level of renewable energy use in the European Union. Austria's commitment to non-nuclear energy as well as hydro and biomass reserves and Austria's traditional environmentally friendly policy have encouraged substantial exploitation levels of renewable energy resources.

Austria's most important energy related environmental issue is its commitment to the Kyoto protocol. The federal parliament ratified the protocol in March 2002. Under the EU's burden-sharing system and the EU Directives, Austria put into national legislation the promotion of renewable energy. The necessary framework for obtaining carbon credits has been adopted in domestic legislation. To meet the common target of the EU, - by 2020 renewable energy should account for 20% of the EU's final energy consumption - Austria needs to increase its production and use of renewable energy in electricity, heating and cooling and transport until 2020 up to 34%.

In the sector of electricity generating renewable energy sources, in Austria traditionally large hydropower plays a significant role. Also the use of biomass and wastes is particularly high. With a share of 70% of electricity production from renewable energy sources ("RES-Electricity") of gross electricity consumption in 1997, Austria was the leading EU Member State for many years. More recently, a continual increase in the total energy need has taken place, and a drop of the share of RES-Electricity has been noticed. Recently, Austria enhanced the promotion of renewable energy amending the Austrian Green Electricity Act ("Ökostromgesetz") by implementing financial incentives for generating more electricity on the basis of renewable energy.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

The Austrian Green Electricity Act covers the promotion of power generation on the basis of renewable energy sources. The Austrian Green Electricity Act of 2002 was amended in 2006 and 2008 resulting in a revised promotional framework for new renewable energy sources (RES) power plants. On 1 July 2012, a substantially amended new Green Electricity Act 2012 entered into force. Summarizing, the Green Electricity Act 2012 (i) defines new targets as to the expansion of RES-Electricity to be achieved by 2020, (ii) provides for the reduction of "waiting periods" for the promotion of wind energy, photovoltaic and water power, (iii) implements a substantial increase (approx. 90%) of the annual subsidy volume for the promotion of RES-Electricity generated by new RES-Electricity facilities ("Unterstützungsvolumen"), (iv) contains measures directed at the degression of feed-in tariffs, (v) establishes administrative

improvements for RES-Electricity, and (vi) involves changes in the financing support scheme. Whereas pre-established statutory provisions still apply to the existing plants, the current Austrian Green Electricity Act applies, in general, to the following power plants:

- Power generating facilities which are run on the basis of wind power, photovoltaic, solid and liquid biomass and biogas, geothermal energy, certain small scale hydro plants (“Ökostromanlagen”). Specific hybrid and mixed combustion plants (“Hybridanlagen und Mischfeueranlagen”).
- Subsidies for investments in “small scale hydro power plants” (maximum capacity of up to 10 MW).
- Subsidies for investments in “medium scale hydro power plants” (maximum capacity exceeding 10 MW up to and including 20 MW).
- Subsidies for investments in power plants on the basis of waste lye.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

The promotion of RES-Electricity in Austria is regulated in the Green Electricity Act.

Green electricity facilities that are recognized as such under the Green Electricity Act enjoy a guaranteed off-take of their generation by the Green Electricity Settlement Centre (“Ökostromabwicklungsstelle”) at supported feed-in tariffs (usually set annually by the Federal Minister of Economics, Family and Youth in agreement with the Federal Minister of Agriculture and Forestry, Environment and Water Management as well as the Federal

Minister of Labor, Social Affairs and Consumer Protection). Facilities eligible for official recognition are: (i) facilities run exclusively on basis of RES; and (ii) hybrid and mixed combustion plants.

Feed-in tariffs are guaranteed for green electricity technologies for a period of 13 to 15 years - depending on the RES-Electricity technology - starting from the date on which the Green Electricity Settlement Center off-takes RES-electricity. After this period, the Green Electricity Settlement Centre is obliged to offer the operator of RES-Electricity facilities to off-take the electricity for an indefinite period of time at the prevailing market prices, less the cost of balancing energy.

### 4. What are the principal regulatory bodies in the renewable energy sector?

As a matter of statutory obligation, the Green Electricity Settlement Centre (“Abwicklungsstelle für Ökostrom AG (OemAG)” or “Ökostromabwicklungsstelle”) purchases and allocates the electricity generated in officially recognized RES-Electricity facilities at the guaranteed feed-in tariffs to the electricity traders supplying end costumers according to valid market rules. Whereas until very recently, the electricity traders were obliged to purchase the electricity allocated to them at annually adjusted settlement prices under the previous Green Electricity Act (which were normally above the market prices), under the newly enacted Green Electricity Act 2012 the electricity is essentially allocated to the traders at current listed market prices for electricity. Besides, the traders have to pay the price for the certificate of origin (“Herkunftsnachweis”) for RES-Electricity set by the E-Control, the competent regulator, on an annual basis.

The investment allowances (investment subsidies) granted to the construction (or

renovating) entity of certain hydro power plants, CHP-plants and plants on basis of waste lye under the Green Electricity Act amount to a certain percentage of the investment costs and are processed by the Settlement Centre of Investment Allowances (“Abwicklungsstelle für Investitionszuschüsse”).

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

For the generation of Electricity on basis of RES no tax incentives are available. There are only tax rebates for transport and heat biofuels. These biofuels are exempted from fossil transport fuel taxes.

- If biofuels are used pure, no mineral oil tax applies. In general, no VAT reduction applies.
- Biodiesel with a minimum blend of 4.4 Vol.% mineral oil tax reduction by 2.8 ct/l fuel-mix - no VAT reduction (remains at 20%).
- Bioethanol with a minimum blend of 4.4 Vol.% mineral oil tax reduction by 3.3 ct/l fuel-mix - no VAT reduction (remains at 20%).

### 6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

According to the Green Electricity Act, the purchase of the RES-Electricity is guaranteed via mandatory contracting with the Green Electricity Settlement Center at standardized feed-in tariffs.

Initially, power generating facilities using RES have to be approved as green electricity facilities by the Governor of the Federal Province where the facility is located. Upon this approval, electricity generated in such facilities benefits from a purchase guarantee from the Green Electricity Settlement Center at pre-determined prices (guaranteed feed-in tariffs) for a certain period of time. The feed-in tariffs are set by the Federal Minister of Economics in agreement with the Federal Minister of Agriculture and Forestry, Environment and Water Management as well as the Federal Minister of Labor, Social Affairs and Consumer Protection on an annual basis (or more often).

In addition, the Green Electricity Act provides for the possibility of investment allowances for certain hydro power facilities and new combined heat and power plants using fossil fuels.

### 7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

According to the Green Electricity Act, feed-in tariffs are guaranteed for a period between 13 and 15 years depending on the RES-Electricity technology. After expiry of the mandatory contracting period, the Green Electricity Settlement Centre is obliged to offer to the operator of the RES-Electricity facility to purchase the electricity at the market prices then prevailing less the costs of balancing energy.

The revenues emanating from the sale of green energy to the electricity traders provide a part of the funds financing the support for RES-Electricity. The main financing of the green electricity support system is, however, provided by the Green Energy Allowance (“Ökostrompauschale”) and the

Green Energy Promotion Contribution (“Ökostromförderbeitrag”), both eventually borne by the customers. As a general rule, under the Austrian system, customers bear the main financial burden.<sup>1</sup>

#### **8. Do the renewable energy based power plants have priority for connection to the grid?**

Neither the Federal Electricity Act (“EiWOG”) nor the Green Electricity Act contains a provision explicitly stipulating priority access for green electricity producers.

In principle, the relationship between the distribution grid operator, electricity producers and end customers within a distribution grid system is subject to the principle of mandatory grid connection. As a rule, the operator of a grid system has to grant access to the grid system on the basis of approved terms and conditions and certain tariffs. As a result, customers are entitled to claim access to the grid system for the delivery of electricity under electricity supply contracts concluded with any electricity producer, electricity trader or other electricity undertaking. The operators of electricity undertakings (including RES-Electricity producers) may also claim access to the grid system on behalf of their customers.

Rather, the Federal Electricity Act provides that grid system operators may not deny to RES-Electricity producers access to the grid system if such RES-Electricity, being offered at fair conditions, could not be otherwise on the supply market. In practice, however, this provision is considered non-enforceable and is not applied.

In practice, the access of RES-Electricity to the grid is guaranteed by the Green Electricity Settlement Centre, which is obliged to

purchase the RES-Electricity for the feed-in tariffs, according to the Green Electricity Act.

#### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

The Federal Provinces in Austria may enact individual incentive mechanisms within their legislative competence. Such investment incentives usually relate to the construction of photovoltaic and biogas facilities operated on a private level.

#### **10. What are the other incentives available to renewable energy generation companies?**

Next to the Green Electricity Act, the Federal Act on the Climate and Energy Fund (“Klima- und Energiefondsgesetz”) forms the legal basis for subsidies from the Austrian climate and energy fund granted for projects pertaining to energy efficiency and sustainability.

However, apart from the support programme under the Green Electricity Act, there are no major investment incentives for renewable energy producers.

### STATISTICS

#### **11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

According to the statistics of the Austrian energy market regulator (Energie-Control GmbH) in the year 2010 power plants in Austria generated **71,073 GWh** of thermal and electrical power in total.

<sup>1</sup> ErläutRV 1223 BlgNR 24. GP 13; in detail §§ 44 - 49 ÖSG 2012.

- Power generated from Renewable Energy Sources: **48,183 GWh = ca 68%**
  - Hydropower (10% of Small Scale Hydro Power): **41,572 GWh = 58.5%**
  - Solid Biomass: **2,556 GWh = 3.6%**
  - Liquid Biomass: **30 GWh = 0.0%**
  - Landfill Gas and Sewage Gas: **70 GWh = 0.1%**
  - Biogas: **579 GWh = 0.8%**
  - Other biogene Power: **1,281 GWh = 1.8%**
  - Wind Power: **2,063 GWh = 2,9%**
- Photovoltaic: **31 GWh = 0.0%**
- Geothermal Energy: **1 GWh = 0.0%**
- Power generated from Fossil Fuels / Derivatives: **22,829 GWh= ca 32%**
  - Hard Coal: **4,914 GWh = 6.9%**
  - Brown Coal: **0 GWh = 0.0%**
  - Coal Derivatives: **1,785 GWh = 2.5%**
  - Mineral Oil Derivatives: **1,272 GWh= 1.8%**
  - Natural Gas: **14,307 GWh = 20.1%**
  - Other Fuels: **551 GWh = 0.8%**

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# Belarus

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

In the Republic of Belarus imported energy comprises more than 80 % of the energy consumption. Therefore one of the strategic objectives of economic development of Belarus is the decrease of energy imports. The solution to this problem is possible through the enhancement of alternative energy sources and local fuels. Development and effective use of renewable energy sources (hereinafter – the RES) has a fundamental importance since in the short term they represent the real potential of local fuel and energy resources that can be efficiently involved in the economy and favor the rise of the energy security of the country.

This is clearly demonstrated at the legislative level. There are a number of normative acts declaring the general trends of the energy policy of the republic.

*The Directive of the President of the Republic of Belarus of 14.06.2007 No. 3 "Economy and thrift - the main factors of economic security of the state"* among the most important criteria for heads performance evaluation in state organizations assigns rates of resources economy, increase of local, alternative and renewable energy sources use.

*The Concept of Energy Security of the Republic of Belarus* defines the goals and objectives for energy security, the main directions of strengthening energy security, including at the

expense of increasing non-conventional and renewable energy sources.

It is also necessary to mention the five-years programmes related to renewable energy sources use development.

According to *the Republican Energy Saving Program for 2011 - 2015 years* the strategic activity goal in the field of energy saving for the period until 2015 is to reduce the energy intensity of gross domestic product of Belarus and to increase the share of local energy resources. Goal achievement will be attained, inter alia, due to the increase of secondary energy resources, alternative and renewable energy sources in the fuel balance of the republic.

*The National Program of Local and Renewable Energy Sources Development* sets the main purpose - growth of value of own energy sources use and development of new tendencies in the sphere of energetic.

Some programs have the dedicated orientation.

Hydropower. *The State program for construction in 2011 - 2015 hydroelectric power in the Republic of Belarus* is approved. Its main purpose is to increase the energy security of the Republic of Belarus by substitution of imported energy resources for renewable energy sources, reducing the environmental burden caused by the activities of the fuel and energy complex. The program provides for construction and reconstruction of the 33 hydroelectric power plants with total capacity of 102,1 MW. The total fuel economy during the commissioning of new hydropower capacity will be 120 thousand tons of equivalent fuel.

Biogas. As a result of *the Program of construction of energy sources, working on biogas for 2010 - 2015 years* implementation 38 biogas plants aggregate electric capacity of 37,9 MW will be put into operation in the country. This

makes it possible to produce annually about 314 million kWh of electricity and to replace imported natural gas in the volume of more than 105 thousand tons of equivalent fuel.

Therefore at present in Belarus energy policy follows the way of own resources developing including renewable energy use.

## 2. What is the definition and coverage of the renewable energy under the relevant legislation?

According to the Charter of the International Agency for Renewable Energy, ratified by the Republic of Belarus, the term “renewable energy” includes all forms of energy, constantly generated from renewable sources, which, inter alia, include:

- bio-energy;
- geothermal energy;
- hydroelectric power;
- ocean energy, including without limitation, tidal energy, wave energy and ocean thermal energy;
- solar energy;
- wind energy.

In Belarusian law the definitions “non-conventional sources of energy” and “renewable energy sources” are synonymous.

In accordance with *the Law of the Republic of Belarus dated 15 July 1998 No. 190- Z, “On Energy Saving”* non-traditional and renewable energy sources include electrical and thermal energy sources using the energy of rivers, reservoirs and industrial runoff, energy of wind, solar, natural gas reducible, biomass (including wood waste), waste water and solid waste.

According to the Law of the Republic of Belarus dated 27 December 2010 No. 204-Z, “On renewable energy sources” the renewable energy sources (hereinafter - the RES) are the energy of the sun, wind, geothermal, natural water flows, wood fuel and other biomass, biogas and also other energy sources that do not belong to a non-renewable.

This list of RES is not exhaustive. It may be added by any source of energy referred to non-renewable.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

Until recently, the legal regulation of RES in the Republic of Belarus has been fragmentary. The situation has changed after the adoption of *the Law of the Republic of Belarus dated 27 December 2010 No. 204-Z, “On renewable energy sources”* (hereinafter - the Law “On RES”). The Law “On RES” came into force - on 5 July 2011. It is the main document that creates a legal base for renewable energy sources development in Belarus.

The Law “On RES” contains basic definitions in the sphere of RES use, a list of the state authorities responsible for RES use control. The Law also defines rights and responsibilities of producers of this type of energy. It establishes the order for setting prices and rates for renewable energy sources and rates for power produced from such sources. The issues of scientific, technological and innovation support are adjusted. A number of economic incentives for producers of the energy are provided. In particular, in the area of pricing it is stipulated the use of multiplying ratios to the tariffs for energy acquired by the government supplying organizations. These tariffs are set by *the Regulation of the Ministry of Economy of the Republic of Belarus of 30.06.2011 No. 100.*

*Regulation of the Council of Ministers dated 30 December 2008 No.2044 and Regulation of the State Committee for Standardization dated 27 February 2009 No.10* regulate the question of the labeling imported goods as equipment used for producing energy from non-conventional and renewable energy sources, as well as the procedure for issuing such a conclusion.

Certain provisions of the renewable energy regulation are contained in the *Law of the Republic of Belarus dated 15 July 1998 No. 190-3 "On Energy Saving"*, in particular the definition of the non-traditional and renewable energy sources, the use of renewable energy as one of the principles of public administration in the field of energy efficiency.

There are also numerous mentioned above *state and republican programs*, including energy saving programs, which determine the need for use of energy produced from renewable energy sources.

Issues related to the order of keeping of the State Cadastre of Renewable Energy Sources are regulated by *the Regulation of the Council of Ministers of 24.06.2011 No. 836*, and *the Regulation of the Ministry of Natural Resources and Environmental Protection of 29.08.2011 No. 29*. Also, the Regulation of the Council of Ministers No. 836 establishes the procedure for confirming the origin of energy produced from RES.

Tax benefits regarding energy generation from renewable energy sources are set by the *Tax Code of the Republic of Belarus*.

#### **4. What are the principal regulatory bodies in the renewable energy sector?**

Considering the use of renewable energy is a complex area, the state regulation is executed by various state bodies on all levels of authorities.

*The President of the Republic of Belarus* determines the unified state policy in sphere of RES use.

*The Council of Ministers* ensures the implementation of the unified state policy. In particular its functions are:

- to establish the procedure for confirming the origin of the energy produced from RES;
- to establish the procedure for conducting the State Cadastre of Renewable Energy Sources and its data use;
- to coordinate the state bodies work;
- to approve state programs.

*The State Committee on Standardization of the Republic of Belarus* is engaged in realization of state policy and executes:

- monitoring for implementation of state, regional and sectoral programs;
- carrying out works on the development of RES use;
- information, scientific and technical support for production plants for use renewable energy (further – Plants);
- development of state programs in the field of renewable energy sources.

*The Ministry of Energy of the Republic of Belarus* takes measures to ensure a guaranteed connection of RES energy plants to public networks and the acquisition of energy derived from plants. Also the Ministry participates in the development of state programs in the field of renewable energy sources.

*The Ministry of Natural Resources and Environment of the Republic of Belarus* is responsible for

development and maintenance of the State Cadastre of Renewable Energy Sources, issues certificates confirming the origin of energy, and participates in the development of state programs in the field of renewable energy sources. In addition the Ministry identifies places suitable for plants location and informs local executive and administrative bodies on the results.

*The Ministry of Economy* sets tariffs for energy produced from RES and provides protection of producers of such energy from unfair competition. Also the Ministry participates in the development of state programs in the field of renewable energy sources.

*The State Committee on Science and Technology of the Republic of Belarus* jointly with other state agencies executes and finances research in the sphere of RES use. The Committee is responsible for development of state science and technology programs, its review and approval. Also the State Committee for Science and Technology coordinates the development and innovation issues and plans the training of scientific personnel of higher qualification.

*Local executive and administrative bodies* participate in the development of state programs in the field of renewable energy sources and within their competence make decisions on:

- the possibility of inclusion of sites of potential plants location in the State Cadastre of Renewable Energy Sources;
- removal and assignment of land plots, as well as the conversion of land to other categories and types for location of Plants.

When developing a scheme of complex territorial organization of administrative units, general plans, town planning projects the executive and administrative bodies have to take into account the information contained in the State Cadastre of Renewable Energy Sources.

The State Cadastre of Renewable Energy Sources is a systematic corpus of data:

- on the facilities and (or) sites for potential and actual placement of plants for RES use;
- on energy in the context of the administrative-territorial units of the Republic of Belarus;
- of background documents;
- on power of the existing plants using RES;
- on issue of electrical and (or) heat energy produced from RES;
- on reduce of emissions of pollutants and greenhouse gases into the atmosphere.

Today the State Cadastre of Renewable Energy Sources database is accessible online by the link: <http://194.158.214.59:8080/apex/f?p=105:2:3579894126661661::NO>.

- The Cadastre is permanently renewed and updated.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

According to the Tax Code of the Republic of Belarus there are a number of tax advantages available to renewable energy generation companies:

- 1) Installation of RES use shall be exempt from value added tax when import into the territory of the Republic of Belarus (article 96).

The basis for exemption is the conclusion on labeling imported goods as the installations of RES use. Such certificate is issued by the State Committee on Standardization of the Republic of Belarus.

- 2) Land plots occupied by objects and installations on the RES use as well as land plots granted for the period of construction (reconstruction) of objects and installations on the RES use are exempt from land tax (article 194).
- 3) Reducing ratios are provided for ecological tax in the following cases (article 207):
- for emissions of pollutants into the air, formed during the combustion of biogas and biofuel to generate heat and (or) electric power – 0,5;
  - for wastewater discharge into water objects made by heat power stations using non-conventional and renewable energy sources – 0,2.

**6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

According to article 16 of the Law “On RES” producers of energy from RES are guaranteed the right to purchase all proposed energy produced from RES and delivered to the public power grids by state supplying organizations, as well as its payment on the tariffs in accordance with the law.

However in order to conclude a contract on the purchase of energy between the producer of energy from the RES and state supply organization it is necessary to obtain a certificate to confirm the origin of energy. Certificate confirming the origin of energy is valid for ten years from the date of its issuance. The certificate is issued by the Ministry of Natural Resources and Environment of the Republic of Belarus on the base of application, design documentation of the object, project ecological passport and acts of the equipment tests.

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

The Law “On RES” (article 20) provides the procedure for establishing the price of fuel wood, other biomass, biogas used as RES and the tariffs for energy produced from RES.

The state supplying organizations guarantee a minimum price for the electricity generated from renewable energy sources. Tariffs for this energy are established at the level of electricity tariffs for industrial and similar consumers with connected power up to 750 kVA with the use of multiplying ratios. Value of multiplying ratios depends on the type of RES and term of plant use.

The multiplying ratios are used within the first ten years from the date of commissioning of the plant. The next ten years of the operation of plants stimulating ratios are applied.

The amounts of the ratios for electricity produced from the RES are:

	Multiplying ratios	Stimulating ratios
Wind energy	1,3	0,85
Natural water flows	1,3	0,85
Wood fuel and other biomass	1,3	0,85
Biogas	1,3	0,85
Sun	3	0,85
Geothermal and other energy sources not belonging to non-renewable	1,3	0,85

Similar terms of multiplying and stimulating ratios are used during commissioning of additional plants as well as increase of plant power by the reconstruction (for the volumes of increased power).

Acquisition costs of energy produced from RES on the mentioned rates are included in the cost price of electricity generation by the state supplying organizations.

### **8. Do the renewable energy based power plants have priority for connection to the grid?**

Article 21 of the Law “On RES” states that persons who carry out activities on the use of renewable energy are provided with a guaranteed connection of plants to public power grids.

Plants connection to public power grids is made on the basis of the agreement on the purchase of energy between a producer of energy from RES and state supply organization.

According to the Law “On RES” the essential provisions of such agreement are:

- the rights and obligations of the parties;
- settlement procedures;
- the planned volume of energy sales;
- responsibility for the quality of services provided in the frameworks of the agreement.

At the same time state supply organization:

- provides an unimpeded and non-discriminatory identification of the nearest point of public power grids and guaranteed connection of the plants to the point;
- incurs costs related to the modernization of public power grids for the provision of technical connectivity of plant to the nearest point of public power grids;
- sets in agreements on the purchase of energy equal conditions of connection to public power grids for all producers of energy from RES;

- has the right to refuse to connect if the plant does not meet the conditions required for connection to public power grids. The state supply organization shall coordinate the decision to refuse connection with the Ministry of Energy of the Republic of Belarus.

The costs of plant direct connection to the nearest point of public power grids are defrayed by the producers of energy from RES.

### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

There are no special incentives in Belarus for local manufacturing of equipment or materials used in the construction of renewable energy based power plants.

### **10. What are the other incentives available to renewable energy generation companies?**

Currently there are no other benefits provided to renewable energy generation companies.

## STATISTICS

### **11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

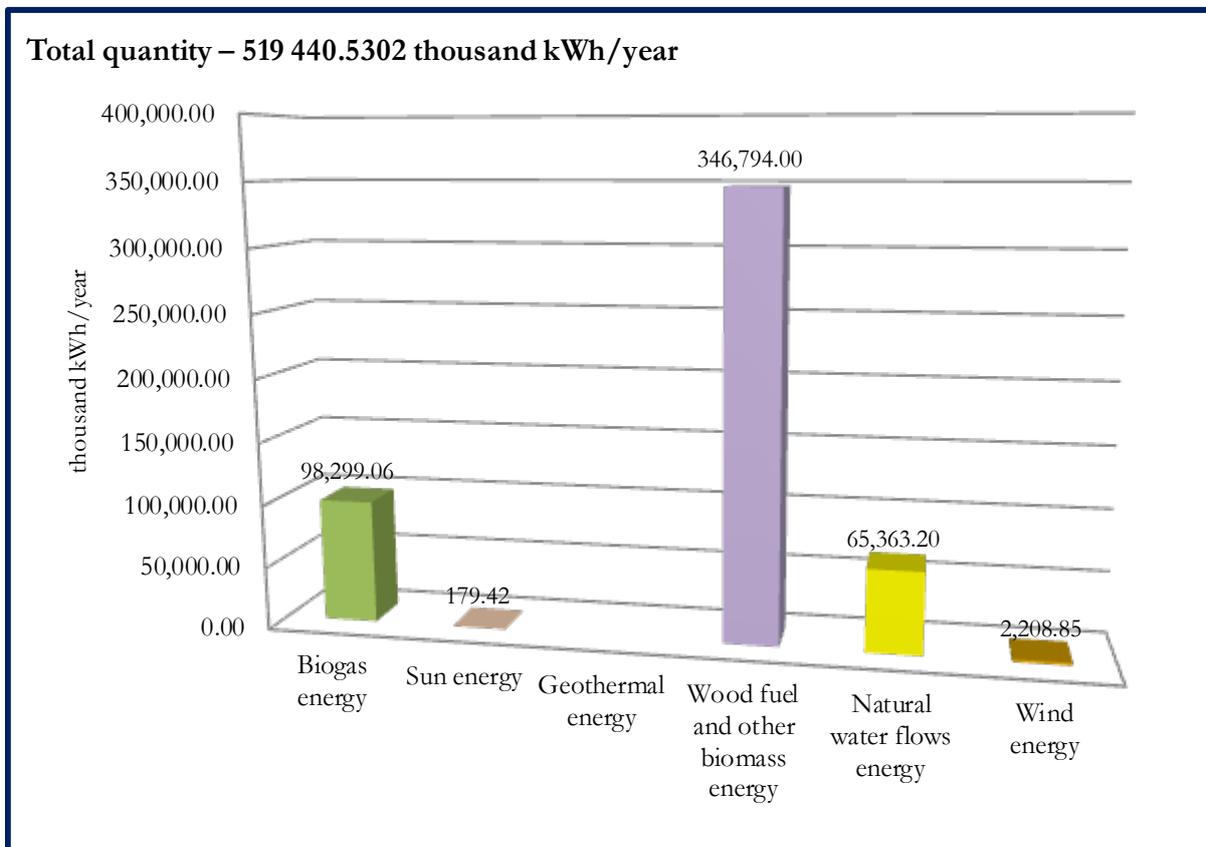
Unfortunately there is no official statistics on the general value of the generated electricity in Belarus in open access.

In accordance with publications in mass media as of the end of 2011, the share of energy generated from RES is small – approximate 3.5%. There is no more urgent date on the percentage of RES energy and general electricity.

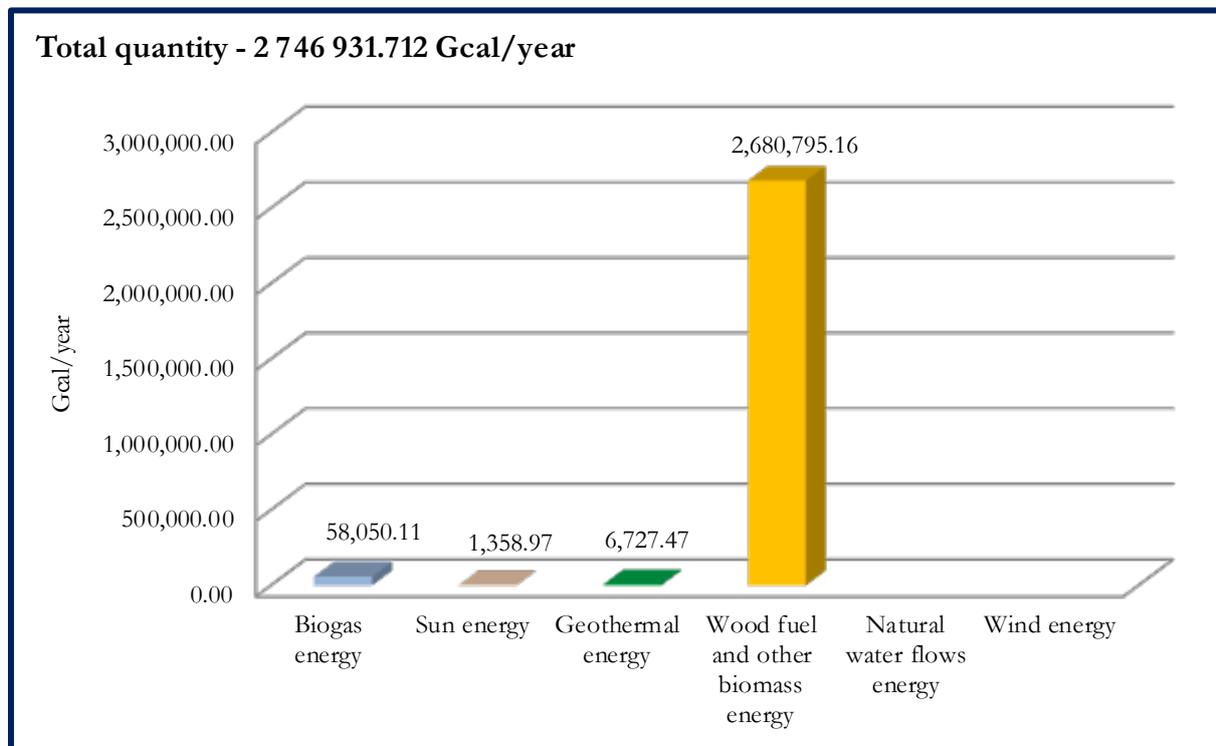
The most wide spreaded type of RES in Belarus is wood fuel and other biomass. The State Committee on Standardization informs that in January-November of 2012 the share of fuel and energy resources in the balance of boiler and stove fuel in Belarus is 25%.

Please find below tables with the maximum quantity of electric energy and heat energy that may be produced from RES in Belarus as of March 15, 2013. The quantity is specified based on the largest ratio of installed capacity use.

**ELECTRIC ENERGY THAT MAY BE PRODUCED FROM RENEWABLE ENERGY SOURCES**



**HEAT ENERGY THAT MAY BE PRODUCED FROM RENEWABLE ENERGY SOURCES**



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# Belgium<sup>1</sup>

Ferdinand Brughmans

Tim Vermeir

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## GENERAL

### 1. What are the types and importance of renewable energy<sup>2</sup> in your country?

Eurostat's 2010 forecast for the percentage of electricity in the EU generated from renewable energy sources in gross electricity consumption is 6% (compared to 4.2% in the latest available figures, for 2007).

Following Directive 2009/28/EC on the promotion of the use of energy from renewable sources, Belgium must achieve an overall target share of 13% of energy from renewable sources in its gross final energy consumption by 2020. In 2011 this share was 4.1%.

Belgium is a federal state comprised of three regions (the Flemish Region, the Walloon Region and the Region of Brussels Capital) and three communities (the Flemish, French and German communities). Generally speaking, the communities are responsible for social, cultural, educational and health matters. The regions are competent for economic matters.

<sup>1</sup> This overview covers the federal legislation and the Flemish and Walloon legislation. As renewable energy is marginal in the Brussels Capital Region (mainly PV and small CHP), it is not covered here.

<sup>2</sup> Interpreted as electricity and heat from renewable energy sources, and not as renewable energy in the broader sense (such as biofuels).

In the field of energy, the federal state is responsible for, among other things, the main energy infrastructures (storage, production and transport), nuclear power generation, the equipment programme for the production, transmission and distribution of energy, the control of tariffs and fiscal incentives, sustainable development policy, the integration of international obligations, and industrial and technical standards. The federal state is also responsible for all activities in the North Sea. The regions are in charge of the local distribution of energy (lines with a nominal tension of up to 70 kV), the management of natural resources, the development of alternative energy resources (including renewable energy sources), and environmental and town planning. Renewable electricity and heat are thus mainly covered by regional legislation (apart from offshore renewable electricity production).<sup>3</sup>

### 2. What are the definition and coverage of renewable energy under the relevant legislation?

The definition of renewable energy is different in federal and regional legislation. The federal electricity act defines this concept as “the renewable non-fossil energy sources (wind, solar, geothermic wave, tidal, biomass, hydro, gas of water purification, landfill gas and biogas”. In Flanders the definition includes solar energy, wind energy, hydro-energy, aerothermic energy, energy from oceans, tidal energy, geothermal energy, biogas, landfill gas, sewage gas and biomass. The Walloon legislation uses a definition equivalent to the federal definition. Roughly summarised, this includes:

<sup>3</sup> Biofuel is mainly covered by federal (tax and product standards) legislation.

- Wind energy
- Solar energy
- Geothermal energy
- Biogas
- Biomass<sup>4</sup>
- Hydro-electricity

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

#### 3.1 Offshore

##### 3.1.1. Location

Wind farm construction is being implemented and further planned on the Belgian continental shelf/exclusive economic zone. The notions of continental shelf and exclusive economic zone are subject to their own specific legal regime, defined in the 1982 United Nations Convention on the Law of the Sea (UNCLOS), which has been ratified by Belgium. Under UNCLOS, the continental shelf of a coastal state comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to (i) the outer edge of the continental margin, or (ii) a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, where the outer edge of the continental margin does not extend up to that distance. States which are party to UNCLOS are entitled to determine an exclusive economic zone (the “EEZ”) beyond the territorial sea. Belgium determined its EEZ in 1999. It comprises the entire Belgian continental shelf.

Compared to other European countries, Belgium’s territorial sea and EEZ are quite small. Nevertheless, the federal government has designated a specific area measuring approximately 200 km<sup>2</sup> in the EEZ where all offshore wind parks must be located. In this area, 2,000 to 2,400 MW production capacity can potentially be installed. By designating this area in the EEZ, the federal government ruled out any wind projects visible from the coast. Consequently, the minimum distance between the coast and the closest wind turbine park will be approximately 12 nautical miles (22 kilometres).

##### 3.1.2. Domain concession

Under the federal Electricity Act, a domain concession grants the right to construct and operate installations for the production of electricity from water, streams, currents or winds, in the parts of the sea falling under Belgian jurisdiction according to international maritime law. The concept of domain concession in the meaning of the Electricity Act must be interpreted as a *sui generis* concept with no relation to the concept of domain concession for the private use of part of the public domain.

A domain concession is granted for 20 years, starting on the day when the last licence, permit or authorisation required for the installation(s) under other legislation is obtained. This period may be extended up to a maximum total duration of 30 years.

All seven wind park projects have been granted a domain concession:

<sup>4</sup> Biomass from waste must meet special requirements.

Project	Shareholders	Lenders	# Turbines	Estimated production (GWh)	Distance	Location
C-Power	Deme, SIW, Socofe, Nuhma, EDF Energies Nouvelles, RWE	Dexia, Rabobank, KBC, Société Générale	60 (5 MW)	986,1	30 km	Thorntonbank
Belwind	Colruyt, DHAM, PMV, SHV, Rabo Project Equity, Meewind	Dexia, Rabobank, EIB, EKF, ASN	110 (2*55) (3 MW)	1,100	46 km	Bligh Bank
Northwind	Aspiravi, Depret, Electrawinds, Colruyt	BNP Paribas Fortis, Rabobank, ASN, Belfius, ING, EIB, Pension Danmark, KFW, the Norwegian Government	72 (3 MW)	670	37 km	Bank not yet named
Norther	Eneco, Electrawinds	Not yet known	Not known	Not known	20 km	Thorntonbank
Rentel	Otary (Deme, Electrawinds, Power@Sea, Rent-A-Port, Public sector)	Not yet known	48 (6 MW)	960	31 km	Zuid-West Schaar (between Thorntonbank and Bank with no name)
Seastar <sup>5</sup>	Otary (Deme, Electrawinds, Power@Sea, Rent-A-Port, Public sector)	Not yet known	246 MW		38 km	Between Bank without a name and Bligh Bank
Mermaid	Otary (Deme, Electrawinds, Power@Sea, public sector), Electrabel	Not yet known			60 km	North of Belwind concession

<sup>5</sup> The Minister for Energy withdrew the domain concession for Seastar following a decision by the Council of State to suspend the concession.

### 3.1.3. Construction and operating authorisations

Besides a domain concession, a specific authorisation to construct (“construction authorisation”) and a licence to operate (“operating licence”), wind turbines in the Belgian EEZ must be obtained pursuant to the Marine Protection Act of 20 January 1999 and the Marine Protection Royal Decree of 7 September 2003. The operating licence is granted for 20 years, starting on the day that the applicant is notified that the licence has been granted. The construction authorisation is granted for the period of time necessary to construct all the installations falling within the scope of the authorisation. This period is limited to five years, starting on the day that the applicant is notified that the authorisation has been granted. It may be extended once for an additional five years.

### 3.1.4. Submarine cables

To connect the wind turbines with the onshore grid, submarine electricity cables must be constructed. The legal basis for constructing these cables is the Act of 13 June 1969 and the Royal Decree of 12 March 2002. A specific licence is required to install these submarine cables.

For the onshore connection to the offshore wind park, a building permit to construct the electricity cables is required. Depending on the type of land under which the cables will run, either an administrative authorisation or a private agreement will be needed.

### 3.1.5. Renewable Energy Certificates (RECs)

In accordance with Article 7 of the federal Electricity Act, the federal system of support for renewable energy is set out in the 2002 Royal Decree on Renewable Energy Support Mechanisms (‘RES Royal Decree’). Owners of installations for the production of electricity

from renewable energy sources offshore will be granted green certificates by the CREG (Commission for the Regulation of Electricity and Gas, the federal regulatory body) if the installation is connected to the Belgian transmission grid. These green certificates are valid for five years.

## 3.2. Onshore

### 3.2.1. Production authorisation

The federal Electricity Act stipulates that the construction and exploitation of an onshore production installation requires prior authorisation from the Minister for Energy. The criteria for granting this authorisation are set out in a Royal Decree of 11 October 2000. However, no authorisation is needed to construct a production installation with a capacity of less than 25 MW.

### 3.2.2. Building and environmental permits

#### a. Building permit

A building permit is generally required for the construction of production installations using renewable energy, although some cases (e.g. small PV elements on rooftops) are exempted by regional legislation. The building permit will be granted by the regional town planning authorities if the electricity produced will be injected into the public grid. If the electricity generated by the installation is mainly consumed by the installation’s owner, the granting authority will be the municipality.

Building permits are linked to the property concerned, and can thus be freely transferred as accessory to the property to which they relate.

#### b. Environmental permit

Except for small PV installations, an environmental permit is required for the operation of an installation using renewable energy. Depending on the power of the

installation, the authority granting the permit is either municipal or provincial. In both the Flemish and Walloon Regions, a permit may be granted for a maximum of 20 years. The holder of a permit may transfer it to someone else. Such transfer must be notified to the authority which granted the permit.

### c. Link between environmental and building permits

In Flanders, in some exceptional cases where the same municipality grants both the building and the environmental permit, the application may be filed in a single document. The Flemish region is currently developing a single permit procedure (*‘omgevingsvergunning’*).

Under Walloon town planning and environmental law, a *“permis unique”* (“single permit”) covers both the construction and the operation of projects (building permit and environmental/operating permit).

### 3.2.3. Renewable energy certificates

#### a. Flemish Region

The Flemish Energy Decree of 2009 sets out the framework supporting the production of electricity and energy from renewable energy sources in the Flemish Region. This system was substantially modified in 2012.

Producers of electricity based on renewable energy sources may receive green certificates from the VREG, the Flemish energy regulator, for electricity generated in the Flemish Region from the following renewable energy sources:

- Solar
- Wind
- Tides and waves
- Geothermal
- Biogas, landfill gas and sewage gas
- Biomass

For installations construed before 1 January 2013, a green certificate confirms that 1000 kWh of electricity have been generated from a renewable energy source. They are valid for ten years from issue. For installations construed and operational after 1 January 2013, a green certificate is issued for 1000 kWh electricity produced from a renewable energy source, multiplied by a banding factor. The banding factor depends on the type of installation and the project category. They are valid during the depreciation period. Green certificates are calculated on the basis of the net electricity produced, measured before injection into the grid.

#### b. Walloon Region

The Walloon Electricity Decree of 2001 sets out the framework supporting the production of electricity and energy from renewable energy sources in the Walloon Region.

A producer of electricity generated from renewable energy sources may obtain green certificates if its production site has been issued a certificate guaranteeing origin by an approved inspection agency. A green certificate is awarded for a number of kWh produced corresponding to one MWh, divided by the level of carbon dioxide savings (456 kg of CO<sub>2</sub>). For a wind turbine, a green certificate is awarded for each MWh produced, because wind turbines save 100% of carbon dioxide compared to a conventional CCTG installation. Green certificates are awarded for electricity consumed by the producer and the electricity injected into the grid or transmitted by means of direct lines. They are calculated on the basis of the net electricity produced, measured before injection into the grid.

The right to obtain green certificates is limited to fifteen years from the start of the production installation’s operations. Green certificates are valid for five years from issue.

### 3.3. Access and connection to the electricity grids

The regulation of connection and access to the grids depends on the grid's tension level. The (federal) transmission grid (> 70 kV) is regulated by federal law. The distribution grids are regulated by regional law. The procedures and conditions are set out in various technical regulations which contain lists of the technical requirements and minimum standards any installation must fulfil in order to obtain connection and access to the electricity grid.

The physical connection of installations is governed by a connection agreement. To obtain such an agreement, the applicant must apply to the grid operator for a connection. If the application contains all the information required, the grid operator will reserve capacity for the applicant. Following this, the grid operator and the applicant will examine the applicant's installations and develop the necessary technical solutions to make the connection possible. If the grid operator and the applicant agree on these technical solutions, the grid operator will propose a connection agreement.

The legislation explicitly states that the grid operator should give priority to the connection of production installations that use renewable energy resources. The costs of grid connection are borne by the system user. The costs arising from the preliminary studies are borne by the grid operator. They are subtracted from the costs of grid connection.

Every injection into the grid must be covered by an access contract which establishes the capacity that may be injected at each injection point. This contract between the grid operator and the access holder may be signed by the grid user directly, or by a third party appointed by the grid user (e.g. a supplier or ARP).

When examining an application for access, the grid operator takes the available grid capacities

into account, and may refuse grid usage if the grid lacks the necessary capacity. The capacities available to a given grid user are specified in the contract.

The access holder must designate an ARP (Access Responsible Party) for each injection point. The ARP may be a producer, a major customer, an energy supplier or a trader. The ARP contract sets out the balance-related rights and obligations of the grid operator and the ARP. The grid operator must ensure that balance is maintained in the control area, while the ARP is responsible for maintaining a quarter-hourly balance between total injections and total off-takes.

Production units that have a nominal capacity of over 25 MW and/or are directly connected to the ELIA grid must sign a CIPU contract with ELIA, the federal grid operator. CIPU (Coordination of Injection of Production Units) contracts ensure that ELIA always has the necessary generating facilities at its disposal, to enable it to plan maintenance or other work on the grid (switching off lines, etc.), prevent and resolve grid congestions, check on available generation reserves, determine import and export capacity at the borders and mobilise production units to regulate zone balance.

The connected party pays the grid operator the connection tariff. The party having access pays the grid operator the access tariff. The ARP also has to pay the grid operator an imbalance fee. Tariffs are regulated and must be approved each year by the CREG.

### 4. What are the principal regulatory bodies in the renewable energy sector?

As there are four different legislations which may apply, depending on where the project is located, the main regulatory bodies are the federal and regional energy legislators, i.e.: CREG (federal), VREG (Flemish Region),

CWAPE (Walloon Region) and Brugel (Brussels Capital Region).

The CREG has been established as the federal regulator. It monitors compliance with the Electricity Act of 1999 and advises the government, controls the electricity market and resolves conflicts. It also approves the tariffs for use of the transmission and distribution grids and the most important contractual conditions of the TSO (Transmission System Operator).

The regional regulators are involved in monitoring renewable electricity production and granting green certificates and CHP certificates.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

No specific tax advantages are available to renewable energy generation companies. However, companies investing in renewable energy in Belgium can offset a capped part of the investment costs against their corporate income tax liability, and thus reduce their tax burden. Eligibility for tax relief is dependent on filing, with the tax return, all relevant invoices and a certificate proving that the project was implemented by a contractor who is a member of an association of qualified professionals.

### 6. Does the relevant legislation give a purchase guarantee for the electricity generated by renewable energy companies?

The regions have opted for a system of quota obligations combined with guaranteed minimum prices. The federal and regional green certificates are not interchangeable. Consequently, federal green certificates may only be sold to the federal grid operator.

To guarantee the authenticity and tradability of green certificates, they are registered in a database managed by the respective regulators.

### *Federal*

ELIA, the federal grid operator, must purchase federal offshore and regional green certificates at a minimum price set out in the 2002 Renewable Energy Support Royal Decree.

Production technology	Price guarantee	Duration
Offshore wind energy (first 216 MW per project)	107 EUR/MWh	20 years
Offshore wind energy (above 216 MW per project)	90 EUR/MWh	20 years
Solar (installation before 31 July 2012)	150 EUR/MWh	10 years

The purchase obligation for the green certificates from offshore wind will be subject to the signing of an agreement between the TSO and the promoter. The draft agreement must be submitted to the CREG for approval.

The Electricity Act allows the federal government to modify the minimum purchase price for green certificates.

These minimum prices are guaranteed for 10 years (20 years for offshore wind).

### *Flemish Region*

All suppliers must submit a number of Flemish green certificates<sup>6</sup> annually to the VREG. The number of green certificates to be accumulated in year *n* is the subject of goals fixed by the Flemish Region (from 6% in 2010 to some

<sup>6</sup> On 8 May 2013, the Attorney-General to the Court of Justice issued an opinion that this obligation is contrary to the principle of Free Movement of Goods.

13% in 2020) and the total volume of electricity supplied to final customers in year *n-1* by that supplier. The obligation takes into account the total number of green certificates issued in the Flemish Region in the preceeding year. Some caps apply to large volumes supplied.

The supplier must pay an administrative fine of EUR 125 for each missing certificate (EUR 118 as of 2013 and EUR 100 after 2013).

Green certificates may also be sold to the distribution grid operator at the following prices:

Production technology	Price (EUR)		Duration (years)
Solar	< 250 kWp 01/01/12-31/03/12: 250 01/04/12-30/06/12: 230 01/07/12-31/07/12: 210 01/08/12-31/12/12: 90 2013 onwards: 93	> kWp 2012: 90 2013 onwards: 93	20 / 10 <sup>7</sup>
Hydro (< 10 MW), tidal and waves, geothermic, onshore wind, biomass, biogas	90		10
Biogas from anaerobic digestion	100/110 <sup>8</sup>		10/20 <sup>9</sup>
Sewage gas, landfill gas, co-combustion of waste	60		10
Other sources	60		10

<sup>7</sup> If operative after 31 July 2012.

<sup>8</sup> If no other support is granted.

<sup>9</sup> For anaerobic digestion of biodegradable waste.

The same principle applies to combined heat and power certificates ('CHP Certificates'), but their value is degressive: stable during the first four years, decreasing in subsequent years until the tenth year. The minimum price is EUR 27 per certificate for existing installations and EUR 31 for installations in operation as from 2012. The quota for the suppliers is 7.6% as from 2012.

**Walloon Region**

Walloon green certificates may be sold OTC to suppliers and grid operators.

Every quarter, electricity suppliers and grid operators are required to transfer a number of Walloon green certificates corresponding to the quota imposed on them. For suppliers, the quota is calculated on the basis of the electricity they have supplied to final customers located in the Walloon region. The grid operators' quotas relate to their own consumption and their supplies to final customers in the context of their public service obligations. The quotas are 15.75% in 2012 and will be 19.4% in 2013, 23.1% in 2014 and 26.7% in 2015. However, they are reduced for large energy consumers consuming more than 1.25 GWh/quarter:

0-5 GWh/quarter	Quota for the last year increased by 50% of the quota for the current year
>5 GWh/quarter – 25 GWh/quarter	50% of the quota
> 25 GWh/quarter	2% of the quota

Suppliers or grid operators who fail to submit the necessary amount of green certificates must pay an administrative fine of EUR 100 per missing certificate.

ELIA must purchase green certificates at a minimum price of EUR 65.

**7. Does the relevant legislation give a minimum price guarantee for electricity generated by renewable energy companies?**

See above.

**8. Do renewable energy-based power plants have priority for connection to the grid?**

The legislation explicitly states that the grid operator should give priority for connection to production installations that use renewable energy resources.

**9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy-based power plants?**

No, this would be contrary to EU legislation on the free movement of goods and services.

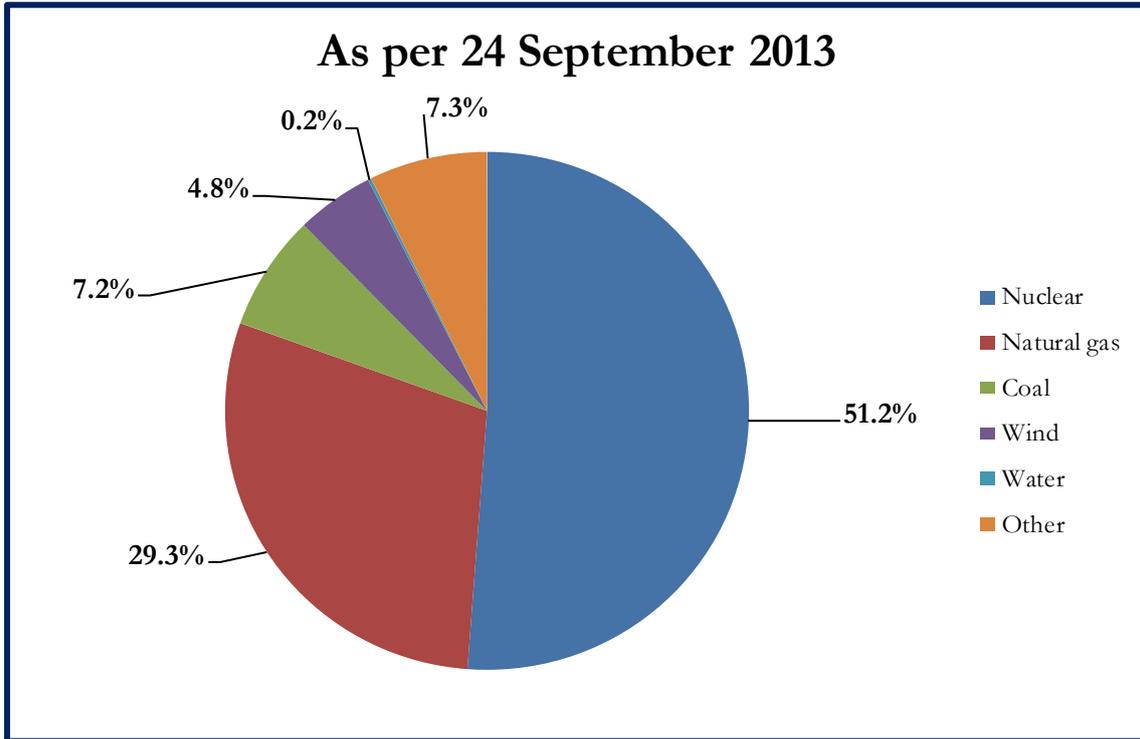
**10. What other incentives are available to renewable energy generation companies?**

With regard to *offshore wind energy*, the TSO takes over one-third of the costs of submarine cables (including onshore cables and the connection installation to the ELIA grid), up to a maximum amount of EUR 25,000,000 for a project of 216 MW or above. The TSO may charge these costs in its transmission tariffs. The TSO's financing up to EUR 25,000,000 is reduced pro rata if the project does not attain 216 MW. The financing is spread over five years in five equal installments. The financing of submarine cables is subject to the signing of an agreement between the TSO and the domain concession holder. This agreement need not be submitted for advice or review to the Minister of Energy or to the CREG.

**STATISTICS**

11. What is the percentage of electricity generated, based on each type of

renewable energy source, in the total generation of electricity at country level?



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# Bosnia & Herzegovina

Nusmir Huskic

HUSKIĆ LAW OFFICE

## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

To understand the importance of the energy sector in Bosnia and Herzegovina, an overview of the current political and geographical situation in Bosnia and Herzegovina should be briefly explained.

Bosnia and Herzegovina is composed of two self governed entities, the Federation of Bosnia and Herzegovina (“FBiH”) and the Republika Srpska (“RS”), which were established by the Dayton Peace Agreement in 1995. The District of Brčko (“Brčko District”) was created in 1999 comprised from land of both entities. The FBiH is divided into ten cantons, which are further divided into municipalities. The RS is only subdivided into municipalities.

Regarding its geographical position, Bosnia and Herzegovina is a hilly and mountainous country. Of the total surface area, 5% are lowlands, 24% hills, 42% mountains and 29% karst. Forests and forestlands cover about 50% of the territory. The total agricultural land covers 2.5 million hectares or 0.7 hectares per capita. Bosnia and Herzegovina possesses significant water resources (average annual precipitation on the territory of Bosnia and Herzegovina is 1250 l/m<sup>2</sup>, which is some

250 l/m<sup>2</sup> higher than the average in European countries).<sup>1</sup> Still, energy production in Bosnia and Herzegovina is almost exclusively based on coal and hydropower and most of the coal and oil used in Bosnia is imported from Russia. Despite the current lack of renewable energy generation, Bosnia and Herzegovina signed the EU obligatory protocol committing them to produce 20% renewable energy in comparison to their overall energy consumption by the year 2020. Solar, wind and biomass energy are expected to have a large roll in achieving this goal.

Bosnia and Herzegovina has four different public power utility companies each responsible for their own sector of the country. The utilities are EP BiH Elektroprivreda of Bosnia and Herzegovina, ERS Elektroprivreda of Repulika Srpska, EP HZHB Elektroprivreda Hrvatske Zajednice Herceg-Bosne and Brčko District of BiH.<sup>2</sup>

Thus, renewable energy has a tremendous impact on the future development of the energy sector in Bosnia and Herzegovina. This sector is still not that regulated and some draft laws are still to be implemented and processed by the government. Because domestic as well as foreign interest in this sector exists, Bosnia and Herzegovina politicians are trying to fasten the procedure of creating a legal base for it.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

The Law on Electricity of the Federation BiH, defines renewable energy as “Renewable sources of electric power” that shall mean sources of electric power that permanently exist in nature and are renewable in whole or

<sup>1</sup> Petar Gvero Ph.D., M.Sc. “Climate Change in South-East European countries: Causes, Impacts, Solutions”, Power Point Presentation.

<sup>2</sup> EBRD Renewable Energy Initiatives, B&H Country Profile 2009.

in part, especially power from water streams, wind, bio-mass, bio-gas, and geo-thermal and non-accumulative solar energy.<sup>3</sup>

The RS Law on Electricity defines renewable energy sources as electricity sources preserved in nature and renewable in whole or in part, especially the power of water streams, wind, bio-mass, and geo-thermal and non-accumulative solar energy.<sup>4</sup>

The RS Law on Energy defines renewable energy sources as non-fossil energy sources which are preserved in the nature and renewed totally or partially such as the energy of watercourse, energy of wind, non-accumulated sun energy, biomass, bio-fuel, sewage gas, gas from the waste water treatment facilities, biogases, geo-thermal energy etc., whereby, electricity generated from the renewable energy sources, is defined as:

- Electricity generated by generation installations which use renewable energy sources only;
- An amount of electricity generated from renewable energy sources by combined generation installations which use non-renewable energy sources as well; and
- Electricity generated from renewable energy sources used for filling in the system for the energy accumulating, but the energy obtained using those reservoirs shall be excluded.<sup>5</sup>

The Statute on the Use of Renewable Energy Sources and Co-generating Energy Sources Regulation on the Use of Renewable Energy Sources define renewable energy as “Electric

power from renewable sources” which means electricity produced from renewable non-fossil sources, which are renewable in whole or in part, such as, but not limited to the energy of watercourses, wind, solar, geothermal, wave and tidal resources, as well as biogas and biomass.<sup>6</sup>

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

In matters that were expressly conferred to the entities for regulation, the entities adopt their own legislation. Even though the entities’ legislation is to a certain extent harmonized, some legal issues may be resolved differently. In the FBiH, cantons may also adopt their own legislation in legal matters that are of local relevance.

There are still no energy strategies in Bosnia and Herzegovina, neither on entity or state level. The RS adopted its Energy Law in 2009, but the FBiH has still no law on energy or renewable energy. It has the Electricity Law, where renewable energy is defined, but not actually regulated. That is why the Decision on Use of Renewable Energy Sources and Co-generating Energy Sources is the only legislation covering the renewable energy sector. A first Draft on Regulation on the Use of Renewable Energy Sources and Cogeneration in FBiH is drafted and amended but needs to be adopted and published hopefully this year.

<sup>3</sup> Law on Electricity of the Federation BiH (Official Gazette of FBiH 41/02), Article 3.

<sup>4</sup> Law on Electricity of the Repulika Srpska (Official Gazette of RS 08 08, 34/09), Article 3.

<sup>5</sup> Law on Energy of the Republika Srpska (Official Gazette of RS 49/09), Article 3.

<sup>6</sup> The Statute on the Use of Renewable Energy Sources Co-generating Energy Sources (Official Gazette of FBiH 36/10), Article 3.

**State level:**

- Law on Transmission of Electric Power, Regulator and System Operator of Bosnia and Herzegovina (Official Gazette BiH 7/02, 13/03, 76/09);
- Law on Establishing the Company for the Transmission of Electric Power in Bosnia and Herzegovina - TRANSCO Law of Bosnia and Herzegovina (Official Gazette BiH 35/04 and 76/09);
- Law on Establishing an Independent System operator for the Transmission of Electric Power in Bosnia and Herzegovina - ISO Law of Bosnia and Herzegovina (Official Gazette BiH 35/04).

**Entity level:**

## Federation of Bosnia and Herzegovina (FBiH):

- Decision on Use of Renewable Energy Sources and Co-generating Energy Sources (Official Gazette FBiH 36/10,11/11, 88/11);
- Law on Electricity of the Federation BiH (Official Gazette of FBiH 41/02, 61/09);
- Decree on Promulgation of the Law on Modifications and Amendments of the Law on Electricity (Official Gazette FBiH 38/05);
- Decision about a Methodology for the Determination of Purchase Prices for Electricity from Renewable Sources with Installed Power up to 5 MW (Official Gazette of FBiH 32/02).

**Republika Srpska:**

- Law on Energy of the Republika Srpska (Official Gazette of RS 49/09);

- Law on Electricity of the Repulika Srpska (Official Gazette of RS 08/08, 34/09, 92/09 and 1/11);

**International/European level:**

- Kyoto Protocol to the Framework Convention on Climate Change was signed in 2007;
- Treaty Establishing Energy Community (Official Gazette BIH - International Agreements, No. 9/06);
- Directive 2005/89/EC of the European Parliament and of the Council of 18 January 2006 concerning measures to safeguard security of electricity supply and infrastructure investment (Text with EEA relevance);
- Regulation (EC) No 1228/2003 of The European Parliament and of The Council of 26 June 2003 on condition for access to the network for cross-border exchanges in electricity;
- Directive 2003/54/EC of the European Parliament and of the Council Concerning Common rules for the internal market in electricity and repealing directive 96/92/EC;
- Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2003 on promotion of use of bio-fuels or other renewable fuels in transportation;
- 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; and
- Framework Convention on Climate Change was signed in 2000.

#### 4. What are the principal regulatory bodies in the renewable energy sector?

The State Electricity Regulatory Commission (SERC) is an independent and a non-profit institution of Bosnia and Herzegovina, which acts in accordance with the principles of objectivity, transparency and equality, and has jurisdiction over the transmission of electricity, transmission system operation and international trade in electricity, as well as generation, distribution and supply of electricity customers in Brčko District of Bosnia and Herzegovina. The SERC was established by the Parliament of Bosnia and Herzegovina by adopting the Act on Transmission, Regulator and Electricity System Operator, and appointing the Commissioners (1 July 2003).<sup>7</sup>

The Independent System Operator in Bosnia and Herzegovina (“ISO BH”) was established by the Parliamentary assembly of Bosnia and Herzegovina, Law of Establishing Independent System Operator for the Transmission System in Bosnia and Herzegovina (Official Gazette BH 35/04). The purpose of establishing ISO BH is to ensure continuity supply of electric energy according to defined quality standards for citizen welfare in Bosnia and Herzegovina. ISO BH is established as an independent, specialized and non-profit organization in BH.<sup>8</sup>

The Regulatory Commission for Electricity in Federation BIH (FERK) established by the Electricity Law (Official Gazette FBIH, No. 41/02 dated 23.08.2002.) is specialized, autonomous, independent and non-profit organization in the Federation of Bosnia and Herzegovina. The Regulatory Commission's jurisdictions are:

- supervision and regulating the relations between power generation, distribution and electricity customers including power traders;
- prescribing methodology and criterion for defining the prices for supplying of non-eligible customers;
- defining of tariffs for distribution systems users and tariffs for non-eligible customers;
- issuing and revocation of licenses for generation, distribution and tariffs for non-eligible customers;
- issuing the preliminary construction permits and licenses for usage of power facilities except the facilities for power transmission; and
- defining General Conditions for Electricity Supply.<sup>9</sup>

The Regulatory Commission for Energy of Republic of Srpska (RERS) was founded on 13 September 2002 in order to regulate the monopolistic behavior and provide the transparent and non-discriminatory position of all participants in the electricity market in Republic of Srpska, pursuant to the Law on Electricity (Official Gazette of Republic of Srpska number 66/02, 29/03 and 86/03).<sup>10</sup>

## INCENTIVES

#### 5. Are tax advantages available to renewable energy generation companies?

Since the renewable energy sector is still new and unregulated, so are the detailed regulations

<sup>7</sup> Available at “[www.derk.ba](http://www.derk.ba)”.

<sup>8</sup> Available at “[www.nosbih.ba](http://www.nosbih.ba)”.

<sup>9</sup> Available at “[www.ferk.ba](http://www.ferk.ba)”.

<sup>10</sup> Available at “[www.reers.ba](http://www.reers.ba)”.

regarding tax advantages and guarantees towards the same. The law does not explicitly provide an answer to this question. Some decisions are drafted in RS and the Federation, but since none of those are enforceable to this date, they are not seen as a guiding law, and thus not relevant.

#### **6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

RS Law on Energy is defining two types of Certificates which the generator of electricity receives upon installation. Pursuant to Article 29 of the RS Law on Energy, the generator of electricity may, at its own request, get a certificate on origin for electricity generated in the generation installations which has a valid certificate (declaration) when proven that, in the period which the certificate is related to for the generation installations, it has been operating in a way that it meets the terms and conditions prescribed for efficient cogeneration; i.e., generation of electricity from renewable sources.

The Certificate (declaration) for generation installations may be granted to generator of electricity if such generation installations generate electricity from renewable energy sources in an economically appropriate way, protecting environment or in efficient cogeneration.

The certificates are defined as follows:

- Certificate on the electricity origin - document serving the generator of electricity to prove that the electricity generated in its installation was generated from renewable energy sources or in cogeneration with a high level of efficiency and it necessarily contains the amount of electricity, energy source which was used for its generation, place and date of

generation as well as other data which contribute to the accuracy and reliability of the document;

- Certificate (declaration) for generation installation - the document which is issued to generator of electricity for a single generation installation certifying that such an installation fulfils the prescribed terms and conditions for the concurrent generation of electricity and heat with a high level of efficiency, or for generation of electricity using the waste or renewable energy sources in an economically appropriate way, harmonized with the regulations related to protection of environment.

In accordance with a Decision on Use of Renewable Energy Sources and Co-generating Energy Sources there will be Operator which should determines the amount of electricity that must be purchased by each supplier of electricity on the basis of the planned total output. Due to fact that this is not a Law, there are no details on procedure but it's prescribed that there must be a written agreement.

#### **7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

According to the Decision on Use of Renewable Energy Sources and Co-generating Energy Sources the two federal power utility companies, "Elektroprivreda BiH" and "Elektroprivreda HZ Herceg-Bosna" have the obligation to purchase electricity from renewable sources.

According to the previous Decision, the determination of the purchase price level of electric energy from renewable sources with installed power up to 5 MW will be made by application of corrective coefficients on the amount of the current tariff item for active

energy, higher seasonal and higher daily, for consumption category on 10 (20) kV voltage from the relative correction coefficient amounts are established for:

- Small hydropower plants 0.80;
- Power plants on biogas from the waste area and biomass 0.77;
- Power plants on wind and geothermal sources 1.00; and
- Power plants on solar energy 1.10.

Tariff items for the sale of electric energy may be subject to correction within + 10%, when the construction of power plants to renewable resources, with the capacity up to 5 MW, contributes to reducing development costs and building networks, which on the basis of proposals from “Elektroprivreda BiH”, has to be approved by the Ministry of Energy, Mining and Industry.

For installed power up to  $\leq 5$  MW, the electricity price on middle voltage is 0.80x. In the Federation B&H the price is 4.05 c€/kWh, “Elektroprivreda HZ Herceg-Bosna” for example, is purchasing electricity from renewable sources with installed power up to 5 MW for 5,346 cent/KWh, or 53,46 EUR/MW, and the price in Republika Srpska is 3.32 c€/kWh.

These prices do not include the value added tax, nor the transferring costs and costs for the Independent System Operator in BH.<sup>11</sup>

According to the new legislation the contract for the new plant will be signed for a period

12 years from the start of operation. After the expiration of the contract period a privileged

<sup>11</sup> Mr. Josip Dragić, dipl.iur., “JP Elektroprivreda HZ HB” d.d. Mostar.

manufacturer will lose right on guaranteed price but they will retain other rights that have qualified manufacturers (e.g. to freely sell electricity on market).

#### **8. Do the renewable energy based power plants have priority for connection to the grid?**

The Rules prescribed that a qualified manufacturer that has concluded an agreement on compulsory purchase has the advantage of dispatch within the reported daily work schedule (timetable) to network operator which the plant is connected. Network operator must take the produced electricity from qualified producers if it does not endanger the operation of power systems.

#### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

No, there is no such incentive available. Based on the information provided by a representative of the company TURBINA IPD ltd., to this date there are just them in Bosnia and Herzegovina that are using equipment and materials for renewable energy based power plants from local suppliers. They are manufacturing wind turbines, and for their product they take materials produced in Bosnia and Herzegovina. The electrics, as the turbine itself, they have to import because there is no company providing this kind of service in Bosnia and Herzegovina, yet.

#### **10. What are the other incentives available to renewable energy generation companies?**

With Bosnia and Herzegovina's great nature and energy potentials, it seems that their first and foremost stimulation is that energy production from renewable resources will become a practice in this country. With the

perspective of joining the European Union, the production of energy from renewable resources will become an obligation that Bosnia and Herzegovina, as a potential member, will have to take seriously. Thus, manufacturers will be obliged to apply those standards and procedures that will for sure be in correlation with nature conservation.

## STATISTICS

### 11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?

As previously stated, Bosnia and Herzegovina signed the EU obligatory protocol committing them to produce 20 percent renewable energy in comparison to their overall energy

consumption by the year 2020. According to statistics from JP “Elektroprivreda HZ HB” d.d. Mostar, Energy resources of small hydropower plants in Bosnia and Herzegovina is 1,004.63 MW of strength and 3,520GWh of electricity annually, which represents 12.64% of the total hydropower potential of Bosnia and Herzegovina. According to a study that GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit), conducted for the HT Innotech GmbH, Berlin, they found that the energy potential from residual wood and wood waste amounted to approximately 1 million m<sup>3</sup>/a which could provide thermal energy for 130,000 households or 300,000 people.

Of other statistics, regarding the total generation of electricity at country scale, we have no confirmed information.

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# Brazil

Antonio Meyer

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**MACHADO, MEYER, SENDACZ E  
OPICE ADVOGADOS**

## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

In Brazil, renewable sources of energy are of great importance. The country's energy matrix is strongly dependent on hydroelectric power. Further, after the energy crisis of 2001 and 2002, the Federal government enacted a number of policies tending to promote the development of other renewable sources of energy.

In this sense, the 2010-2020 National ten-year energy plan (*Plano Decenal de Energia*) states that one of its targets is to increase the participation of renewable sources of energy in the Brazilian power matrix in order to meet the increasing demand for electric energy during the coming decade.

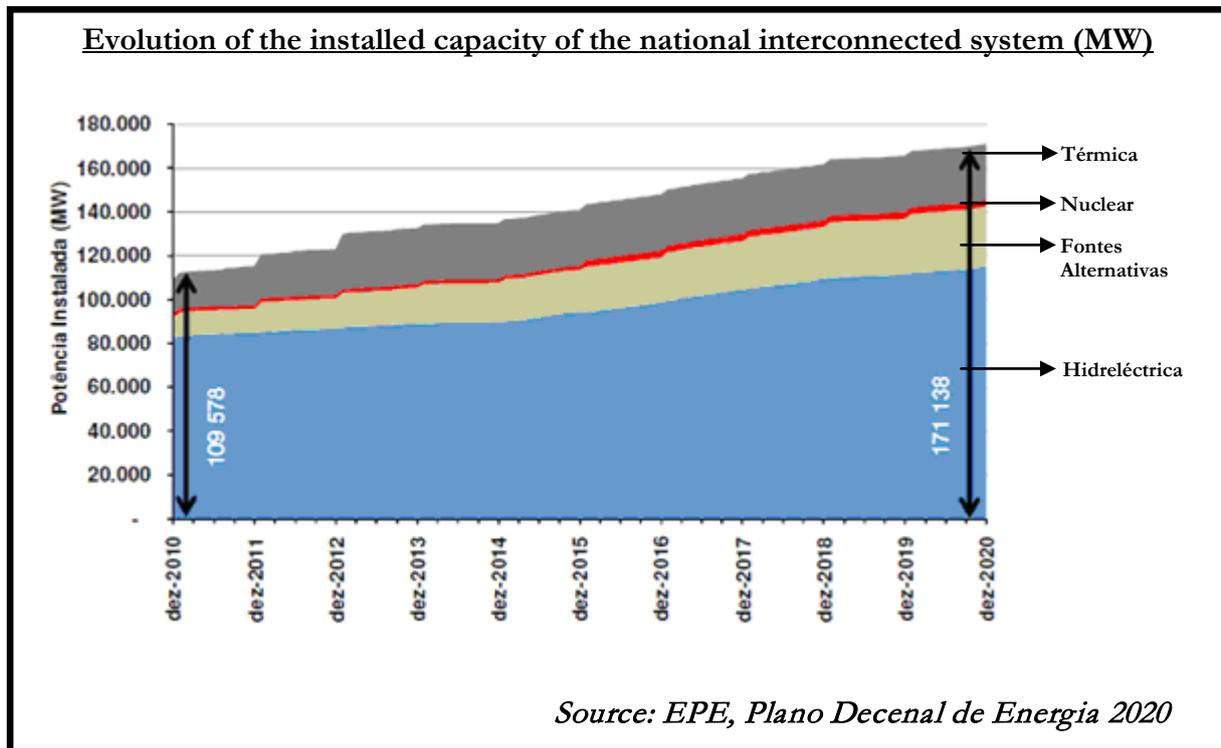
2002, so as to bring incentives for the development of alternative energy sources, such as wind energy, biomass projects and

small hydroelectric plants ("PCHs"). It was instituted by Law No. 10,438/02, as amended, and implemented by Decree No. 5,025/2004. The plan was divided in two phases: the purpose of the first stage of PROINFA was to produce 3,300 MW from alternative sources, equally distributed among wind power, PCHs and biomass sources. In the second stage, with respect to which regulations have not yet been issued, alternative sources should meet 10% of annual electricity consumption demand in Brazil within 20 years.

Projects qualified during the first stage were initially scheduled to be rolled out by 30 December 2006, but this deadline was repeatedly extended due to significant delays. By the end of 2011, 3.155 MW of installed power became operational.

Further to the PROINFA program, the Federal government has implemented the policy to increase the participation of renewable energy in the country's energy matrix by coordinating public auctions for purchase of energy from renewable sources on a long-term basis. These auctions which are coordinated by the Ministry of Mines and Energy – "MME" and the National Electric Energy Agency – "ANEEL" have led to the development of a local biomass and wind energy industries and has even spurred the interest of foreign investors.

As can be seen in the graph below, the installed capacity of renewable projects is to increase significantly in the coming decade:



On 2007, an auction for alternative sources was held. In this case, wind energy was placed alongside hydroelectric and other sources such as biomass fuels. The initial bidding prices of R\$135,00/MWh (for hydroelectric energy) and R\$140,00/MWh for other sources of energy were not competitive enough for wind energy developments and none were selected.

On 2009, the first auction exclusively for energy from wind source was held. The auction was organized by ANEEL dependent on the Ministry of Mines and Energy as a “reserve auction” or auction for additional energy to be supplied to the basic grid - National Integrated System (“SIN”) - so as to reduce the operational costs of the system. Interested parties could participate either alone or by forming consortiums with other parties. In all, 339 projects were enrolled to participate in the auction with an installed capacity of more than 10,000 MW. The auction was a decreasing-price or Dutch type auction in which bidding started in a first round set at

R\$189/ MWh and began to drop by R\$0.50. More than seven hours and 75 rounds later, the price had dropped to an average of R\$148.39/ MWh. At this price, 71 projects were selected, amounting to 1.805,7 MW of installed capacity.

On August 2010, a reserve energy auction and a renewable energy auction were held for the sale and purchase of energy from wind, hydro power and biomass projects. As a result of the 2010 auctions, 70 wind energy projects were contracted with an installed power of 2.047,8 MW for an average price of R\$130.86/ MWh.

Further to the referred auctions, on 2010 the Ministry of Mines and Energy also coordinated specific auctions for the purchase of energy from hydroelectric power which were relevant both in terms of contracted power and in terms of price, namely structural project Belo Monte (11,233 MW) and Teles Pires (1,820 MW) in which energy was sold at the following prices: R\$78.97/MWh and

R\$58.35/MWh, respectively. The pricing obtained in Teles Pires was the lowest price for new energy projects obtained within auctions hosted in the regulated market.

On August 2011, two energy auctions were conducted by ANEEL: a reserve energy auction and an A-3 auction. 429 wind energy projects were enrolled to participate in these auctions as well as 41 hydro power plants, 30 thermal power plants (including gas fueled power plants) and 81 biomass power plants. As a result of these auctions, 362.227.186,100 MWh were contracted for an average price of R\$ 102.07/MWh and R\$ 99.61/MWh (for the A-3 auction and reserve auction, respectively), presenting a relevant difference in comparison with the energy auctions of the previous years.

Also in the end of 2011, an A-5 energy auction was held with the participation only of wind and

biomass projects for an average price of R\$ 102.18/MWh. As a result of this auction, 104.509.233,600 MWh shall enter into commercial operation at the beginning of 2016.

On December 2012, ANEEL conducted another A-5 energy auction exclusively for renewable energy projects. As a consequence of this auction, 66.181.492,800 MWh were contracted for an average price of R\$ 91.25/MWh. These new generating projects shall enter into commercial operation on or until January 1<sup>st</sup>, 2017.

The table below depicts the expansion of renewable sources of power (in terms of installed power) between 2011 and 2013. As can be seen below, there is to be a significant increase in biomass, small hydroelectric power plants (PCH) and wind power projects within the next 3 years.

**Tabela 46 – Expansão de fontes alternativas de 2011 a 2013**

Tipo	Região	Potência (MW)		
		2011	2012	2013
Biomassa	Sudeste	887	799	329
	Sul	0	0	0
	Nordeste	61	30	0
	Norte	0	0	80
	<b>TOTAL</b>	<b>948</b>	<b>829</b>	<b>409</b>
PCH	Sudeste	245	24	97
	Sul	120	6	49
	Nordeste	26	0	0
	Norte	4	0	0
	<b>TOTAL</b>	<b>395</b>	<b>30</b>	<b>146</b>
Eólica	Sudeste	0	135	0
	Sul	295	186	246
	Nordeste	157	1.620	1.802
	Norte	0	0	0
	<b>TOTAL</b>	<b>452</b>	<b>1.941</b>	<b>2.048</b>
<b>TOTAL</b>		<b>1.795</b>	<b>2.800</b>	<b>2.603</b>

*Source: EPE, Plano Decenal de Energia 2020*

## 2. What is the definition and coverage of renewable energy under the relevant legislation?

The Brazilian legal framework does not have a specific provision defining the concept of renewable energy. Further, there is no general long-term policy regarding the use and development of renewable energy projects.

Notwithstanding the above, Law No. 9,478, dated 6 August 1997 sets forth the national politics for the rational use of energy resources. The law sets forth a number of guidelines including “*the protection of the environment and conservation of energy*” and the “*use of alternative sources of energy through the economic use of raw materials available and the applicable technologies*”.

Also, Law No. 10,438/2002 – which, among other things, created PROINFA- sets forth the objective of increasing the generation of energy from biomass, small hydroelectric plants and wind power projects.

In practice, the promotion of renewable energy sources has been implemented through specific auctions (as highlighted above), through the creation of PROINFA, the existence of specific financial credit facilities for companies generating renewable energy and through the granting of incentives to projects with certain characteristics.

Policy-wise, however, much needs to be done to develop a general framework and long-term policy for the generation of energy from renewable sources.

The Brazilian legal framework still needs to be developed in relation with the environmental rules and creating more specific conditions for the companies that generate alternative sources.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

According to Article 22, IV of the Federal Constitution, the Brazilian Union is competent to regulate energy-related matters. As such, the member States and Municipalities cannot establish laws contradicting the federal regulation.

The Brazilian concern regarding renewable sources of energy was first portrayed in Law 9.478/ 1997. As referred *supra*, this Law established the general guidelines for the rational use of energy and set forth that the economic use of renewable sources was to be a priority.

The PROINFA scheme was created by Law No. 10,438, dated 26 April 2002, and regulated by Decree No. 4,541, dated 23 December 2002. Law 10.438 also defined important mechanisms for subsidies for the use of renewable sources in the National Grid (*Sistema Interligado Nacional* – “SIN”), amongst other benefits for generating companies of the alternative sources.

Law 10,848 dated 15 March 2004 instituted the so-called “new model” of the Brazilian Power Sector pursuant to which trading of electric energy may take place either in the free market (ACL) or in the regulated market (ACR).

Specific auctions for energy from renewable sources are set forth by the National Electric Energy Agency (ANEEL), under guidelines set forth by the Ministry of Mines and Energy.

Specific regulations regarding requirements for authorizations or registrations of the renewable energy projects have been issued by ANEEL

under Resolution 112/1999 (now replaced by Resolution 390/2009).

Furthermore, at the beginning of 2012, ANEEL has approved, by means of ANEEL Resolution No. 482, dated as of April 17, 2012, the regulatory cornerstone for the development of new distributed generation projects (with a generating capacity up to 1MW) from renewable sources.

Under such regulation, the power consumers who wish to implement a renewable source and on-site generation system, up to 1MW in size, are authorized to use net metering systems and compensate any excess of generated energy with future consumption of energy to be received from SIN. Accordingly, this new regulation authorizes the compensation of the energy credit from an on-site generation unit with the future energy consumption of any related consumption under the same ownership chain, within a 36 months period, including distribution concessionaires.

At the end of 2012, the Brazilian Government has also enacted two important acts that have considerably changed the Brazilian electric energy sector framework: Ordinance No. 455/2012 and Provisional Measure (*Medida Provisória* or *MP*) No. 579/2012.

On August 2, 2012 the Ministry of Mines and Energy enacted Ordinance No. 455/2012, which defines the guidelines for the registration of power purchase agreements entered into within the free market. In short terms, the Ordinance sets forth that (i) such agreements must be registered *ex ante* the beginning of the energy delivery; and (ii) the parties must inform the contracted price at the moment of the registry. The Ministry of Mines and Energy set forth this price disclosure obligation with the purpose to create a price index for the free market (ACL).

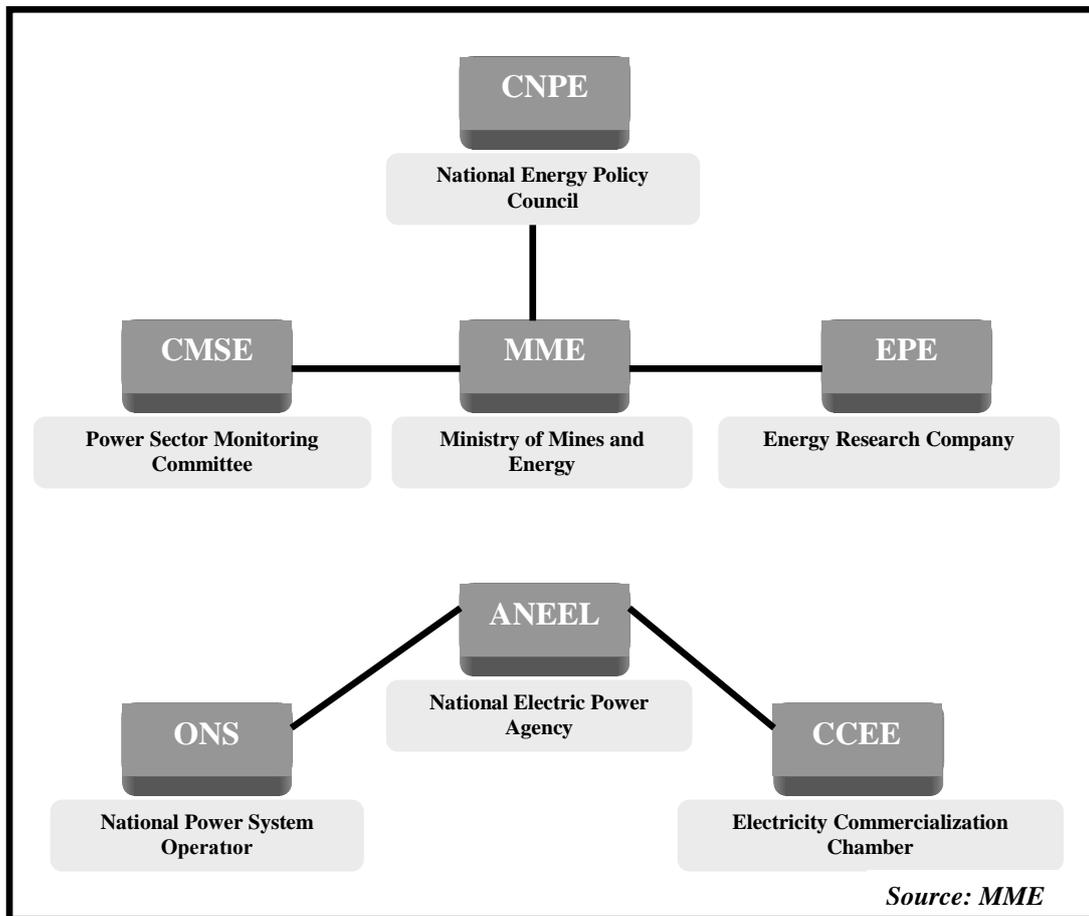
Moreover, the Brazilian Government enacted MP No. 579/2012, which was converted into Law No. 12,783/2013. Among other provisions, the main purpose of this normative act is to regulate the renewal conditions for electric energy generation, distribution and transmission concessions expiring between 2015 and 2017, including but not limited to hydro power generation.

Law No. 12,783/2013 aims at (i) establishing the conditions for the renewal of electric energy generation, distribution and transmission concessions; (ii) assuring a tariff reduction; and (iii) creating a quotas system characterized by the allocation of the power generated by the hydroelectric plants to the distribution concessionaires of the SIN whose concessions are renewed under the terms and conditions established by Law No. 12,783/2013. When it comes to hydroelectric generation, the renewal is subject to (i) a new tariff calculated by ANEEL, (ii) the commercialization in accordance with the quota allocation system and (iii) compliance with quality standards established by ANEEL.

#### **4. What are the principal regulatory bodies in the renewable energy sector?**

The institutional framework for regulation of energy in Brazil includes the Ministry of Mines and Energy -MME, the Brazilian Electric Energy Agency (“ANEEL”), the National Electric System Operator (“ONS”) and the Wholesale Energy Chamber (“CCEE”). Other agents include National Council for Energy Policy (CNPE), the Power Sector Monitoring Committee (CMSE) and the Energy Research Company (EPE).

Please find below a diagram depicting the main regulatory bodies within the Brazilian electric energy sector:



The National Council for Energy Policy - CNPE (*Conselho Nacional de Política Energética*) is an advisory board to the Brazilian Executive Power. Its main attributions are formulating energy-related policies and guidelines and assuring the supply of materials necessary for power generation in remote areas of Brazil. The CNPE is also in charge of reviewing the energy in each region of the country, as well as for establishing general guidelines for specific programs such as programs for the use of natural gas, alcohol, biomass, coal and thermonuclear power.

The Ministry of Mines and Energy - MME is the Federal Government entity responsible for the execution of energy-related policies within the country. Its paramount attributions include the formulation and the implementation of

policies for the energy sector, according to the guidelines defined by the CNPE.

The MME is responsible for setting up the planning for the domestic energy sector, monitoring Brazilian Power Sector safety of supply, and for defining preventive actions to preserve safety of supply in case of imbalances between supply and demand of electricity. As of the sanction of Law No. 10,848 dated March 2004, which instituted the “New Energy Model”, the Brazilian government, acting primarily through the MME, assumed certain functions previously assigned to ANEEL, including preparing the guidelines that govern the granting of concessions and the issuance of regulations with respect to the bidding process for public utility and electricity plants concessions. MME, for example, is the

body that approves the amount of energy to be purchased in a public auction promoted by the Federal Government. Consequently, the MME defines the list of generation projects.

The Power Sector Monitoring Committee – CMSE is an advisory board, dependent on the MME, established for the purpose of monitoring and evaluating the continuity of energy supply. Its principal functions include that of monitoring generation, transmission, distribution, export, import and trading of energy; as well as evaluating current conditions and identifying problems and risks within the Brazilian energy industry and elaborating proposals for adjustments in order to preserve safety of supply and service.

The Energy Research Company - EPE was instituted by Law No. 10,847/2004 and established by Decree No. 5,184/2004 as a company in charge of carrying out research and studies within the Brazilian electric energy sector. As such, EPE performs surveys and carries out projections which allow for further developments, expansions and –in general– short, medium and long term planning.

The National Electric Energy Agency- ANEEL was instituted by Law No. 9,247/96 and established by Decree No. 2,335/97. Its attributions are to regulate and inspect production, transmission, distribution and commercialization of electricity so that quality of provided services and universal access to electricity are assured. ANEEL also sets tariffs for consumers. Further, under the new model established on 2004, ANEEL is to promote, directly or indirectly, auctions for the distributing agents to purchase electricity through long term contracts within the National Grid (*Sistema Interligado Nacional- SIN*).

The National Power System Operator - ONS, was created by Law No. 9,648 in 1998 as a private, non-profit organization made up of agents representing customers and private and state- owned companies involved in the electricity generation, transmission, and distribution businesses. The New Industry Model Law granted the Brazilian government the authority to appoint three members to the ONS executive committee.

The Wholesale Energy Chamber - CCEE was instituted in August 2004 to take over the attributions previously carried out by the Wholesale Electricity Market. Its principal attributions are determining the spot price, used to value short term market transactions; executing so-called energy accounting processes to identify the agents and amount of electricity involved in multilateral short term market transactions; preparing financial settlement of amounts calculated in the energy accounting process; and preparing and executing electricity auctions within ACR by delegation of ANEEL.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

Generation companies can adhere to the Special Regime of Incentives for the Development of Infrastructure (*Regime Especial de Incentivos para o Desenvolvimento da Infra-Estrutura – “REIDI”*) established by Law No. 11,488, dated of 15 June 2007 and regulated by the Decree No. 6,144/2007 that suspends the requirement of specific taxes PIS/PASEP and COFINS in the acquisition and import of services and equipment linked to infrastructure projects approved and carried out in a period of 5 years as from the approval date.

The license and co-license of the beneficiaries of the REIDI can only be required by private legal entities that hold the implementation of an infrastructure project of the energy sector.

In the case of companies of the energy sector, according to the Ordinance No. 319, dated 26 September 2009, the legal entity holds the concession, permission or authorization to generate, transmit or distribute electric energy needs to submit a request to ANEEL to participate in the program.

Subsequently, the legal entity needs to file with the Secretary of the Brazilian Federal Revenue, to receive the benefits of this program.

In addition, on 2011, the Brazilian Government, seeking to attract more investments for the country, issued Law No. 12,431/11, dated as of June 24, 2011, which enabled the creation of infrastructure bonds (*debentures*). The referred law permits specific purpose companies to issue infrastructure bonds for the financing of projects considered by the Government as a priority, including renewable energy undertakings. These infrastructure bonds are a form of incentive for investments because they present certain privileges, especially regarding tax aspects: infrastructure bonds issued by renewable energy generating companies – whose project was duly approved by the Government as a priority – shall be subject to a 15% income tax aliquot (such percentage is reduced to 0% for individuals).

## 6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

Under the new model for the electric sector, the trading (or commercialization) of electric energy may take place in two different markets:

(i) within the regulated market (*Ambiente de Contratação Regulada- ACR*), electric power purchase agreements (so-called CCEARs) are executed by and between selling agents and purchasing agents (distributors) through specific auctions hosted by the government. Power purchased by the distributing companies is supplied to the captive consumers at regulated rates; and (ii) within the free market (*Ambiente de Contratação Livre*), on the other hand, negotiation among the generating Agents, Commercialization Agents, Free Consumers<sup>1</sup> Importers and Exporters of electricity takes place through privately negotiated agreements. Distributing entities may operate only in the regulated market. Generating companies (whether public generation concessionaires, Independent Producers of electric power or Self-Producers) can trade power both in the free market and in the regulated market.

Companies operating within the regulated market must submit winning bids in the auctions promoted by the regulatory bodies and will consequently sell the predetermined amount set forth in the contract. In this case they have a purchase guarantee of the energy generated.

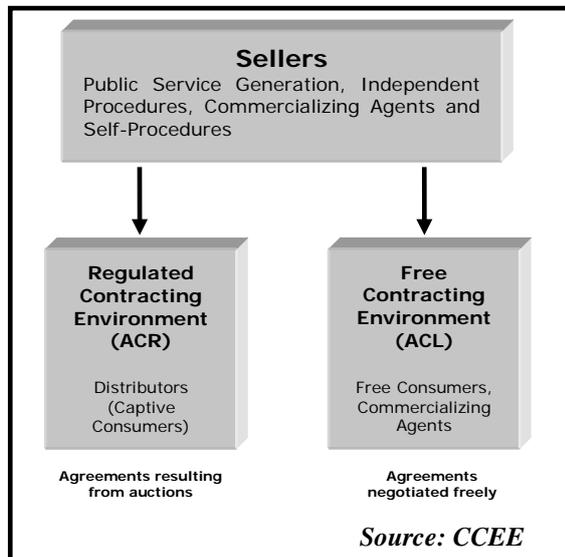
<sup>1</sup> Free Consumers are consumers which – having complied with certain requirements set forth by the applicable legislation - are allowed to choose their electric power provider (generating and commercializing Agents) by means of free negotiation. The table below summarizes the conditions enabling the consumer of electric power to become a free consumer.

Criteria in effect to become a Free Consumer:

Minimal Demand	Minimum Supply Voltage	Date of connection to the consumer
3 MW	Any voltage	After July 8, 1995
3 MW	69 kV	Before July 8, 1995

The threshold of minimum demand may decrease in special cases involving consumers that are willing to buy power from renewable energy projects.

A general overview of the two different trading markets is portrayed below:



In the 2009 wind energy reserve auction, projects submitting successful bids have a purchase guarantee from CCEE. In the case of the PROINFA, it was established that Eletrobrás would purchase 100% of the generated energy of the power plants registered in the program, thus all the generating companies that participate of this program have a purchase guarantee. In other public auctions, long-term PPAs are entered into with the pool of concessionaires of distribution services participating of each auction, with the purpose to amortize the investment performed by generating companies.

### **7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

A question that generates controversy is that related to the maintenance and growth of renewable sources of energy versus the cost that such sources often entail. In this sense, some claim that the cost of renewable sources of energy is higher than that of energy from

other sources. At the same time, a minimum price must be guaranteed in order to attract investors.

In practice, however, there is no minimum price. Auctions are conducted as Dutch-type or decreasing price auctions whereby the maximum price is previously established by the MME and interested parties are to submit bids lower than this price in order to prevail.

In effect, under the new model of the Brazilian power sector, the principle of the lowest price is to serve as guideline for auctions coordinated by the Federal government (item VII of art. 20 of Decree No. 5,163/2004). In other words, winners of the auction shall be those bidders which offer electric power for the least price per Mega-Watt Hour to supply the demand envisaged by the Distributors. A power purchase agreement (in the form of a CCEAR) is then executed between the winners and the Distributors.

In the case of the PROINFA regime, the minimum price was set in relation to the average national tariff of supply for the final consumers in the last 12 months with an increase in the amount of 50% for biomass projects, 70% for PCHs and 90% for wind power projects. This resulted in final bidding prices significantly higher than prices for projects from other energy sources.

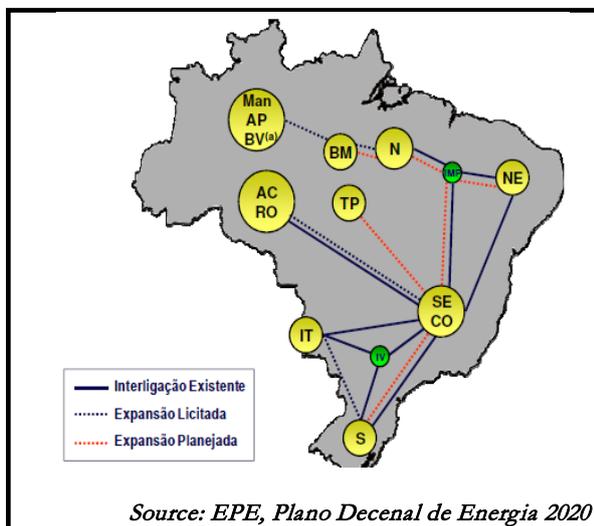
In subsequent energy auctions, the maximum price defined by the MME was set at R\$189/MWh (in the 2009 wind energy auction) and at R\$ 167.00/MWh for wind and biomass and R\$155.00 for small hydroelectric power plants (in the 2010 auctions). During the auction, the price dropped to an average of R\$148.39/MWh (in the 2009 wind energy auction) and to R\$130.86 (wind), R\$144.20 (biomass) and R\$141.93 (small hydroelectric power plants) in the 2010 auctions.

On 2011, the maximum price was established at R\$ 139/MWh, R\$ 146/MWh and R\$ 112/MWh for auction A-3, reserve auction and A-5 auction, respectively.

The maximum price for the 2012 auction was set forth at R\$ 112/MWh.

## 8. Do the renewable energy based power plants have priority for connection to the grid?

The Brazilian electricity network consists of one main interconnected grid, namely SIN, comprised of several transmission lines, connecting the regional systems: South, Southeast, Centre-west, Northeast and part of the Northern area. The SIN is responsible for supplying energy to approximately 98.0% of Brazil's market of electric energy. The basic grid is composed by more than 90,000 km of transmission lines. The Brazilian regions that don't form part of the SIN compose the isolated system. On 2009 Brazil the so-called "isolated systems" supplied energy to approximately 3% of the Brazilian population.



The map above, portrays the SIN including existing connection (blue lines), expansions to the grid that have already been auctioned (dotted blue line) and planned expansions to the grid (dotted red lines).

In what regards the national grid or SIN, a priority condition was given to the companies that participate in the PROINFA. According to the Decree No. 5,025 of 2004 (before the Decree No. 4,541 of 2002) the generating companies that participate of the PROINFA have priority in the dispatch with the ONS to the connection on the grip in comparison with other types of energy.

In this sense, ANEEL enacted the Normative Resolution No. 56/2004 that sets forth the procedure for the access of the generating companies that participate of the PROINFA to the system of the transportation of energy. This Resolution established that the ONS, the concession or permission company of distribution needs to send a definitive access report (parecer de acesso) defining the way that the generation company that participates of the PROINFA will be connected to the grid. The access report needs to observe the criteria of minimum global value that is a valuation of the technically equivalent ways to the integration of the generating companies to the grid spending the minimum global value of investments to do this connection.

Article 4 of the same Resolution contemplates the possibility of shared connection to the grid. This alternative is usually considered by the generating companies because normally the costs to implement operate and maintain the connection installations of shared use are divided, in a proportional way, to the power installed by the companies in the power plant units.

Regarding the possibility of shared connection to the grid, ANEEL Normative Resolution No. 320/2008 established special conditions for wind, biomass and PCHs to access the SIN by the Facilities Transmission of Exclusive Interest of Central Generations for Share Connection ("Instalações de Transmissão de Interesse Exclusivo de Centrais de Geração para Conexão Compartilhada") – "ICG" The shared

use of the transmission installations by the generating companies of renewable energy prorate the high costs that an isolated connection can imply and consequently help the companies that generate these types of energy to reduce the total price of the energy sold.

To share an ICG the generating companies need to be selected in a Public Call of ANEEL and have to give a guarantee. The companies selected by ANEEL need to pay a monthly connection charge to the concessionaire of transmission that will be calculated by the proportion of power injected in the access point to the basic grid and also to the investments done by the company between the point of access in the basic grid and the connection to the ICG.

#### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

The PROINFA system, enacted by Law No. 10,438/2002, included a local content requirement. Thus, as per Article 3, § 4<sup>o</sup> only producers complying with the 60% local content requirement for equipments and services for the first phase of the program and 90% for the second phase, qualified for the auction.

Subsequent auctions, such as the 2009 wind energy auction did not contain such a local content requirement, although the Bidding Notice set forth that only wind turbines with a capacity of more than 1,500 kW could be imported. The same limitation on the import of equipment was implemented in the 2010 auctions and in the auctions that are scheduled to take place in August 2011.

However, please note that local content requirements for equipments and services are also condition to qualify certain financing facilities of the BNDES, the Brazilian National

Development Bank, including the FINEM<sup>2</sup> and FINAME<sup>3</sup>.

#### **10. What are the other incentives available to renewable energy generation companies?**

Despite the lack of a general long-term policy regarding renewable energy, there are a number of incentives available to renewable energy generation companies.

##### a) Discount in connection tariffs:

ANEEL supervises and regulates the access to distribution and transmission systems and sets the tariffs and charges for the use of and access to such systems. Tariffs are (i) TUSD, a tariff charged for the use of the exclusive distribution system of the distribution company and (ii) TUST, a tariff charged for the use of the base network and other transmission facilities. Additionally, distribution companies of the South/Southeast interconnected power system pay a charge for the transportation of electricity from Itaipu and some distribution companies that access the shared transmission system pay a connection charge.

TUSD is paid by generators and free consumers for the use of the concessionary's distribution system to which they are connected and is adjusted annually taking into consideration two factors: inflation in the year and investments in network expansion,

<sup>2</sup> FINEM is a financing line to support infrastructure projects. To find more information about these financial facilities please see; <http://inter.bndes.gov.br/english/finem.asp>.

<sup>3</sup> FINAME is Special Agency for Industrial Financing of BNDES. It finances through accredited financial institutions, for the production and commercialization of new domestically manufactured machinery and/or equipment accredited with BNDES. To find more information about this financing facilities, please refer to; <http://inter.bndes.gov.br/english/finame.asp>.

maintenance and operation made in the previous year. The monthly charge to be paid by the entities connected to the distribution system, by connection point, is calculated by multiplying the use amount, by the tariff established by ANEEL, in R\$/kW. Distribution concessionaries receive the TUSD from Free Consumers located in their concession area and possible distribution companies connected to their distribution systems.

TUST is paid by distribution companies, generation companies and Free Consumers for the use of the base network and is adjusted annually according to (i) inflation; and (ii) annual revenues permitted to transmission concessionaries set by ANEEL. Under the principles set by ANEEL, the owners of the different parties of the main transmission network transferred to the coordination of their facilities to the ONS in exchange for the regulated payments of transmission systems users. Network users entered into contracts with the ONS that grant them the right to use the transmission network in exchange for the payment of the published tariffs. Other portions of the network owned by transmission companies but that are not considered an integral part of the transmission network are made available directly to interested users that pay a specific fee.

Section 26, § 1<sup>a</sup> of Law No. 9,427/1996 (as amended) establishes that discounts on distribution and transmission tariffs shall be available to small hydroelectric plants, solar, wind, biomass and qualified co-generation projects with power injected in the transmission and distribution system equal to or less than 30 MW.

ANEEL Resolution No. 77/2004, granted a 50% reduction in the tariffs. The same Resolution established in some specific cases the reduction of 100% of the tariff, as follows: (i) PCHs with a power higher than 1 MW and

lower than 30 MW that initiated commercial operation between 1 October 1999 and 31 December 2003; (ii) operate with wind, biomass or by a qualified co-generation process and that initiated the commercial operation between 23 April 2003 and 31 December 2003, (iii) use as energetic input, at least 50% of biomass composed by solid waste and/or biogas of landfill or animal or vegetal waste, as well as sludge from sewage treatment plants and (iv) the power plants that have their reduce percentage of generation established by an authoritative act and initiated the commercial operation until 31 December 2003.

In the first semester of 2012, another TUSD and TUST reduction was granted to solar generators: pursuant to ANEEL Resolution No. 481, dated as of April 17, 2012, the tariff charged for the transportation of the energy from a solar source to the interconnected system was reduced in 80% for a 10 years period considering projects entering into commercial operation until December, 2017. As for solar projects entering into commercial operation after December, 2017, the referred resolution grants a 50% reduction over TUSD and TUST.

b) According to Section 26 § 5<sup>a</sup> of Law No. 9,427/1996 the generators of renewable energy have the possibility of commercializing energy with potentially free consumers in case that they inject in the system of transmission and distribution a power equal or lower than 50.000 kW. In this case, the generators can supply the energy to the potentially free consumer in conjunction with other renewable energy generators to the limit of 49% of the energy generated by them. Before this Law only the generators with more than 3.000 kW and with a tension equal or superior to 69 kV had the possibility to commercialize the remaining energy generated with free consumers. The conditions for the commercialization of the generators of renewable energy are defined in the ANEEL

Resolution No. 247/2006, further amended by the Resolution No. 323/2008 and 376/2009.

c) Another type of incentive that is applicable for renewable energy is the Electricity Development Account (“CDE”). This mechanism was created on April 2002 by the Brazilian government) to promote (i) competitiveness in the power produced from alternative sources, such as from wind, biomass, PCHs, natural gas, and Brazilian minerals, in areas served by interconnected power systems; and (ii) the universal supply of electricity services. CDE is effective for 25 years and is managed by Eletrobrás.

CDE funds come from annual payments made for the use of public resources, fines imposed on concessionaries, permission holders and companies authorized by ANEEL, and the fees paid by all entities that purchase and sell power to end consumers.

CDE can also be used to subsidize tariffs to low-income household consumers when funds that the Brazilian government uses for such purpose are insufficient. Low income consumers are those served by single-phase circuits with a monthly consumption from 80 to 220 kWh/month, registered in the single registry of the Brazilian government or in the family support program of the Brazilian government by 27 February 2006.

d) The Brazilian Federal Constitution sets forth -in its Article 21 (XIX)- that PCHs don't have to pay the financial compensation for the use of the water sources. Law No. 9,427/96 (Section 26 § 4<sup>a</sup>) states that the water plants with a power equal or lower than 30,000 that maintain the characteristics of a PCH can use this incentive.

e) The Fuel-Consumption Account has been in force since 1993 and collects funds from the

electric-power concessionaires of the interconnected grid to subsidize the price of diesel fuel for thermoelectric-generation facilities in isolated areas of the country not serviced by the national grid (mainly in the North region). It is important to note that, as established by Law No. 12,111/2009 in Sections 3 and 4, CCC can also be used for companies that don't generate thermoelectric energy but are also part of the isolated system. Thus, the companies that generate renewable energy can request the subsidy of the fund (subrogate in the right of the other companies) if they prove that the energy generated will be used as a substitute of the thermoelectric generation in the isolated system.

CCC funds are managed by Eletrobrás. It was ANEEL's role to set the value of the early quotas to be paid by electric-power distributors to provide funds for the fuel-consumption account. Before the approval of the Provisional Measure 579/2012, converted into Law No. 12,783/2013 these charges were in turn, transferred to consumers by means of a monthly additional contribution included in their electricity bills. However, the above mentioned Provisional Measure established that the payment of fuel-consumption account is no longer required. Despite of this provision, CCC's resources shall still be used to subsidize the price of diesel fuel for thermoelectric-generation facilities in isolated areas of the country not serviced by SIN.

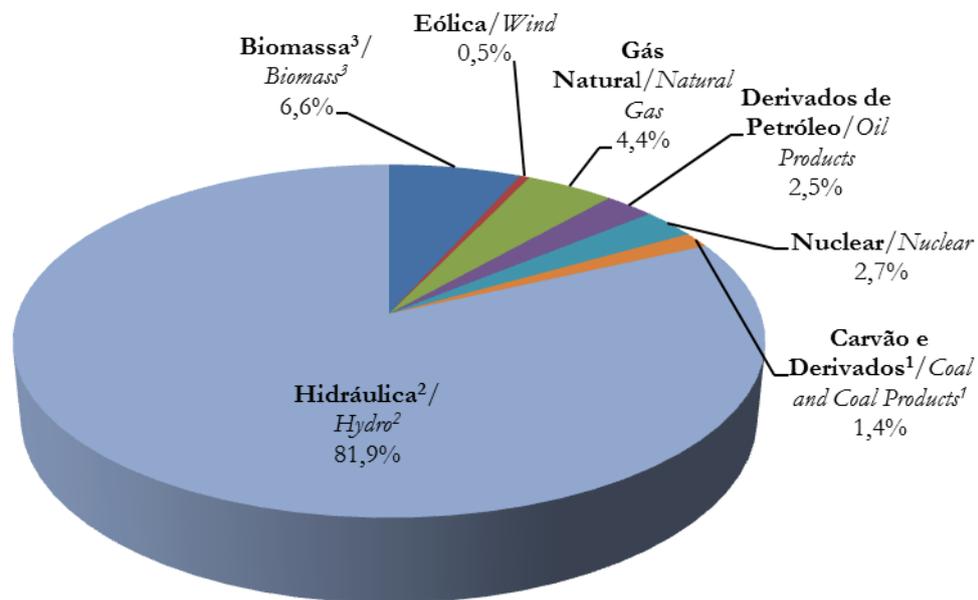
f) The Clean Development Mechanism (“CDM”) created by the Kyoto Protocol is already contemplated in some Brazilian rules. The Decree No. 5,882 of 2006 determined that the Power Purchase Agreements (PPAs) of the PROINFA may have a clause which the generators pass the power to administrate the CDMs to ELETROBRÁS. The last auctions of renewable energy (the auction for reserve wind energy of 2009 and the auction of reserve

energy of PCH, wind and biomass) established the possibility that the sellers of energy plead for themselves the credits related to the CDMs. In the case that the sellers decide to use the credits, it will be their responsibility to elaborate and obtain the necessary documents for the execution of all the phases for the registry in the Executive Council of the Clean Development Mechanism.

## STATISTICS

11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?

**Gráfico 1.1 - Oferta Interna de Energia Elétrica por Fonte - 2011**  
**Chart 1.1 - Domestic Electricity Supply by Source - 2011**



**Notas/Notes:**

<sup>1</sup> Inclui gás de coqueria / Includes coke oven gas

<sup>2</sup> Inclui importação de eletricidade / Includes electricity imports

<sup>3</sup> Inclui lenha, bagaço de cana, lixívia e outras recuperações / Includes firewood, sugarcane bagasse, black-liquor and other primary sources

**Source: 2013 Balance of National Energy - EPE**

According to data published by the Energy Research Company – EPE, on 2011, Electricity generation in Brazil, including public service power plants and self-producers, was 509.2 TWh on 2010, which is 10.0% higher than in 2009.

Public service plants remain as the main electricity generators, sharing 87.5% of total generation. Hydropower, the main electricity source, has increased 3.7% on 2010, due to favorable hydrological conditions.

Net imports of 35,9 TWh, plus domestic generation, amount to 545,1 TWh domestic electricity supply, which is 8.4% higher than in 2009. Final consumption was 455.7 TWh, which is 7.8% higher than the consumption on 2009.

As can be seen in the graph above, hydroelectric power plants continue to provide a large percentage of the electricity in Brazil, accounting for 74% of the domestic supply. Generation of electricity from other renewable

sources of energy continues to be incipient. In this sense, generation from wind source only accounts for 0.4% of the domestic supply and generation of energy from biomass for 4.7%. However, as referred above, these figures are

increasing significantly as a result of the auctions coordinated by ANEEL for purchase of power from renewable sources. As such, the installed power from renewable sources is to increase significantly in the coming years.

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# Czech Republic

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## GENERAL

### 1. What is the nature and importance of renewable energy in your country?

The renewable energy sector is a very fast growing sector within the energy business. The Czech government has further made a commitment at the EU level to achieve a share of 13% from renewable energy resources by the end of 2020; this level is supposed to be achieved already by the end of 2013. At the time of the most recent statistics (year 2011), this share was 10.28% and the total production of electricity from the renewable sources was 7.25 TWh.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

A renewable energy resource is any non-fossil resource, such as wind energy, solar energy, geothermal energy, hydro energy, soil energy, air energy, biomass energy, landfill gas energy, sewage gas energy and biogas energy.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

The renewable energy sector is regulated by the following legal regulations:

Act No. 458/2000 Coll., the Energy Act, as amended, and Act No. 165/2012 Coll., on Supported Renewable Sources (the “Act”).

Currently, further support for renewable energy plants starting operations from January 1, 2014, is discussed and is supposed to be abolished or significantly limited.

### 4. What are the principal regulatory bodies in the renewable energy sector?

The main regulatory bodies are the Energy Regulatory Office (“ERO”) and the Ministry of Industry and Trade.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

No, the exemption from tax applicable to income generated from certain renewable energy facilities has been abolished as of 1 January 2011.

Further, incentives for all PV Plants connected between January 1, 2009 and December 31, 2010 (except for roof-mounted units with installed power up to 30 kWp), on electricity produced until December 31, 2013 are subject to a withholding of 26% on the feed-in tariff (i.e. fixed prices) and 28% on the green bonus (subsidy added to the market price of the electricity). Currently, extension of this period is discussed.

### 6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

Any producer of electricity generated by renewable resources has the right to sell the electricity on the market, or to the regional

distribution company/transmission grid operator, if he complies with certain obligations for grid connection. The regional distribution company and transmission grid operator are obliged to buy all energy generated by renewable resource facilities.

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

The ERO determines feed-in tariffs and green bonuses by the year end for the following calendar year. The prices and green bonuses are guaranteed by law for a period of recovery of investment to the facility. The prices which were guaranteed as of the day of commissioning of respective plant cannot be decreased and can only be changed based on the Producer Price Index.

Under the Act, only green bonuses will be provided to the new producers for the electricity produced by the renewable resources facilities, unless the capacity exceeds 10 MW in case of water power plants and 100 kW in case of any other plants.

**8. Do the renewable energy based power plants have priority for connection to the grid?**

Yes, renewable energy based power plants if comply with certain technical requirements, have priority access to the connection to the grid, unless the technical status of the grid and

technical reasons do not allow such connection (the main reason for refusing grid connection of a facility is the risk of safe and reliable operation of the distribution grid and entire network).

**9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

No.

**10. What are the other incentives available to renewable energy generation companies?**

None.

## STATISTICS

**11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at the country level?**

The percentage of electricity generated based on each type of renewable energy source is as follows (as of the end of 2011):

Biomass	2.32%
Biogas	1.28%
Water	7.7%
Wind	0.54%
Solar	3.01%
Sewage	0.12%

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# Estonia

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

The share of renewable energy sources in the total energy consumption was 24.3% in 2011, whereas the share of renewable energy sources in electricity consumption was 14.9% in 2012. The Government have declared that the share of renewable energy sources in total energy consumption is aimed to be 25% in 2020.

Estonian National Development Plan of the Energy Sector until 2020 and Competitiveness Plan – Estonia 2020 set out that in order to ensure sustainable energy supply and consumption, the share of renewable energy sources and cogeneration must be increased in the energy balance. The following is planned to increase the share of renewable energy sources:

- a) The increase of share of renewable energy in final consumption of energy up to 25% in 2020;
- b) The share of transport fuels based on renewable energy sources will increase from 0.06% in 2007 – up to 10% in 2020;

The Renewable Energy Action Plan was adopted by the Government in 2010 setting out detailed measures for different sectors to support renewable energy.

At the same time it must be noted that the current Government plans to make changes in renewable energy support. Draft amendments to Electricity Market Act were initiated by the Ministry of Economic Affairs and Communications in January 2012. The draft amendments have been considered by the Parliament, however as of 1 April 2013 they have not been adopted yet and it remains to be seen whether and to what extent the renewable energy support levels will be changed.

The Estonian renewable energy sources include biomass (wood) as the largest component, but also wind and hydro power. It is expected that the share of biomass and wind energy will increase while fossil fuel part decreases.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

Electricity Market Act defines the renewable energy sources are water, wind, solar, wave, tidal and geothermal energy sources, landfill gas, sewage treatment plant gas, biogases and biomass.

Biomass is further defined as the biodegradable fraction of products, waste and residues from agriculture (including vegetal and animal substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste.

Liquid biofuel is treated as a renewable energy source if it meets the effective sustainability criteria for biofuels, which are set out by the Minister of Environment on the basis of Ambient Air Protection Act (adopted on the basis of directive 2009/28/EC on the promotion of the use of energy from renewable sources).

**REGULATION****3. How is the renewable energy sector regulated? What are the principal laws and regulations?**

There are no specific laws regulating exclusively renewable energy sector. Renewable energy is regulated by the general energy laws:

- Electricity Market Act
- Grid Code, adopted by the Government of the Republic on the basis of Electricity Market Act
- Liquid Fuel Act
- Alcohol, Tobacco and Fuel Excise Duty Act.

Electricity Market Act sets out the definition of renewable energy sources and provides support measures for the renewable energy production. Detailed rules on the access of wind turbines and other electricity installations to the electricity grid are included in the Grid Code.

Liquid Fuel Act and Alcohol, Tobacco and Fuel Excise Duty Act provide that excise tax needs to be paid on electricity energy and exemption from fuel excise is granted to certain biofuels.

**4. What are the principal regulatory bodies in the renewable energy sector?**

The Regulator of energy sector in general is Estonian Competition Authority. Electricity energy excise and bio fuel exemption related activities are regulated by the Customs and Tax Board.

**INCENTIVES****5. Are tax advantages available to renewable energy generation companies?**

No, there are no tax advantages to companies generating electricity from renewable energy sources.

**6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

No. Previously the Electricity Market Act set out for a purchase obligation of the transmission network operator in relation to electricity produced from renewable energy sources; however such purchase obligation was abolished as of 27 February 2010.

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

Renewable energy companies are eligible to receive the support for the sale of renewable energy. A reservation applies in relation to wind power, whereas renewable energy support is paid for electricity generated from wind until 600GWh of wind energy has been produced each respective calendar year. If the volume of wind energy generated in such calendar year exceeds 600 GWh, then all wind power generators will lose the right for the support. According to public sources, approximately 450GWh wind energy was produced in Estonia in 2012.

The amount of the renewable energy support is 0.0537 EUR per kWh.

It must be further noted that until 1 July 2010 such support was paid for the electricity

generated from all renewable energy sources (with the above exception in relation to wind power). As of 1 July 2010, the types of renewable energy eligible for the support changed. Renewable energy support is not paid for the electricity generated from biomass on condensation regime any more. At the same time electricity generated from waste, peat or oil shale is eligible for a reduced support of 0.032 EUR per kWh if the electricity is generated in cogeneration regime.

However, amendments are expected to be made in 2013 to the Electricity Market Act regarding the renewable energy support, main conditions are still under discussion.

**8. Do the renewable energy based power plants have priority for connection to the grid?**

No, renewable energy based power plants do not have a priority for connection to the grid.

**9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

No, there are no incentives for domestic (local) manufacturing of equipment or materials used

in the construction of renewable energy based power plants.

**10. What are the other incentives available to renewable energy generation companies?**

The Grid Code now provides for a simplified procedure for the connection to the grid of generation facilities with up to 15kW capacity using renewable energy sources – connecting such facilities to the grid does not need the consent of the transmission network operator any more.

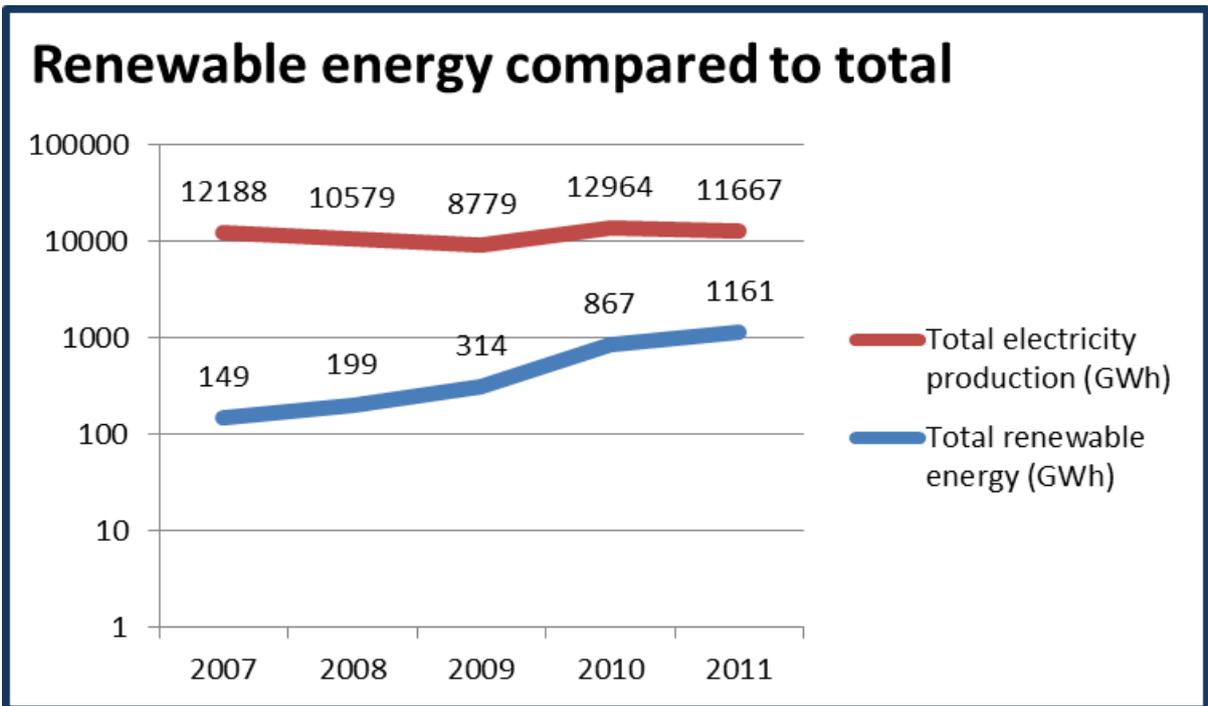
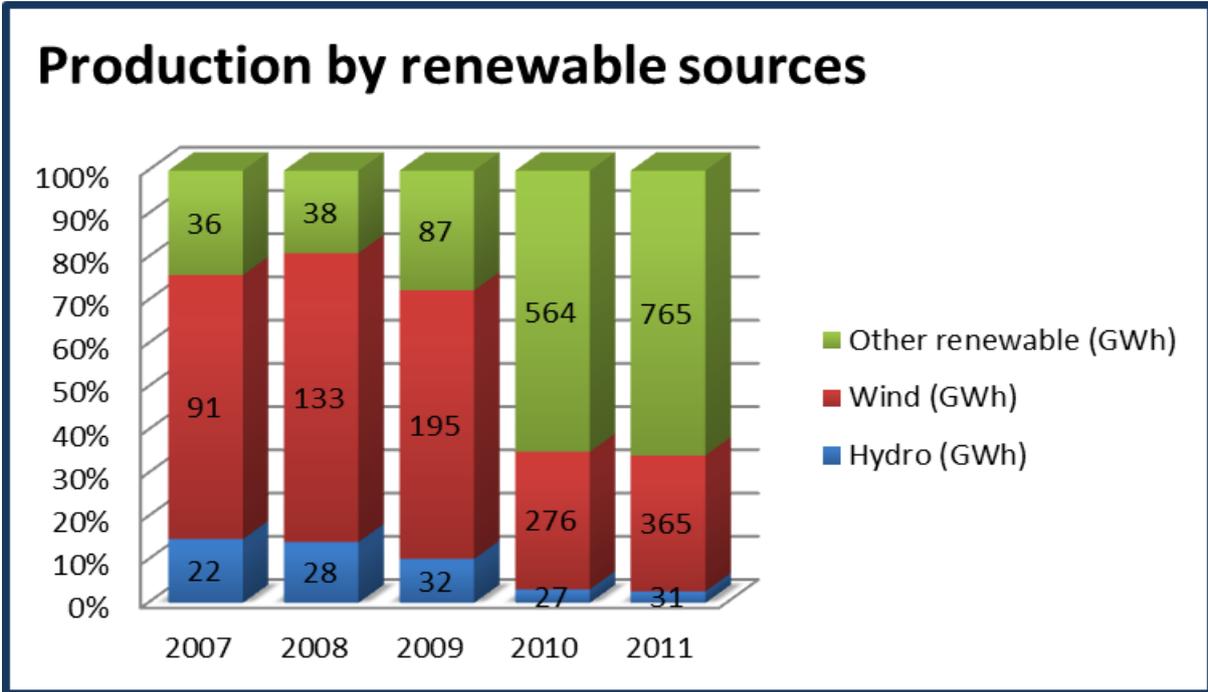
## STATISTICS

**11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

Please find the Statistics Estonia information on the total electricity production and the share of electricity produced from renewable energy sources.

As of 1 April 2013, the statistics for 2012 has not yet been published.

Year	Total electricity production (GWh)	Hydro (GWh, share of total electricity production)	Wind (GWh, share of total electricity production)	Other renewable – mainly biofuel (GWh, share of total electricity production)
2007	12188	22(~0.2%)	91 (~0.7%)	36 (~0.4%)
2008	10579	28 (~0.3%)	133 (~1.3 %)	38 (~0.4 %)
2009	8779	32 (~0.4%)	195 (~2.2%)	87 (~1%)
2010	12964	27 (~0.2%)	276 (~2.1%)	564 (~4.4%)
2011	11667	31 (~0.3%)	365 (~1%)	765 (~6.6%)



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# Finland

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

Finland consumes proportionally more renewable energy than most countries in the world.

In the third quarter of 2012, the share of renewable energy of Finland's total energy consumption increased as a result of a decrease in consumption of fossil fuels and increase in the consumption of hydro and wind power.<sup>1</sup> Wind power production has been growing rapidly due to its promotion by the Finnish Government.<sup>2</sup>

According to 2011 statistics, renewable energy sources provided approximately 28 percent of Finland's total energy consumption and accounted for 33 percent of electricity generation. Based on a breakdown of the total energy consumption by source, the main renewable energy sources are hydro power and wood-based fuels. As regards electricity,

hydropower and biomass contribute the largest proportions.<sup>3</sup>

Generally, Finnish energy policy is in line with the European Union Directive on the Promotion of the Use of Energy from Renewable Sources 2009/28/EC, as amended (the "RES Directive"). The Finnish Government promoted and plans to keep promoting the production and consumption of renewable energy with various support schemes in order to reach the ambitious national target that requires Finland to increase the use of renewable energy at least to 38 percent of its energy consumption by 2020.<sup>4</sup>

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

Although the national legislation does not define renewable energy, the Act on Production Subsidies for Electricity Produced from Renewable Energy Sources (1396/2010, as amended) ("Production Subsidies Act") for example, refers to the following sources: wind power, biogas, wood-based fuels (including wood by-products and waste products as well as wood chips) and hydro power.

Moreover, Finland considers the energy sources specified in the RES Directive to be renewable.<sup>5</sup> According to the RES Directive, the term renewable energy refers to energy that is produced from renewable non-fossil sources such as wind, solar, aerothermal, geothermal,

<sup>1</sup> Official Statistics of Finland, 2012 third quarter, available at "[http://www.stat.fi/til/ehk/2012/03/ehk\\_2012\\_03\\_2013-01-22\\_en.pdf](http://www.stat.fi/til/ehk/2012/03/ehk_2012_03_2013-01-22_en.pdf)".

<sup>2</sup> Official Statistics of Finland, 2012 first quarter, available at "[http://www.stat.fi/til/ehk/index\\_en.html](http://www.stat.fi/til/ehk/index_en.html)".

<sup>3</sup> Official Statistics of Finland, 2011 first quarter, available at "[http://www.stat.fi/til/ehk/index\\_en.html](http://www.stat.fi/til/ehk/index_en.html)".

<sup>4</sup> See Directive 2009/28/EC of The European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, Official Journal of the European Union, 5 June 2009.

<sup>5</sup> Ministry of Employment and the Economy (1096/08.10.02/2012), implementing guidelines of RES Directive.

hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogas. In Finland, peat is considered a slowly renewable energy source.<sup>6</sup>

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

- Electricity Market Act (386/1995, as amended): The Act stipulates provisions on renewable sources within the framework of the electricity market.
- Production Subsidies Act and Degree on Production Subsidies for Electricity Produced from Renewable Energy Sources (1397/2010, as amended) (“Production Subsidies Degree”) came into effect on January 1, 2011: The aim is to promote the production of electricity from renewable sources and the competitiveness of such sources. It provides for feed-in tariffs and fixed production subsidies paid for electricity generated from wind power, biogas, wood-based fuels and hydro power. In 2012, the former fixed production aid for producers that was paid as an alternative to the feed-in tariffs was terminated.<sup>7</sup>
- Act on the Allocation of State Grants (688/2001, as amended): The Act is the legal basis of the Government Decree on General Rules for the Allocation of Subsidies for Energy (1313/2007).
- Government Decree on General Rules for the Allocation of Subsidies for Energy

<sup>6</sup> See National Strategy for Implementing Kyoto Protocol, Government Report to Parliament, 25 November 2005 and Long-term Climate and Energy Strategy, Government Report to Parliament, 6 November 2008.

<sup>7</sup> See Explanatory Memorandum (124/2011).

(1313/2007): This government decree establishes provisions on the allocation of financial aid for investment and research projects that also promote technologies for the use of renewable energy.

- Act on Promoting the Use of Biofuels in Transport (446/2007, as amended): The Act promotes the use of biofuels in transport and sets an obligation for transport fuel distributors to distribute biofuels for consumption.

### 4. What are the principal regulatory bodies in the renewable energy sector?

The Ministry of Finance is responsible for the preparation of legislation on energy taxation. The Ministry of Employment and the Economy participates in the preparation of energy taxation in order to ensure that taxation supports energy and climate policy goals as efficiently as possible. The Ministry’s Energy Department’s Director-General serves as the main authority in the field of energy.<sup>8</sup> As for supervisors, the Energy Market Authority grants various permits for energy projects and is in charge of the feed-in tariff system.<sup>9</sup> It also enhances and monitors the activities of the electricity and natural gas market and enhances the realization of climate change.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

Finland promotes the use of renewable energy through various taxation advantages. In 2011, energy taxation reform changed the former

<sup>8</sup> Ministry of Employment and the Economy, available at “<http://www.tem.fi/index.phtml?l=en&s=2630>”.

<sup>9</sup> Energy Market Authority, available at “<http://www.energia.markki.navirasto.fi/default.asp?languageid=826>”.

excise duties. The current excise duties for both electricity and liquid fuels are based on energy content and the carbon dioxide emissions. The reform changed, inter alia, The Act on Excise Duty on Liquid Fuels (1472/1994, as amended) and the Act on Excise Duty on Electricity and Fuels (1260/1996, as amended).

The goal as regards transport fuels was to guide the consumption towards the use of the most carbon dioxide-efficient biofuels.<sup>10</sup> In addition, the following liquid fuels remain exempt from excise duty and stockpile fee:

- fuels entered in the reserve stock of the Finnish Government;
- fuels used as an energy source in an oil refining process;
- fuels used as raw material or auxiliary in industrial production, or in direct first use in the production of goods;
- fuels used in vessel traffic other than private leisure boating;
- fuels used for electricity generation;
- fuels used in aviation other than private leisure flights; and
- liquefied petroleum gas.<sup>11</sup>

As regards electricity and other fuels, taxpayers are divided into different classes. The electricity used by in industry is subject to lower tax category while, for example, the households, forestry and agriculture pay a higher tax. Exemptions from both electricity tax and strategic stockpile fee are granted to:

- produce electricity with a generator not exceeding 50 kVA or with a facility consisting of several items of electricity generation equipment;
- produce electricity with a generator exceeding 50 kVA but not exceeding 2000 kVA without transferring the electricity to an electrical network; and
- produce electricity onboard a vessel or in a car, train or other vehicle for the requirements of the vehicle.<sup>12</sup>

Furthermore, tax refunds are paid for energy intensive industries<sup>13</sup> and agriculture.<sup>14</sup>

#### **6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

Although many countries have purchase guarantees for electricity produced from renewable sources, such a guarantee would violate the Finnish Electricity Market Act.<sup>15</sup>

<sup>10</sup> Government Bill 147/2010 on Amending Energy Taxation, available in Finnish at “<http://www.finlex.fi/fi/esitykset/he/2010/20100147>” p. 23.

<sup>11</sup> See Act on Excise Tax on Electricity and Certain Fuels (1260/1996, as amended) and Customer Bulletin No 21, National Board of Customs, 2012 available at “[http://www.tulli.fi/en/finnish\\_customs/publications/excise\\_tax/index.jsp](http://www.tulli.fi/en/finnish_customs/publications/excise_tax/index.jsp)”.

<sup>12</sup> See Act on Excise Tax on Electricity and Certain Fuels (1260/1996, as amended) and Customer Bulletin No 21, National Board of Customs, 2012 available at “[http://www.tulli.fi/en/finnish\\_customs/publications/excise\\_tax/index.jsp](http://www.tulli.fi/en/finnish_customs/publications/excise_tax/index.jsp)”.

<sup>13</sup> § 8 a, Act on Excise Tax on Electricity and Certain Fuels (1260/1996, as amended).

<sup>14</sup> Act on Refund of Excise Tax Levied on Certain Energy Products Used in Agriculture (603/2006, as amended).

<sup>15</sup> Government Bill (147/2010) on Amending Energy Taxation, available in Finnish at “<http://www.finlex.fi/fi/esitykset/he/2010/20100147>”.

Thus, Finland does not have a purchase guarantee.<sup>16</sup>

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

Generally, production subsidies are paid to companies that generate energy from renewable sources pursuant to Production Subsidies Act. Producers of electricity whose plants generate energy from wood chip, wind power, biogas or wood-based fuels have been accepted to the feed-in tariff system upon fulfillment of certain criteria and are paid feed-in tariffs, the amount of which varies depending on the market price of electricity or/and the price of emission rights.<sup>17</sup> Mainly, the feed-in tariff system compensates for production costs by guaranteeing a premium for a producer for a limited time.

For example, a wind power project in Finland may be eligible for the feed-in tariff if (i) the project did not get direct state aid; (ii) it is new and does not contain used parts; and (iii) the total nominal output of the generators exceeds 500 kW.<sup>18</sup> Under the tariff system, eligible power projects will get a guaranteed price of EUR 83.5 per MWh for a period of 12 years.<sup>19</sup>

If the three-month average market price is below the guaranteed price, the project will be paid the difference as a premium feed-in tariff. Until December 31, 2015, the guaranteed price

is EUR 105.30 per MWh.<sup>20</sup> In order to be included in the tariff system, a producer must provide the necessary documentation to the Energy Market Authority. While the Energy Market Authority will supervise the tariff system, Finland's electricity transmission system operator, Fingrid, will handle issues concerning coordination.<sup>21</sup>

The Finnish feed-in tariff is paid out of the government budget. Thus, the feed-in tariff constitutes a state aid and limitations such as the maximum amount of state aid, must be considered. There are also constitutional considerations. In order to grant the guaranteed price on the basis of the feed-in tariff, a turbine may not benefit from any other state aid.<sup>22</sup> European Union aids, such as the aids that are granted based on the Seventh Framework Program, are not an obstacle for joining the feed-in tariff.<sup>23</sup> However, even though such aid does not qualify as state aid by definition, the combined amount of aid will be calculated by Ministry of Employment and the Economy and Energy Market Authority, which can limit the total amount of aid in these situations.

The government bill 107/2012 proposed amendments to Production Subsidies Act and Production Subsidies Degree, amendments came into effect on January 1, 2013. These amendments focus mainly on promoting the competitiveness of forestry projects in

<sup>16</sup> Electricity Market Act (386/1995, as amended).

<sup>17</sup> § 6, Production Subsidies Act.

<sup>18</sup> § 9, Production Subsidies Act.

<sup>19</sup> § 25, Production Subsidies Act.

<sup>20</sup> § 62, Production Subsidies Act and State Aid Decision 31107 2011/N – FI.

<sup>21</sup> Production Subsidies Act and Press release of Ministry of Economy and Employment, April 7, 2009. See also Energy Market Authority homepage available at "<http://www.energiamarckkinavirasto.fi/alasivu.asp?gid=344&languageid=246>".

<sup>22</sup> See Production Subsidies Act section 20 and the special prerequisites for acceptance to the feed-in tariff in sections 9 – 11.

<sup>23</sup> Further information regarding the Seventh Framework Program can be found at [http://europa.eu/legislation\\_summaries/energy/european\\_energy\\_policy/i23022\\_en.htm](http://europa.eu/legislation_summaries/energy/european_energy_policy/i23022_en.htm).

electricity production. One of the most essential changes was the new premium for forestry projects (*kaasutinpremio*). There were no changes to the feed-in tariff of wind power.<sup>24</sup>

#### 8. Do the renewable energy based power plants have priority for connection to the grid?

There is guaranteed access to the grid for all electricity users and electricity-producing plants, including RES-E generators. Generally, the grid operator is required to grant connection to the grid according to non-discriminatory criteria.<sup>25</sup> Thus, electricity generated from renewable sources is not given priority.

#### 9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?

To the best of our knowledge, no.

#### 10. What are the other incentives available to renewable energy generation companies?

Discretionary investment subsidies are available for new investments, which receive a subsidy of up to 30 percent (up to 40 percent for wind).<sup>26</sup> Government subsidies may be

granted to public or private sector organizations by Finland's Ministry of Employment and the Economy to support research and investment projects that involve the generation of renewable energy or the application of RES technologies.<sup>27</sup> Among other costs, the preparation and planning costs and the cost of materials, machinery and acquisition of necessary land are eligible for subsidies.<sup>28</sup>

### STATISTICS

#### 11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?

In 2011, the total electricity production was 70.6 TWh, which was 3.8 percent less than in 2010. Finland produced 83.6 percent of the electricity consumed and imported 16.4 percent. The following is a breakdown of the main electricity sources: 31.6 percent nuclear power, 17.4 percent hydropower, 14.3 percent biomass, 14.1 percent coal, 13.0 percent natural gas, 7.4 percent peat, 0.9 percent waste, 0.7 percent wind and 0.6 percent oil. Renewable energy accounted 33 percent of the electricity supply.<sup>29</sup>

<sup>24</sup> Government Bill 107/2012 available at <http://www.finlex.fi/fi/esitykset/he/2012/20120107>

<sup>25</sup> § 9, Electricity Market Act (386/1995, as amended).

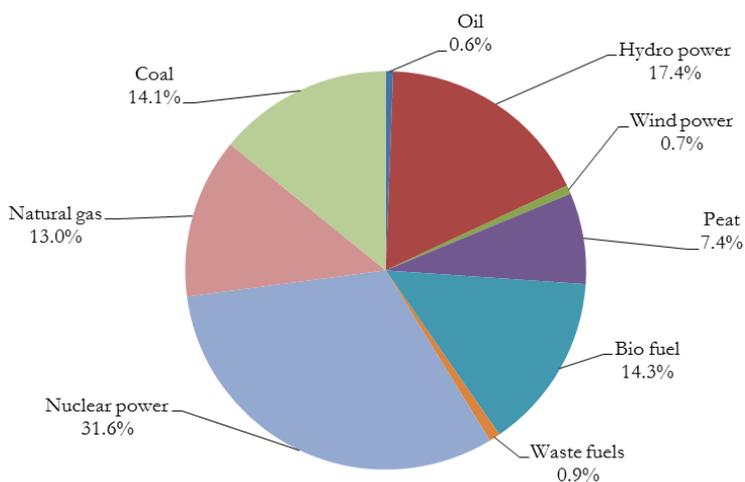
<sup>26</sup> § 4, Government Decree on General Rules for the Allocation of Subsidies for Energy (1313/2007, in force until 31 December 2012).

<sup>27</sup> § 2, Government Decree on General Rules for the Allocation of Subsidies for Energy (1313/2007, in force until 31 December 2012).

<sup>28</sup> § 6, Government Decree on General Rules for the Allocation of Subsidies for Energy (1313/2007, in force until 31 December 2012).

<sup>29</sup> Official Statistics of Finland available at "[http://www.stat.fi/til/ehk/2011/04/ehk\\_2011\\_04\\_2012-03-22\\_tie\\_001\\_fi.html](http://www.stat.fi/til/ehk/2011/04/ehk_2011_04_2012-03-22_tie_001_fi.html)".

**Electricity production 70,6 TWh**  
**Figure 01. Electricity production by energy sources 2011**



Source: Statistics on production of electricity and heat, Statistics Finland and Electricity statistics, Finnish Energy Industries

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# France

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

France has historically shown little interest in renewable energy sources, but instead concentrated its efforts on the expansion and development of the nuclear sector. However, in the past few years, France has taken several measures, on one hand, to decrease the share of nuclear energy in the French total gross electricity consumption and, on the other hand, to develop and promote the generation of electricity from renewable sources by *inter alia* putting in place a favorable legal framework to attract interest from a large number of domestic and international renewable energy players.

As a result, electricity from renewable sources accounted in 2011 for 12,84% of the French total gross electricity consumption<sup>1</sup> (as compared to 13,62 % in 2009 and 14,45 % in 2010).

<sup>1</sup> This indicator is the ratio between the electricity produced from renewable energy sources and the gross national electricity consumption for a given calendar year. It measures the contribution of electricity produced from renewable energy sources to the national electricity consumption. Electricity produced from renewable energy sources comprises the electricity generation from hydro plants (excluding pumping), wind, solar, geothermal and electricity from biomass/wastes. Gross national electricity consumption comprises the total gross national electricity generation from all fuels (including autoproduction), plus electricity imports, minus exports.

In 2009, the primary production of renewable energy represented 19,5 million tonnes of oil equivalent<sup>2</sup> (as compared to 16,5 million tonnes of oil equivalent in 1999), the share of renewable energy sources being as follows:

- Solar energy: 0,5%
- Biomass & waste: 69,1%
- Geothermal energy: 0,4%
- Hydropower energy: 25,6%
- Wind energy: 4,1%

The French Government has committed to continue to increase the annual production of renewable energy by 20 million tonnes oil equivalent (Mtep) in order to raise their share in final energy consumption to at least 23% by 2020, the forecasted total production being at least 32 Mtep.<sup>3</sup> This objective corresponds to the target of gross electricity consumption from renewable sources assigned to France under the European Union Directive 2009/28/EC dated 28 April 2009, which was partially transposed into French law by the order n°2011-504 dated 9 May 2011.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

Pursuant to Article 29 of the law n°2005-781 dated 13 July 2005<sup>4</sup> (as amended), renewable energy sources cover wind energy, solar energy, geothermal energy, aerothermy energy, hydro energy, energy generated from biomass, waste water treatment plant and biogas. Article 29 of the law n°2005-781 dated 13 July 2005

<sup>2</sup> Source: Eurostat.

<sup>3</sup> Program Law n°2009-967 dated 3 August 2009 on the implementation of the Grenelle Environment Forum.

<sup>4</sup> Repealed by the order n°2011-504 dated 9 May 2011 and coded in the new Energy Code.

(as amended) further defines biomass as biodegradable fraction of products, wastes and residues issued from agriculture including vegetal and animal substances from earth and sea, silviculture and related industry and from the biodegradable fraction of industrial and household wastes.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

The renewable energy sector is mainly regulated by law n°2000-108 dated 10 February 2000 (as amended) relating to the modernization and development of the public electricity service (the “French Electricity Act”). The French Electricity Act has implemented into French law the European Directive electricity 96/92/CE dated 19 December 1996 and has opened up to competition the French electricity market.

The French Electricity Act contains measures to support the development of generation of electricity from renewable sources. In particular, Article 10 of the French Electricity Act<sup>5</sup> imposes on State-owned and historical operator, *Electricité de France* (“EDF”) and non-nationalized electricity distributors an obligation to purchase at a preferential tariff electricity generated in France from renewable sources (please see sections 6 and 7 below). The French authorities have enacted various secondary legislation and set out the conditions under which renewable energy generator may benefit from the power purchase obligations provided for by the French Electricity Act. In particular, decree n°2001-410 dated 10 May 2001 (as amended) lists certain requirements which need to be satisfied by a generator (including renewable

energy generator) in order to benefit from the power purchase obligation.

A ministerial order (*arrêté*) enacted by the French Ministry in charge of the energy sector (the “French Ministry of Energy”) sets out for each type of renewable source the preferential tariff for the purchase by EDF and non-nationalized electricity distributors of electricity generated from such renewable source.

### 4. What are the principal regulatory bodies in the renewable energy sector?

The principal regulatory body in the renewable energy sector is the *Commission de régulation de l'énergie* (the “CRE”). The CRE is an independent administrative body regulated by the provisions of the French Electricity Act. Article 28 of the Electricity Act<sup>6</sup> defines in general terms the missions and powers of the CRE which are to “assist in ensuring the proper operation of the electricity and natural gas markets to benefit the final customer. In particular, CRE ensures that the conditions of access to electricity and natural gas transmission and distribution networks do not impede the development of competition. It monitors, for the electricity and natural gas sectors, all transactions made between suppliers, traders and producers, all transactions made on the organized markets and cross-border trading”. New prerogatives regarding price fixing and control over access to nuclear electricity were granted to the CRE by law n° 2010-1488 dated 7 December 2010.

In relation to the renewable energy sector in particular, the CRE’s role is to ensure that the development of renewable energy sources is carried out under reasonable economic conditions. At the request of the French Government, the CRE notably carries out calls for tenders for new generation capacities from biomass. The CRE also delivers opinions on

<sup>5</sup> Repealed by the order n°2011-504 dated 9 May 2011 and coded in the new Energy Code.

<sup>6</sup> Repealed by the order n°2011-504 dated 9 May 2011 and coded in the new Energy Code.

the level of feed-in tariffs applied to the power generated from renewable sources<sup>7</sup>.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

There are mainly two tax advantages granted in France to renewable energy generation companies: (i) Article 39 AB of the French Tax Code (“FTC”) permits an exceptional and accelerated depreciation over a twelve-month period for equipment designed to save energy or intended to produce renewable energy. This mechanism of depreciation allows companies which invest in renewable energy to reduce their taxable profit by the amount of the investment, which equates to a 33<sup>1/3</sup>% subsidy. However, to date, this incentive benefits only equipment acquired or manufactured before 1 January 2011; (ii) Article 1382-12 of the FTC grants an exemption of land tax on installations which produce solar energy, including solar panels.

There are no other tax advantages which are specific to the renewable energy generation companies. However, please note that the French tax legislation contains other tax mechanisms aiming at promoting electricity from a renewable source, but which apply only to individuals (i.e., tax credits on investments in renewable energy systems or tax exemptions on income derived from the sale of electricity produced from renewable energy).

### 6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

The French Electricity Act imposes on EDF and non-nationalized electricity distributors an

obligation to purchase electricity generated from facilities producing renewable energy at a preferential tariff. This principle is embodied in Articles 8 and 10 of the French Electricity Act.

Article 8 of the French Electricity Act<sup>8</sup> allows the French Ministry of Energy to organize calls for tender for the construction and operation of renewable energy facilities the generating capacity of which exceeds 12 MW. EDF and non-nationalized electricity distributors are obliged to enter into a power purchase contract with the successful bidder. Pursuant to Article 8 of the French Electricity Act, any company incorporated in a European Union Member State may participate in the tender. The terms and conditions of the power purchase contract (e.g., duration and purchase price of electricity) are set out in the tender documentation and depend on the nature and specificity of the facility.

Furthermore, Article 10 of the French Electricity Act<sup>9</sup> also imposes on EDF and non-nationalized electricity distributors an obligation to purchase, at a preferential tariff, renewable energy produced by facilities (i) that generate energy from household waste or similar waste or that use such sources to provide heat to a heating system, (ii) the generating capacity of which does not exceed 12 MW and that use renewable energy sources or implement highly energy-efficient techniques such as cogeneration, (iii) that use wind power and are based in a wind power development area, or (iv) that use energy recovery.

EDF and non-nationalized electricity distributors are required to enter into a power purchase contract only if the renewable source

<sup>7</sup> CRE 2009 National Report to DG TREN.

<sup>8</sup> Repealed by the order n°2011-504 dated 9 May 2011 and coded in the new Energy Code.

<sup>9</sup> Repealed by the order n°2011-504 dated 9 May 2011 and coded in the new Energy Code.

generator has obtained a power purchase obligation certificate (*Certificat ouvrant droit à l'obligation d'achat*). The power purchase obligation certificate will be issued for the benefit of the renewable source generator if the later has satisfied the requirements provided in the decree n°2001-410 dated 10 May 2001 (as modified). Power purchase contracts are concluded in a standard form approved by the French Ministry of Energy.

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

Renewable energy companies, having entered into a power purchase contract with EDF or non-nationalized electricity distributors, benefit from a guaranteed purchase price for the duration of the power purchase agreement. However, the purchase price is not decided by the parties but is set by the French Ministry of Energy.

Under a tender process organized under article 8 of the French Electricity Act<sup>10</sup>, the power purchase price is determined by the French Ministry of the Energy and is set out in the tender documentation. Such price depends on the nature and specificity of the facility and is indexed according to the terms of the power purchase agreement.

If a power purchase agreement has been entered into on the basis of the provisions of Article 10 of the French Electricity Act, the purchase price for each source of renewable energy is set by an order of the French Ministry of Energy. As a general principle, the purchase price must be determined taking into

<sup>10</sup> Decree n°2002-1434 dated 4 December 2009 (as amended) further defines the tendering procedure. As stated previously, article 8 of the French Electricity Act was repealed by the order n°2011-504 dated 9 May 2011 and coded in the new Energy Code.

account the capital and operating costs avoided by EDF and non-nationalized electricity distributors, with a possible premium to the benefit of the renewable source generator.

**8. Do the renewable energy based power plants have priority for connection to the grid?**

Renewable energy based power plants do not have priority for connection to the grid. As a general principle, Article 23 of the French Electricity Act<sup>11</sup> requires the entities responsible for the management and connection of facilities to the electricity grid to guarantee without discrimination an access to the grid to all electricity generators. *Électricité Réseau Distribution France* (the “ERDF”) is the principal entity responsible for the connection to the grid. In order to be connected to the grid, a generator must request the ERDF to issue a proposition (*Proposition Technique et Financière*) setting out technical and financial conditions under which the facility of the generator may be connected to the grid (the “PTF”). Upon receipt of the generator’s application, the grid manager has three months to study the information submitted by the generator and to provide the generator with the PTF. The PTF contains an estimation of the technical and financial conditions for the connection but also mentions an estimated waiting time for the execution of a connection agreement as well as an estimated length of the connection works.

**9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

Under French law, there is no specific incentive available to manufactures of

<sup>11</sup> Repealed by the order n°2011-504 dated 9 May 2011 and coded in the new Energy Code.

equipment or materials used in the construction of renewable energy based power plants.

**10. What are the other incentives available to renewable energy generation companies?**

Please refer to our comments in Section 5.

**STATISTICS**

**11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

*Figure 1: (Source : European Commission “Energy – country factsheets” - 2012)*

Gross Electricity Generation in 2010 (TWh)	569
Electricity from renewable sources (%)	14,45

*Figure 2: (Source : European Commission “Energy – country factsheets” - 2012)*

	Gross Electricity Generation from renewable sources in 2010 (in TWh)
Total	82,6
Hydro	66,8
Wind	10
Solar	0,6
Tide, wave and ocean	0,5
Biomass and renewable wastes	4,7
Geothermal	-
Other	2,1

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# Germany

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

Given the climate change discussion, as well as the limited availability of fossil energy resources such as coal and oil, the importance of renewable energies is constantly increasing. Germany has taken this issue very seriously and sees a huge opportunity in renewable energies, as these are virtually inexhaustible and are (in principle) being perceived as not having a negative effect on the climate.

In 2012, renewable energy sources had a share of nearly 23% of the electricity supply and 12.6% of the total energy consumption in Germany (provisional figures of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) for 2012).

Germany is one of the pioneers in the wind power sector. With an installed capacity of 31,035 MW in 2012, Germany has one of the largest installed onshore wind power capacities worldwide. About 30% of the installed wind power in Europe is installed in Germany. With 280 MW installed capacity, offshore wind power installations comprise less than 1% of the total installed wind power capacity in Germany.

Up until 2012 Germany was one of the world's top photovoltaic markets, accounting for over half of the global solar power market in 2011.

As per 2012, there was an installed capacity of 32,643 MWp in Germany with an overall capacity of 7,600 MWp having been installed in the year 2012 itself.

Germany aims at reducing greenhouse emissions by 40 % by the year 2020 compared to the year 1990. Such ambitious goals require an ambitious strategy to increase energy efficiency and expand the renewable energy sector. Accordingly, the German government published an integrated energy and climate program in 2007 ("IEKP") which set out global standards and considerations on an appropriate response for a modern economy. It contained both political and legal initiatives aimed at securing energy supply while at the same time being cost-effective and environmentally sustainable. All of the 29 legal initiatives in the program have been implemented.

In September 2010, the German government published its first energy strategy ("ES") with the intention of organizing an environmentally friendly, sustainable and affordable energy supply for the first half of the 21<sup>st</sup> century. The core of this ES was the extension of the operating time for nuclear power plants by twelve years (average) and the development of the renewable energy sector. In addition, the ES comprised plans concerning the grid system extension, modernization of the insulation of buildings and the transport sector. After the nuclear disaster in Fukushima in March 2011, the German government revised its ES – after a new evaluation of nuclear power risks – and decided to shut down the last nuclear power plant in Germany in 2022. The eight oldest operating nuclear power plants in Germany were shut down immediately in 2011. Therefore, the development of the renewable energy sector became more significant. A main focus of the German government now lies on improving the integration of the renewable energy sources in the system and in the market.

With the German Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz (“EEG”)), the German legislature created a regulatory instrument:

- to facilitate the sustainable development of energy supply, particularly for the sake of protecting the climate and the environment,
- to reduce the costs of energy supply to the national economy, also by incorporating external long-term effects,
- to conserve fossil fuels,
- to promote the further development of technologies for the generation of electricity from renewable energy sources (Sec. 1 para. 1 EEG), and
- to increase the share of renewable energy sources in electricity supply to at least 35% by the year 2020, 50% by the year 2030, 65% by the year 2040 and 80% by the year 2050 (Sec. 1 para. 2 EEG).

The EEG came in force in 2000 and has been amended several times thereafter. Substantial amendments became effective on 1 January 2012. In addition, a further amendment of the EEG regarding the promotion of solar power in Germany became effective on 23 August 2012 (with retroactive effect as of 1 April 2012). In principle, the tariffs applicable to facilities generating electricity from solar radiation were reduced and other measures to limit the promotion of this sector were implemented.

Against the background of rising costs for end customers under the renewable energy promotion system, there is a public debate about yet another amendment of the EEG. However, for the time being no new law has been drafted (or submitted to the parliament, for that matter).

## 2. What is the definition and coverage of renewable energy under the relevant legislation?

According to the European Directive on the promotion of the use of energy from renewable sources (Directive 2009/28/EC), energy from renewable sources covers energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases (Article 2 para. 2 lit. (a) Directive 2009/28/EC). However, even though German law on renewable energies is already consistent with material provisions of Directive 2009/28/EC, there is no generally accepted definition of “renewable energy” in the German legislation. Therefore, the coverage of renewable energy may differ between the respective legislative acts.

Within the meaning of the EEG, renewable energy is defined as:

- hydropower, including wave power, tidal power, salt gradient and flow energy,
- wind energy (onshore and offshore),
- solar radiation,
- geothermal energy, and
- energy from biomass (as defined in detail in the Biomass Ordinance), including biogas, landfill gas and sewage treatment gas, the biodegradable fraction of municipal waste and industrial waste.

Biomass (energy sources from phyto and zoomass) is defined in Sec. 2 of the Biomass Ordinance as:

- plants and parts of plants,

- fuels made from plants or parts of plants whose components and intermediate products have all been produced from biomass,
- waste and by-products of plant and animal origin from agriculture, forestry and commercial fish production,
- biological waste within the meaning of Sec. 2 no. 1 Biological Waste Ordinance,
- gas produced from biomass by gasification or pyrolysis and all resulting products and by-products, and
- alcohols produced from biomass, whose components, intermediate products, products and by-products have been produced from biomass.

Please note that the EEG also promotes mine gas – even if mine gas is not a renewable energy within the meaning of the EEG.

The Act on the Promotion of Renewable Energies in the Heat Sector (Erneuerbare-Energien-Wärmegesetz (“EEWärmeG”)) defines “renewable energy” as:

- heat extracted from the ground (geothermal energy),
- heat extracted from the air or water, excluding waste heat (ambient heat),
- heat made technologically usable to cover thermal energy demand through the use of solar radiation,
- heat generated from solid, liquid or gaseous biomass, and
- cooling energy extracted from the ground or water or extracted from heat extracted or generated as per the above.

Only the following energy sources shall be recognized as biomass within the meaning of

this Act (i.e. the EEWärmeG):

- biomass within the meaning of the Biomass Ordinance,
- biodegradable fractions of household and industrial wastes,
- landfill gas,
- sewage treatment plant gas,
- sewage sludge within the Sewage Sludge Ordinance, and
- vegetable oil methyl ester.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

The principle laws and regulations are:

*Renewable Energy Sources Act – Erneuerbare-Energien-Gesetz (“EEG”); in force since March 2000, latest amendment in 2012. An English translation is available at the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety’s website, [www.bmu.de/47883](http://www.bmu.de/47883)*

The EEG is the most important legislative act promoting the use of renewable energies in Germany. It covers the connection of installations for the generation of electricity from renewable sources to the grid system, the offtake of the generated electricity by the respective grid system operator, the respective feed-in tariffs the grid system operator has to pay for the electricity, and a nationwide scheme to equalize the financial burden of the promotion of renewable energies. In detail:

*Priority connection to the grid system*

Installations generating energy from renewable energy sources have priority regarding connection to the grid system.

*Priority offtake, transmission and distribution*

Grid system operators are obliged to offtake, transmit and distribute electricity generated from renewable sources. Upon request, grid system operators shall immediately optimize, boost and expand their grid systems in accordance with the best available technology in order to guarantee the offtake, transmission and distribution of such electricity. In case of a congestion in the grid system, grid system operators are obliged to regulate the installations generating energy from renewable energy sources provided it is ensured that the largest possible quantity of electricity from renewable energy sources and from combined heat and power generation is being offtaken (feed-in management). If, however, they have to do so, they are obliged to compensate the installation operator (hardship clause).

*Regulated tariffs*

The EEG provides for a guaranteed minimum tariff to be paid for electricity which is exclusively generated from renewable energy sources. Installations generating energy from biomass / bioliquids are, however, only entitled to this compensation if they prove that the biomass used has been produced in accordance with the sustainability requirements set up in the Biomass Ordinance / Biomass-Electricity-Sustainability Ordinance.

*Nationwide equalization scheme*

The costs resulting from the payment of feed-in tariffs are equalized according to the EEG and the Ordinance on the Further Development of the Nationwide Equalization Scheme (Equalization Scheme Ordinance). While the EEG provides for the principles of the equalization mechanism, the Equalization Scheme Ordinance stipulates detailed rules on the marketing of electricity generated from renewable sources by the transmission operators.

1<sup>st</sup> Step:

Grid system operators who offtake electricity generated from renewable energy sources are obliged to deliver it immediately to the respective upstream transmission system operator, who has to pay the regulated tariffs less avoided grid system usage costs to the grid system operator.

2<sup>nd</sup> Step:

The transmission system operators are obliged to meter the quantities and the temporal sequence of the quantities of electricity for which tariffs were paid and to equalize the quantities of electricity amongst themselves.

3<sup>rd</sup> Step:

Transmission system operators are obliged to market electricity for which tariffs have been paid, either themselves or jointly, at the Energy Exchange Spot Market (EEX) in an effective, nondiscriminatory and transparent manner.

4<sup>th</sup> Step:

Transmission system operators may claim reimbursement from the utility companies delivering electricity to final consumers to share the costs caused due to the EEG promotion regime that exceed the compensation received by marketing this electricity on the EEX (the so-called “EEG surcharge”). This EEG surcharge has to be calculated in a transparent manner according to the Equalization Scheme Ordinance. The EEG surcharge for 2011 was set at 3.530 ct/kWh, for 2012 at 3.592 ct/kWh and for 2013 at 5.277 ct/kWh (Resource: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety’s press release of 19 October 2012, faq’s regarding the EEG surcharge).

5<sup>th</sup> Step:

Generally, the utility companies are entitled to pass through the financial burden arising from the EEG surcharge to the final customers (general equalization scheme).

However, there is an exception granted to electricity-intensive manufacturing enterprises with high electricity consumption and rail operators (Secs. 41, 42 EEG). Upon request, their financial burden arising from the EEG promotion of renewable energy shall be limited pursuant to a special equalization scheme. The reason for this exception is that the electricity-intensive manufacturing industry shall not lose its competitiveness due to the EEG regulatory framework.

*Ordinance on the Further Development of the Nationwide Equalization Scheme (Equalization Scheme Ordinance – Ausgleichsmechanismusverordnung; in force since July 2009, latest amendment in 2012)*

This Ordinance sets out details of the complex equalization scheme under the EEG according to which purchased electricity is marketed on the spot energy market and costs are distributed amongst the utility companies delivering electricity to final customers (see above, steps 3 and 4). The Ordinance intends to simplify the process by minimizing costs and risks for the involved parties.

*Act on the Promotion of Renewable Energies in the Heat Sector (Renewable Energy Heat Act – Erneuerbare-Energien-Wärmegesetz (“EEWärmeG”); in force since 2008, latest amendment in 2011).*

The purpose of this Act is to facilitate sustainable development of the energy supply and to promote the further development of technologies for the generation of heat from renewable energies, especially with a view to climate protection, efficient use of fossil resources and the reduction of import

dependence. According to this Act, owners of new buildings are obliged to satisfy their heat demand by using a specific amount of renewable energy (unless the building meets certain requirements regarding thermal insulation).

*Ordinance on Generation of Electricity from Biomass (Biomass Ordinance – Biomasseverordnung; in force since 2001, latest amendment in 2012)*

This Ordinance sets forth details regarding the scope of application of the EEG. This includes descriptions of:

- substances that shall be considered to be biomass,
- the technical processes for generating electricity from biomass, and
- environmental standards that must be met in relation to the generation of electricity from biomass.

*Ordinance on Requirements Pertaining to Sustainable Production of Bioliquids for Electricity Production (Biomass-Electricity-Sustainability Ordinance – Biomassestrom-Nachhaltigkeitsverordnung; in force since 2009, latest amendment in 2011)*

This Ordinance aims at ensuring that bioliquids used for electricity production which are eligible for the promotion framework under the EEG are always produced in full compliance with binding sustainability standards. Bioliquids not complying with these standards are not eligible for the promotion under the EEG.

The liquid biomass must – in the interest of environment, climate and nature – be produced and used in a way that emits significantly less greenhouse gases than energy production from fossil fuels. Furthermore, the cultivation of the crops must not take place in areas having a high ecological value.

To qualify for the regulated tariffs stipulated by the EEG, installation operators have to prove vis-à-vis the grid system operator, that the offered energy has been solely generated from renewable energy sources, i.e. that it has been produced in accordance with these sustainability standards.

*Ordinance on Requirements Pertaining to Sustainable Production of Biofuels (Biofuel-Sustainability Ordinance – Biokraftstoff-Nachhaltigkeitsverordnung; in force since 2009, latest amendment in 2012)*

To promote biofuels, the German legislature grants tax relief. Energy products are generally subject to energy taxes under the German Energy Tax Act. Upon request, tax relief can, however, be granted for the share of biofuels used in the fuel mix, as long as the biofuels are generated in a sustainable manner according to the Biofuel-Sustainability Ordinance. The Energy Tax Act aims at increasing the share of biofuels in the fuel mix up to a volume of 20% by 2020, while ensuring at the same time that biofuels are generated in a sustainable manner.

Furthermore, the Federal Emission Protection Law (Bundesimmissionsschutzgesetz) requires that fuels placed on the market have to contain a certain amount of biofuels.

*Ordinance on System Services by Wind Energy Plants (System-Service Ordinance – Verordnung zu Systemdienstleistungen durch Windenergieanlagen (“SDLWindV”); in force since 2009, latest amendment in 2011)*

The development of onshore wind energy generation has been progressing in line with the political objectives with respect to the development of renewable energies. It is expected that up to 45,000 MW of onshore wind facilities will be installed by the year 2020. This development represents a challenge for grid system operators. They must ensure the security and stability of the grid system and at the same time transport significantly increasing shares of wind-generated electricity

through the grid system. Therefore, newly installed and repowered onshore wind farms have to provide system services which have – so far – only been required from conventional installations. This Ordinance intends to boost the security and stability of the grid system, particularly solving wind energy-related problems (such as frequency control, voltage control, network security), as well as technical developments in this field.

#### **4. What are the principal regulatory bodies in the renewable energy sector?**

*Federal Network Agency (Bundesnetzagentur)*

The tasks of the Federal Network Agency with regard to the renewable energy are enumerated in the EEG.

*Monitoring the (general) equalization scheme*

The Federal Network Agency particularly monitors the (general) equalization scheme (Secs. 34 – 39 EEG – see question 3).

The Federal Network Agency shall monitor:

- that the utility companies are only charged by transmission system operators with tariffs paid in accordance with the general equalization scheme less the avoided grid system costs,
- that the data referring to the location and capacity of the installations the grid system operators are obliged to present to the Federal Network Agency, and other data the grid system operators have to publish, are duly submitted and published, and
- that, based on the information provided by the transmission system operators, third parties are able to understand how the EEG surcharge is calculated.

*Responsibilities concerning Solar Radiation Power*

- Operators of solar radiation installations have to report the location and capacity of

the installations to the Federal Network Agency in order to be entitled to the regulated feed-in tariffs (Sec. 17 para. 2 sentence 1 EEG).

- The Federal Network Agency publishes, in consultation with the Federal Ministry for the Environment, Nature and Nuclear Safety and the Federal Ministry of Economics and Technology, the percentages of the next year's degression and the resulting tariffs concerning those installations (Sec. 20a para. 6 EEG).
- Furthermore, the Federal Network Agency has the option to determine specifications of the technical equipment necessary to allow the so-called feed-in management (Secs. 6 and 11 EEG) and the order of deactivation pursuant to Sec. 11 EEG (Sec. 61 EEG).

*Federal Office of Economics and Export Control  
(Bundesamt für Wirtschaft und Ausfuhrkontrolle)*

The Federal Office of Economics and Export Control is charged with duties regarding the special equalization scheme for electricity-intensive enterprises and rail operators (Secs. 40 – 44 EEG).

The financial burdens electricity-intensive manufacturing enterprises with high electricity consumption or rail operators face can, under certain conditions, be exempt from a part of the electricity costs which are accrued by the renewable energies promotion system according to the EEG.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

Electrical power is generally subject to an electricity tax in Germany. However, the electricity tax law allows for exemptions for

electrical power if it is exclusively generated from renewable energy sources and if the electrical power is offtaken from a grid system/ power line that provides electrical power exclusively from renewable energy sources (Sec. 9 para. 1 no. 1 Electricity Tax Act).

### 6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

According to the principle of the priority purchase, transmission and distribution:

- grid system operators shall immediately and as a priority offtake and pay for, transmit and distribute the entire available amount of electricity generated from renewable energy sources (Sec. 8 para. 1, 16 et seq. EEG); and
- grid system operators shall, upon request of those interested in feeding in electricity, immediately optimize, boost and expand their grid systems in accordance with the best available technology in order to guarantee the offtake (and payment for), transmission and distribution of the electricity generated from renewable energy sources (Sec. 9 para. 1 sentence 1 EEG). This obligation also applies to upstream grid system operators (Sec. 9 para. 1 sentences 2, 3 EEG).

In the event of system congestion, grid system operators may regulate the system by means of so-called feed-in management instruments (Sec. 11 EEG). Using these instruments, grid system operators shall be entitled to take technical control over installations connected to their grid system with a capacity of more than 100 kW – and of more than 30 kW in the case of solar radiation if :

- the grid system capacity in the respective grid system area would otherwise be overloaded on account of that electricity,

- they have ensured that the largest possible quantity of electricity from renewable energy sources and from combined heat and power generation is being offtaken, and
- they have called up the data on the current feed-in situation in the relevant region of the grid system.

The respective installation operator, however, has a claim for compensation: The grid system operator whose grid system gives rise to the need for the feed-in management shall compensate those installation operators who, due to such measures, were not able to feed in electricity. Compensation is limited to 95 % of the lost tariffs and revenues less (if applicable) the expenses saved by the installation operator if the lost tariffs in one year do not exceed 1 % of the revenues of the installation operator. Once that is the case, 100 % of the lost tariffs shall be compensated (Sec. 12 para. 1 EEG).

Claims for further compensation made by the installation operators against the grid system operator shall remain unaffected (Sec. 12 para. 3 EEG).

### 7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

There is a minimum price guarantee for electricity which is exclusively generated from renewable energy sources (Secs. 16 – 33 EEG).

#### *General provisions regarding tariffs*

The EEG sets forth the basic parameters of the tariff system which apply equally to all types of renewable energy sources, such as:

- the commencement and duration of the tariffs paid (20 years plus the commissioning year from the start of the commission of a new installation),
- the calculation of the tariffs in accordance with the capacity of the installation in relation to the threshold value to be applied in each case (principle of gliding tariffs),
- the degression (the specific tariffs shown in the EEG are subject to a reduction each year by certain percentages set forth in Sec. 20 et. seqq.; the applicable tariff calculated for any given year shall apply for the above mentioned duration).

#### *Special provisions regarding tariffs*

In addition to the rules applicable to all types of renewable energy sources, the EEG sets forth specific rules for the promotion of every single type of installation in detail (in particular the tariff to be paid).

The following table shows the minimum tariffs for the different renewable energy sources. The tables below sets forth the tariffs shown in the EEG which, however, are subject to the degression mentioned above.

Renewable Energy Source	EEG	Rated Output/Capacity	Minimum Tariff (cent/KWh per 2012) (subject to degression)
Hydropower	Sec. 23	max. 500 kW	12.7
		max. 2 MW	8.3
		max. 5 MW	6.3
		max. 10 MW	5.5
		max. 20 MW	5.3
		max. 50 MW	4.2
		> 50 MW	3.4

Renewable Energy Source	EEG	Rated Output/Capacity	Minimum Tariff (cent/KWh per 2012) (subject to degression)
Landfill Gas	Sec. 24	max. 500 kW max. 5 MW	8.6 5.89
Sewage Treatment Gas	Sec. 25	max. 500 kW max. 5 MW	6.79 5.89
Mine Gas	Sec. 26	max. 1 MW max. 5 MW > 5 MW	6.84 4.93 3.98
Biomass	Sec. 27	max. 150 kW max. 500 kW max. 5 MW max. 20 MW	14.3 12.3 11.0 6.0
Biogas from fermentation of biological waste	Sec. 27a	max. 500 kW max. 20 MW	16.0 14.0
Biogas from fermentation of liquid manure	Sec. 27b	all installations (< 75 kW, minimum 80 % liquid manure use)	25.0
Geothermal Energy	Sec. 28	all installations	25.0
Wind Energy Onshore	Sec. 29	<ul style="list-style-type: none"> <li>● basic tariff</li> <li>● initial tariff (first 5 years after start of commissioning)</li> </ul>	4.87 8.93
Wind Energy Offshore	Sec. 31	<ul style="list-style-type: none"> <li>● basic tariff</li> <li>● initial tariff (first 12 years after start of commissioning)</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>● initial tariff (first 8 years after start of commissioning)</li> </ul>	3.5 15.0 19.0
Solar Radiation	Sec. 32	basic tariff	13.5
Solar Radiation – attached to or on top of buildings	Sec. 32 para 2	max. 10 kW max. 40 kW max. 1 MW max. 10 MW	19.5 18.5 16.5 13.5

The following table shows the special bonuses:

Name of Bonus	Source of Energy	Basic Principles, e.g. Innovative Technology	Amount of Bonus (cent/ KWh) / Rated Output (Capacity) (subject to degression)
<b>Gas-processing Bonus (Sec. 27c)</b>	<ul style="list-style-type: none"> <li>• landfill gas (Sec. 24)</li> <li>• sewage treatment gas (Sec. 25)</li> <li>• biomass (Sec. 27 para 1)</li> <li>• biogas from fermentation of biological waste (Sec. 27a para 1)</li> </ul>	gas processing	3.0 by max. 700 standard m <sup>3</sup> /h 2.0 by max. 1000 standard m <sup>3</sup> /h 1.0 by max. 1400 standard m <sup>3</sup> /h
<b>Bonus for Electricity generated by using explicit listed biomass (Sec. 27 para 2)</b>	biomass (Sec. 27 para 1)	<ul style="list-style-type: none"> <li>• electricity is exclusively generated by using biomass explicit listed in <u>appendix 2</u> to the Biomass Ordinance</li> <li>• electricity is exclusively generated by using biomass explicitly listed in <u>appendix 3</u> to the Biomass Ordinance</li> </ul>	6.0 by max. 500 kW 5.0 by max. 750 kW 4.0 by max. 5 MW  generally 8.0 by max. 5 MW  <u>if</u> electricity is exclusively generated using cattle/swine /sheep liquid manure or other explicit listed biomass 8.0 by max. 500 kW 6.0 by max. 5 MW
<b>Heat-Use Bonus</b>	geothermal energy (Sec. 28)	heat-use	5.0

### 8. Do the renewable energy based power plants have priority for connection to the grid?

According to the principle of priority connection to the grid system, grid system operators shall immediately and as a priority connect installations generating electricity from renewable energy sources and from mine gas to that point in their grid system which is suitable in terms of voltage and which is at the shortest linear distance from the location of the installation if no other grid system has a more favorable (technically and economically) grid system connection point (Sec. 5 para. 1 sentence 1 EEG).

The costs associated with connecting installations generating electricity from renewable energy sources to the grid system connection point and with installing the

necessary metering devices for recording the quantity of electricity transmitted and received shall be borne by the installation operator (Sec. 13 para. 1 EEG).

If the grid system operator assigns the installations a different grid system connection point, he shall bear the resulting incremental costs (Sec. 13 para. 2 EEG).

Regarding the grid connection of offshore windfarms, further amendments to the German Energy Act (“EnWG”) have been adopted at the end of 2012. Such amendments set forth planning mechanisms for the offshore grids, provisions for claims of windfarm operators due to delayed grid connection or unavailability of the grid as well as provisions and conditions for a pass through of damages paid by grid operators to end customers.

**9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

There are no incentives, such as state aids, for local manufacturing of equipment or materials used in the construction of renewable energy - based power plants. If the public procurement law is applicable, the public authority or public company is obliged to set non-discriminatory conditions for the bidders.

**10. What are the other incentives available to renewable energy generation companies?**

There are various incentives available to renewable energy generation companies. In particular, the Market Incentive Program for Renewable Energy Sources by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety has to be mentioned. In the context of the Market Incentive Program there are two kinds of incentives: loans with subsidized interest rates (the interest rates on the loan are below market rates) on the one hand and investment grants on the other hand.

*Loans by the Reconstruction Loan Corporation (KfW – Kreditanstalt für Wiederaufbau)*

The KfW grants loans with low interest rates for the erection of large installations producing heat or power from renewable energy sources; e.g., the erection or extension of district heating networks or to innovative technologies for the utilization of heating and cooling energy. Eligible in this context are biomass heating systems, large solar collectors, large heat storage tanks, biogas pipelines for the transport of untreated biogas to combined heat and power installations or installations which process biogas to natural gas quality and feed it into the network. Further, the KfW provides grants for the redemption of the loans. The loans are in particular granted to smaller and

middle -sized companies to effect a change to climate -friendly and sustainable energy supply in this sector.

In addition, a EUR 5 billion loan facility program aimed at supporting offshore windfarms was established by the KfW. With this special program, the KfW wants to support up to ten offshore windfarms in the exclusive economic and the twelve-mile coastal zone of the North and the Baltic Sea via direct and indirect loan facilities. The financial amount per project can be up to EUR 700 million. Furthermore, the credits have a fixed interest period of ten years.

*Investment Grants*

The other incentive of the Market Incentive Program is the provision of investment grants allocated by the Federal Office of Economics and Export Control. Eligible in this context are, for example, smaller solar collectors and biomass heating systems.

*The Environmental Innovation Program*

The Environmental Innovation Program intends to finance large -scale environmental projects, which first demonstrate advanced technological processes and process combinations to prevent or minimize environmental impacts. Like the above - mentioned incentives it is based on a loan with low interest rates provided by the KfW combined with grants for the redemption of the loan.

## STATISTICS

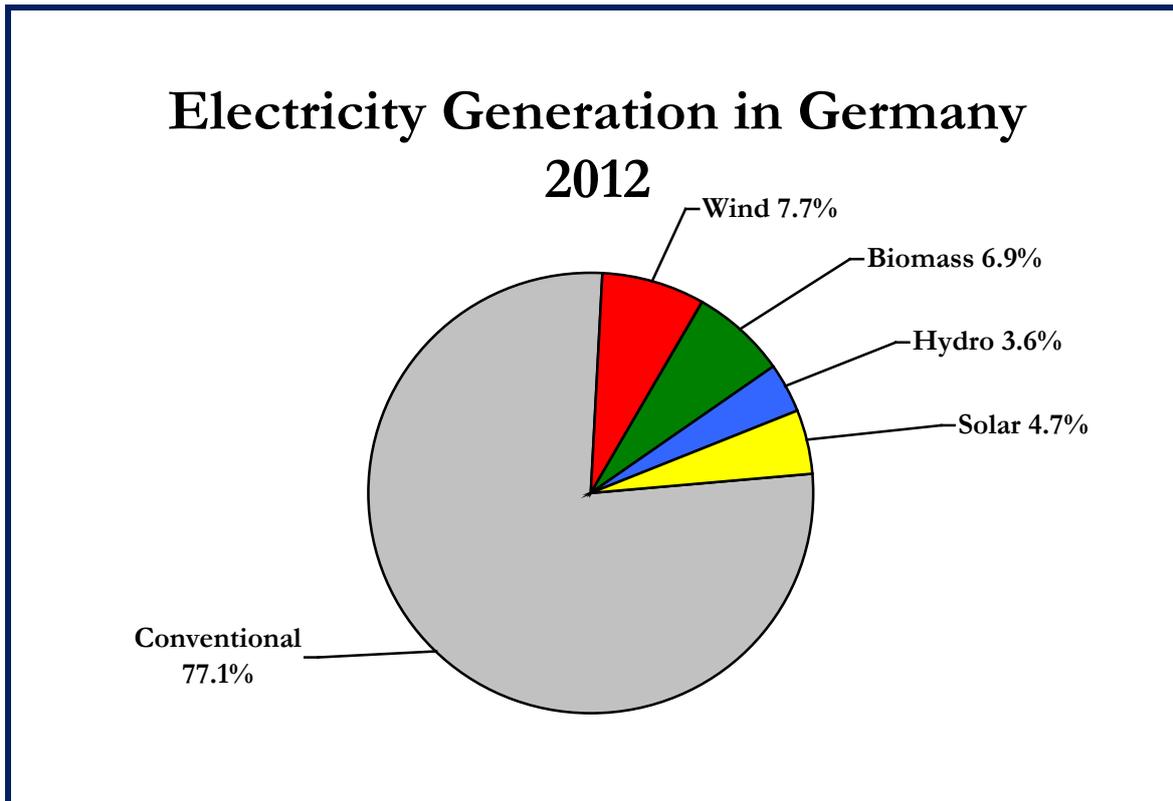
**11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

In 2011, renewable energy sources had a share of 25% in the total generation of electricity.

This share is steadily growing. The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety anticipates that Germany will be able to cover its total energy consumption generated from renewable sources by the year 2050.

**Resources:**

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), development of renewable energy sources in Germany in 2012 (Status as per February 2013).



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# Hungary

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## GENERAL

### 1. What is the nature and importance of renewable energy in your country?

Currently, renewable energy ranks relatively low on the agenda in politics. In contrast, private investors would be willing to invest into renewable energy, especially with respect to biomass, geothermal energy, and biofuel projects if suitable subsidies were available. The legislative background has not changed recently. In 2010, the government published Hungary's Renewable Energy Action Plan for the period from 2010 to 2020. In 2011, the Hungarian Parliament adopted the National Energy Strategy until 2030, with an outlook until 2050. They adopted an optimistic scenario with the ambitious target of increasing the ratio of electricity from renewable energy sources (the "RES-E") in domestic electricity generation to 14.65% by 2020.<sup>1 2 3</sup>

This renewable energy action plan is also intended to serve as the basis for a renewable energy act and a sustainable energy management act to be approved by the Parliament, as well as of a subsidy program in energetics (co-financed by the EU) for the 2014-2020 period. In late 2012, the competent

minister was asked to review the Renewable Energy Action Plan and, therefore, the new subsidy system is delayed further.

Nevertheless, MAVIR, the Hungarian state-owned transmission network operator, expects the Hungarian energy market to grow by an annual rate of 1.5% during the next two decades and that the peak power load will increase by approximately 100 MW a year.<sup>4</sup>

Due to aging power plants and growing demand, there is currently considerable room for new power plant capacity. In Hungary, 18 big power plants and approximately 300 small power stations generate electricity. The current approximately 10,000 MW gross nominal capacity of the Hungarian power plants can increase to 14,000 MW by 2030, primarily depending on the size of the new nuclear power plant blocks. However, owing to aging equipment, 9,000 MW gross new capacity must be installed in Hungary during the coming two decades. Of the new capacities, 7,000 MW will be given by the big power plants (including 2000-3400 MW by the two new nuclear blocks) and 2,000 MW by small power plants built on renewable energy sources including, primarily, biomass and wind.<sup>5</sup> Power plants burning biomass can have significant role in district heating as well.<sup>6</sup>

According to the Hungarian Government's New Széchenyi Plan (in Hungarian: Új Széchenyi Terv), a special area for development is the development of the so-

<sup>1</sup> Hungarian Renewable Energy Action Plan 2010-2020, Budapest, 2011 p. 38

<sup>2</sup> Pursuant to the EU Renewable Energy Directive, Hungary is required to achieve a 13% share of renewable energy sources in its final energy consumption by 2020.

<sup>3</sup> National Energy Strategy 2030, Budapest, 2011 p. 13

<sup>4</sup> MAVIR Source-side Capacity Balance of the Electricity System, Budapest, 2011, MAVIR-RTO-DOK-0005-00-2011-10-04, issued on October 4, 2011.

<sup>5</sup> Presentation of Dr. Alajos Stróbl (ETV-Erőterv), Budapest, 11 November 2009, titled "Conventional Power Plant Developments in Hungary", slides 13 to 15.

<sup>6</sup> Key data of planned power plant constructions in Hungary in the mid and long terms, etc. Study by dr. Alajos Stróbl, 31 May 2011. p. 2 and p. 78

called “green economy” that helps increase the employment rate and aims at supporting the development and use of innovative technologies, increasing the security of supply and the diversification of sources, thus decreasing the dependency on energy import (primarily on Russian natural gas) and encouraging the generation and utilization of renewable energy. The priorities of the Environmental and Energy Operative Program (in Hungarian: Környezetvédelmi és Energia Operatív Program, the “KEOP”) encourage the use of renewable energy sources and the improvement of the efficiency of energy consumption.

## 2. What is the definition and coverage of renewable energy under the relevant legislation?

Under Hungarian Act LXXXVI of 2007 on Electricity (the “Electricity Act”), renewable energy includes energy resources other than fossil fuel and nuclear energy: solar; wind; geothermic; wave; tidal and hydro energy; biomass (whether used directly or indirectly); landfill gas, gas from waste and sewage; and biogas.

According to the current Renewable Energy Action Plan, Hungary will subsidize primarily biomass (forestry and agriculture), biogas, bio and alternative fuels, geothermal and thermal energy and, secondarily, solar and wind energy and hydropower.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

#### *General Framework*

The Electricity Act sets forth the basic principles of licensing power plants using renewable energy, the connection of such

power stations to the electricity grid and the basis of incentivizing and promoting renewable energy.

Under the Electricity Act, electricity produced from renewable sources has priority when licensing new generation capacity. Any company eligible for a Hungarian electricity generation license may establish RES-E generation plants at its own business risk, except for wind farms. Licenses for wind farms may only be acquired through a tender procedure (see Resource-specific Rules below). The licensing of RES-E plants in Hungary is a rather complex and lengthy procedure, which is relatively under-coordinated, and involves many authorities, including those of energy, environmental protection, water management and construction. This is why a key objective of Hungary’s Renewable Action Plan is to simplify and accelerate the licensing procedures of renewable energy production.

The Government Decree implementing the Electricity Act further specifies the role of the Hungarian Energy Office (the “HEO”) in supervising and licensing the obligatory off-take regime.

#### *Off-take Obligation*

The off-take obligation is regulated in detail by Government Decree No. 389/2007 on the off-take obligation of electricity generated by using renewable sources or waste and the price thereof.

Decree No. 109/2007 of the Ministry of Economy and Transport on the distribution of energy in the mandatory off-take system by the transmission network operator and applicable prices sets forth the rules on schedules and data supply, metering, pricing and invoicing of electricity under the off-take obligation.

For a detailed description of the off-take regime, see please Sections 6 and 7 below.

*Resource-specific Rules*

Further specific rules and regulations apply to the most important of renewable resources, such as wind, namely Decree No. 33/2009 of the Ministry of Transport, Communications and Energy of Hungary on the terms of the tender regarding the installment of wind farm capacity, the minimum contents of the tender and the rules of such tender, respectively biofuels, namely Government Decree No. 343/2010 regarding the requirements and certification of sustainable biofuel production.

*Wind Energy*

The HEO issues licenses for wind farms through tenders. In general, the HEO prepares and publishes a mid-term forward-looking assessment regarding the capacity balance of the electricity grid by 15 September of each year, and determines if new wind farm capacities may be installed and the amount of such new capacity. Once the HEO establishes that new wind farm capacity may be added to the electricity grid, the HEO prepares a call for tender, based on which it issues licenses for the operation of electricity generating wind farms.<sup>7</sup>

In 2006, the HEO granted a license to build 330 MW wind farm capacity in Hungary but did not issue a tender for the installation of extra wind power capacity in 2007 and 2008. Due primarily to licensing issues, the global economic crisis and financing problems, as of May 2009, the total built-in wind power

capacity in Hungary was 179 MW according to the Hungarian Wind Energy Association.

The HEO issued a call for tenders on new wind farm capacity in late September 2009, in a total capacity of 410 MW. 68 bidders submitted tenders on 1 March 2010, to establish 1,118 MW wind energy capacity. The HEO cancelled the tender in July 2010.<sup>8</sup> The national target for 2020 is aligned, in respect of wind energy, to the limit of controllability of the electricity system, which is, to our present knowledge, capable of receiving wind energy up to an approximate total output of 740 MWe.<sup>9</sup>

*Biofuel*

The Hungarian Government has established a national goal of achieving a 10% share of RES-E by 2020, in terms of the energy consumption of all types of transportation, in line with the EU Biofuels Directive.<sup>10</sup> Legislative instruments, adopted in late 2009, imposed a statutory obligation on fuel vendors to ensure that an appropriate share of fuels sold is biofuels, whether blended or clean. Fuel vendors must register the share of biofuels sold and report this to the appropriate authority designated by law. The authority may impose a fine upon vendors who do not submit such a report or sell less biofuels than required by law.<sup>11</sup> 3.1% of the quantity of gasoline and 4.4% of the quantity of diesel oil (expressed in energy content) sold must be certified biofuels.<sup>12</sup>

<sup>7</sup> Articles 5 and 6 of Decree No. 33/2009 of the Ministry of Transport, Communications and Energy of Hungary on the terms of the tender regarding the installment of wind farm capacity, the minimum contents of the tender and the rules of such tender.

<sup>8</sup> New regulation and tender are still in progress.

<sup>9</sup> Renewable Energy Action Plan p. 39

<sup>10</sup> See Hungarian Act CXVII of 2010 on advancing the use of renewable energy for transportation purposes and reducing the greenhouse gas emission of energy used in traffic, and Government Decisions 2233/2004 and 2058/2006.

<sup>11</sup> See Hungarian Act CXVII of 2010

<sup>12</sup> Article 5 of Government Decree No. 343/2010 on the requirements and certification of sustainable biofuel production.

#### 4. What are the principal regulatory bodies in the renewable energy sector?

There are two main regulatory bodies responsible for the electricity industry: (i) the Ministry of National Development (the “Ministry”); and (ii) the HEO.

The Ministry defines Hungary’s energy strategy and is primarily responsible for the establishment of off-take prices for RES-E and network usage fees.

The HEO is the government authority responsible for the electricity industry’s compliance with the Electricity Act, other energy-specific legislative instruments and the decisions of the HEO. The HEO is supervised by the Minister for National Development. Its responsibilities include the issuing and withdrawing operational licenses, implementing and enforcing the Electricity Act, approving the Operating Code, approving the Commercial Code and approving the General Terms and Conditions of the licensed operators of the energy market, and consumer protection.

In addition to the HEO, the Hungarian Competition Authority actively supervises anti-competitive market practices in the energy market.

### INCENTIVES

#### 5. Are tax advantages available to renewable energy generation companies?

Hungary offers specific development tax incentives which work in the form of tax allowances and reduce the corporate income tax payable by a business for carrying out environmental protection or rehabilitation projects that aim to reduce the use and pollution of the environment, and also for projects improving energy efficiency, to

preserve and conserve natural resources, and to promote efficient management that ensures the renewal of resources.

In order to take advantage of the tax incentive, prior to the commencement of the project, a notification or application must be served upon the Ministry of National Economy. The project must have a minimum investment value of HUF 100 million and at least 25% of the cost must be funded by the investor’s own funds.

Moreover, to be eligible for a tax granted for an environment protection project, the investor must have been a tax payer of Hungary for at least five years prior to the submission of the notification or application.

The maximum amount of the corporate tax deduction that may be claimed under the incentive depends upon the geographical location of the project. Developments in deprived areas of Hungary may entitle investors to claim as much as 50% of the investment costs, while in other areas the ratio varies between 25% and 40%.

The investor can take advantage of the tax incentive in the given tax year or the tax year following the completion of the project, and continue doing so in the following nine tax years, provided that the project remains in operation for at least five years (or for three years, if run by an SME) following the start of operations. At the latest, the tax incentive can be utilized in the 14<sup>th</sup> tax year following the tax year in which the notification or application was submitted to the Ministry of Finance.

Renewable energy generation companies may also take advantage of other corporate income tax incentives of a general nature. For example, projects that result in the creation of new jobs, projects that are carried out by SMEs, or projects that are carried out on the territory of designated local governments or represent a

value of more than HUF 3 billion. The requirements that need to be met in order to claim benefit under these general tax incentives are set out in Hungarian Act LXXXI of 1996 on Corporate Tax. Please note that the incentives only reduce the corporate income tax burdens of a business but will not reduce other taxes specific to the energy sector.

#### **6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

##### *Obligatory off-take regime*

The Electricity Act reformed the obligatory off-take regime effective of 1 July 2011, in a manner that producers of cogenerated electricity were removed from the obligatory off-take system. Accordingly, only electricity produced from renewable energy sources and waste (so-called “Green Power”) is now eligible for the obligatory off-take system. Cogeneration power plants up to 50 MW nominal capacity could opt to become members of the ‘cogeneration balance circle’ established by the Hungarian transmission system operator MAVIR<sup>13</sup>.

The cogeneration power plants that joined the new balance circle<sup>14</sup> may sell electricity in the cogeneration balance circle only. The electricity in the new cogeneration balance circle is then sold by MAVIR at the Hungarian electricity exchange (HUPX).

The amendment of the Electricity Act also introduced the so-called ‘cogeneration

restructuring tariff’ that is payable by the license holders (including universal service providers) supplying customers (i.e. electricity users) and system users buying electricity directly. The new tariff is aimed at supporting heat production instead of electricity generation.

##### *Option to introduce the green and cogenerated certificate system*

Pursuant to the Electricity Act, the government may introduce a so-called “green and cogenerated certificate system” instead of the current regime based on obligatory off-take obligation, also observing the provisions of the EU Renewable Energy Directive regarding guarantees of electricity, heating and cooling produced from renewable energy sources. Under the green and cogenerated certificate system, RES-E would be sold at conventional market prices for electricity. In order to finance the additional cost of producing Green Power and to ensure that the desired Green Power is generated, all consumers (or producers) would be obliged to purchase a certain number of green certificates from RES-E producers according to a fixed percentage, or quota, of their total electricity consumption. As the green and cogenerated certificates would be market-based instruments, they have the theoretical potential, if functioning well, of ensuring best value for investment.

#### **7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

Pursuant to the regime of state-set prices, the same feed-in tariffs apply to different types of RES-E, except for wind and solar energy sources. The off-take prices are published annually on the HEO’s website. The HEO determines guaranteed peak, off-peak and deep off-peak prices based on the basic fees set forth in Government Decree No. 389/2007,

<sup>13</sup> The new obligatory off-take system, differentiating based on technologies and power plant capacities, as well as certain other aspects, will come into force following the review of the Renewable Energy Action Plan.

<sup>14</sup> 92 of the 160 producers concerned, with total nominal capacity amounting to 4% of the Hungarian electricity system, joined the new balance circle.

indexed by the CPI issued by the Hungarian Statistical Office. For certain types of RES-E, the CPI must be decreased by an efficiency factor of 1%. In case of cogenerated electricity, the off-take price must also be indexed in accordance with any change to the officially fixed price for natural gas. Such indexation of the off-take price for cogenerated electricity may also take place during the year, if the change in gas prices makes it necessary.

#### **8. Do the renewable energy based power plants have priority for connection to the grid?**

In terms of connection to the electricity grid, RES-E plants enjoy certain benefits under, or are prioritized by, the Electricity Act and Decree No. 76/2011 of the Ministry for National Development on the financial and technical conditions of connecting to the public electricity grid.

The distribution operators must prioritize the electricity from renewable sources when ensuring connection and maintenance of the distribution network. The distribution operators may deny access to the distribution grid or limit, reduce or suspend the service for contracted distribution capacities if it would be disadvantageous for the generation of electricity from renewable energy sources.

The transmission network operator and the distribution network operators must bear the costs of upgrading the public network (especially transmission capacity and grid connection) when capacities from renewable sources are installed to the system, to the extent provided for by law. If the share of renewable energy sources in the production of a power plant equals or exceeds 70% or 90%, such power plant gets a statutory reduction of the network connection fees in an amount of 30% and 50%, respectively.

#### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

The New Hungary Rural Development Program 2007-2013 (in Hungarian: Új Magyarország Vidékfejlesztési Program) subsidizes the production and processing of biomass raw materials at competitive prices and the electricity self-supply of producers (including the installation of biomass power generation and electricity storage equipment) from funds of the European Agricultural Fund for Rural Development. The New Széchenyi Plan also supports the use of renewable energy produced from biomass.

Further subsidies and incentives may be available in Hungary, however, these are not RES-E specific.

#### **10. What are the other incentives available to renewable energy generation companies?**

Investment in RES-E is supported under that Environmental and Energy Operative Program that distributes EU Structural Funds. The National Development Agency (in Hungarian: Nemzeti Fejlesztési Ügynökség,<sup>15</sup> the “NFÜ”) is responsible for the strategy and decisions with respect to KEOP, while the Hungarian Energy Centre (in Hungarian: Energia Központ Kht.,<sup>16</sup> the “HEC”) is the intermediate coordinating body. When deciding which investments should be subsidized from this fund, these entities examine the cost-efficiency of each project and also take into account the subsidy provided through the compulsory energy purchase scheme. The period of application for the KEOP programs is between 2007 and 2013. The sum available for supporting KEOP

<sup>15</sup> See [www.nfu.hu](http://www.nfu.hu).

<sup>16</sup> See [www.energiakozpont.hu](http://www.energiakozpont.hu)

projects was HUF 42 billion in the 2009-2010 planning period.<sup>17</sup>

The National Energy Efficiency Program (in Hungarian: Nemzeti Energiatakarékossági Program) was replaced by the Successful Hungary Household Energy Saving Credit Program (in Hungarian: Sikeres Magyarország Lakossági Energiatakarékossági Hitelprogram) in September 2009. Credit purposes include the replacing of doors and windows, modernization of heating and hot water supply, heat insulation and the utilization of renewable energy sources. The overall budget of the Credit Program is HUF 16 billion.

The Credit Fund for Energy Saving (in Hungarian: Energiahatékonysági Hitel Alap) was a joint effort of the Ministry, the HEC and Kereskedelmi és Hitelbank Zrt. to support projects that contribute to energy saving and the use of RES-E by a preferential/reduced rate credit program, but was suspended in March 2012.

In order to facilitate the production and use of biofuels, mining and water management companies may be eligible for partial excise tax rebates after the biofuel used for vehicles which operate off the public roads.<sup>18</sup>

Indirect incentives to RES-E generation companies include participation in the European Union Emissions Trading Scheme, project financing under Article 6 of the Kyoto Protocol and the household-scale green investment system funded from Hungary's revenues of international emissions trading under the Kyoto Protocol.

In January 2012, Hungary applied for derogation for the introduction of the emission quotas: Hungary undertook three investments in the total value of 120 billion HUF, i.e. the amount corresponding to the quantity of free quotas. To this end, Magyar Villamos Művek (the state owned power company) is required to build a pump-storage hydro power plant and a gas pipeline and introduce the smart metering of energy consumption by 2020.

Within the framework of the Renewable Energy Action Plan, the Hungarian government also plans to set up a so-called 'green bank' to provide financial coverage for green investments including those related to renewable energy. In addition, green financing schemes and programs are planned to be introduced.

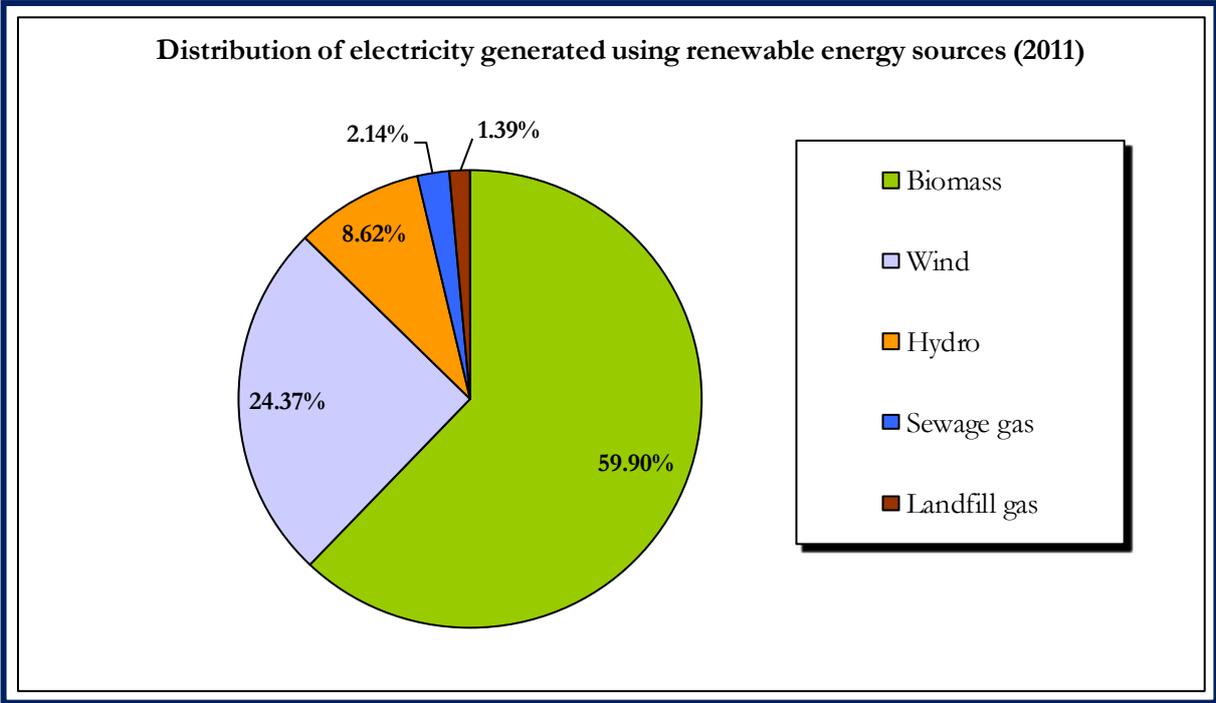
## STATISTICS

### 11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?

The chart below shows the amount of electricity generated from renewable resources and waste in 2011 in Hungary. Electricity generated from renewable resources constituted 6.5% of the net domestic total generation in 2011.

<sup>17</sup> HEC website.

<sup>18</sup> Article 55(4) of Hungarian Act CXXVII of 2003 on excise tax.



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# Ireland

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## GENERAL

### 1. What is the nature and importance of renewable energy in your country?

Under the Renewable Energy Directive 2009/28/EC (the “RED”), the European Commission has set out its “20-20-20” goals, i.e., a 20% reduction in greenhouse gases by 2020; a 20% increase in EU energy efficiency by 2020; and for 20% of total energy consumption in the EU to come from renewable sources by 2020. The RED also imposes individual renewable energy consumption targets for each Member State based on a flat rate approach adjusted to each Member State’s GDP. The EU has set a target of 16% of Ireland's gross final consumption of energy to come from renewable sources by 2020. In addition to specific targets in respect of transport (10%) and heat (12%), 40% of overall electricity consumption must be generated from renewable sources. Prior to the financial crisis, this was estimated to equate to about 5,800MW of installed renewable capacity. Revised demand forecast figures have seen this figure drop to 4,600MW according to EirGrid's Transmission Forecast Statement for 2010-2016. Although Ireland’s position as a potential exporter of renewable energy is the current “hot topic” (discussed below), there remains a significant challenge for Ireland to achieve its own 2020 targets of installed

renewable capacity. For example, there is currently 2,583 MW of renewable generation installed on the power system of Ireland and Northern Ireland. In order to reach Ireland’s 2020 targets, it is estimated that the amount of installed wind generation will need to reach an installed capacity of between 4,800 MW and 5,300 MW by the end of 2020.<sup>1</sup>

The National Renewable Energy Action Plan (“NREAP”) sets out the Government's strategic approach and concrete measures to achieve Ireland’s 2020 targets. The NREAP estimates the total contribution expected from each renewable energy technology sector. By 2020, it is proposed that the following renewable energy technologies will hold the following energy share in electricity:

- Hydro 234 MW
- Tide, wave, Ocean 75 MW
- Biomass 153 MW
- Wind (Onshore) 4,094 MW
- Wind (Offshore) 555 MW

The Government has introduced a number of measures to reduce the dependency on imported oil in the transport sector. In order to meet its target of 10% of vehicles to be powered by electricity in 2020, the Government has introduced tax incentives to encourage both private individuals and businesses to purchase electric vehicles. Although high costs and underdeveloped support systems have so far hindered the popularity of the electric car amongst consumers, the existing scheme is encouraging and indicative of the Government’s intention to grow this sector in the future. In addition,

<sup>1</sup> “All Island Renewable Connection Report 26 Month Forecast (Q4 2012)” published by EirGrid and the System Operator for Northern Ireland (“SONI”).

under the national Biofuel Obligation Scheme 2010, road transport fuel suppliers are obligated to use biofuel in their fuel mix to ensure that a certain percentage of transport fuel used in the State consists of biofuels.

Regulators and policy makers alike face the challenge of ensuring a smooth transition from the current market to a market fuelled by up to 40% renewable energy in less than six years' time. While renewable technologies continue to be promoted at a government policy level, key stakeholders are working to address practical implementation issues such as grid development and management of variability. A high penetration of intermittent renewable generation (largely wind) has placed a premium on flexibility and resilience in the balance of Ireland's generation portfolio. The Irish Transmission System Operator, EirGrid, is involved *in detailed* examination of the challenges posed by large scale intermittent power on the Irish grid, and is leading several facilitation studies to ensure the appropriate management of the grid and stability of the electricity system during this transition.

EirGrid has also launched a major initiative, called Grid25, to develop and upgrade the transmission infrastructure throughout Ireland. Approximately €3.2 billion will be invested in this project, which is expected to continue until 2019. EirGrid has already commenced a number of large-scale regional projects under this initiative, such as Grid West which alone has accounted for €240 million of investment to date. In 2012, EirGrid was responsible for the construction of 130km of new circuits, in addition to upgrading and refurbishing over 415km of existing circuits.

Separately, EirGrid has invested an additional €500 million in the Grid Link project. The purpose of Grid Link is to develop the electricity infrastructure in the south and east of Ireland, including the construction of a

400kV overhead power line linking to the two regions. The completion of the Grid Link project will result in increased security of supply, as well as helping Ireland to meet its 2020 targets by integrating more renewable energy sources into the grid. Public consultation and studies are currently underway, and it is expected that Eirgrid will obtain planning permission to commence works in 2015.

2012 also saw the completion of the East-West Interconnector, a 500MW HVDC electricity link between the Irish and British grids. This was a major step forward for both markets, as it will help to improve security of supply as well as promoting competition in the electricity sector. Efforts continue to be made to marry an intra-day trading regime with the Single Electricity Market ("SEM") market design which is currently characterised by a lengthy gate closure and optimisation time horizon.

In addition to reducing Ireland's dependence on fossil fuels and securing energy supply, Ireland's renewable energy industry plays a central role in our economy by creating a demand for highly-skilled workers and providing a welcome boost to the construction sector.

The importance of renewable energy to Ireland and to the Irish economy has recently gained further importance when, on 24 January 2013, the Irish Minister for Communications Energy and Natural Resources, Pat Rabbitte, TD, and the UK Secretary of State for Energy and Climate Change, Edward Davey, MP signed a long expected Memorandum of Understanding pursuant to which both parties committed to working closely together to secure economic benefits for both states through trade in renewable energy. While there are yet unresolved policy issues for both Member States, the potential advantages for Ireland in securing the United Kingdom as export market

for its renewable energy has thrown into sharp relief the importance of developing Ireland's renewable energy resources.

## 2. What is the definition and coverage of renewable energy under the relevant legislation?

The principal legislation governing the electricity industry in the Republic of Ireland is the Electricity Regulation Act 1999, as amended (the "1999 Act"). The 1999 Act defines "renewable, sustainable or alternative forms of energy" as energy used in the production of electricity which uses as its primary source one or a combination of more than one of the following: wind, hydro, biomass, waste (including waste heat), biofuel, geothermal, fuel cells, tidal, solar and wave.

The definition of renewable energy was further expanded in the European Communities (Renewable Energy) Regulations 2011 (which transposed the RED into Irish law) to include energy from renewable non-fossil sources, namely aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

The Minister for Communications, Energy and Natural Resources (the "Minister") has overall responsibility for the renewable energy sector. The Minister is advised by a range of other statutory bodies including the Commission for Energy Regulation (the "CER"), which was established under the 1999 as the national regulatory authority responsible for overseeing the liberalisation of Ireland's energy sector and granting licences for the generation, transmission, distribution and supply of

electricity. The Minister is also assisted by Ireland's national energy authority, Sustainable Energy Authority Ireland ("SEAI") which promotes and provides grants for the development of sustainable energy structures, technologies and practices.

Government policy in the electricity sector is driven principally by the relevant European Directives. The European Communities (Internal Market in Electricity) Regulations 2000 (the "2000 Regulations") completed the transposition of Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 concerning common rules for the internal market in electricity (Directive 96/92/EC). The European Communities (Internal Market in Electricity) Regulations 2005 (the "2005 Regulations") were promulgated to transpose the requirements of Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC (Directive 2003/54/EC). The implications of the Third Energy Package and in particular of the RED concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC remain to be seen. The European Communities (Internal Market in Electricity) Regulations 2010 (S.I. 450 of 2010) were signed into effect on 17 September 2010 and mark the first step in full transposition of this Directive. Full transposition of the RED is still progressing in Ireland. The RED was transposed into Irish Law by the European Communities (Renewable Energy) Regulations 2011 on the 28 March 2011, supplemented by the Sustainable Energy Act 2002 (Section 8(2)) (Conferral of Additional Functions - renewable Energy) Order 2011.

The Irish electricity sector underwent fundamental reform with the establishment on 1 November 2007 of the SEM encompassing the Republic of Ireland and Northern Ireland.

Key characteristics of the SEM include a gross mandatory pool with central commitment, a single system marginal price transmission-constraint payments and the introduction of capacity payments. The Energy (Miscellaneous Provisions) Act 2006 and the Electricity Regulation (Amendment) (Single Electricity Market) Act 2007 provide the legal basis for the SEM in Ireland, including establishment of a SEM Committee of the CER to regulate SEM matters in conjunction with an equivalent committee of the CER's counterpart in Northern Ireland. The Irish Government's framework for renewable energy fully mirrors the European Union's energy policy objectives which can be clearly identified in the 2007 Government White Paper, 'Delivering a Sustainable Energy Future for Ireland'. This proposes future development of the energy sector for 2007 to 2020 around the central pillars of increasing security, sustainability and competitiveness of energy supply. As noted above, Ireland's energy efficiency policy is reflected in the NREAP, which provides an overview of the various strategies and measures proposed by the Government to reach our 2020 targets.

The Government's Strategy for Renewable Energy 2012-2020 recognises Ireland's wind and ocean resources as a potential for Ireland to become a renewable energy exporter within the next few years. This document outlines a number of key actions to be taken in order to facilitate the cooperation needed to achieve this objective. This strategy achieved one of its goals when the Memorandum of Understanding with the United Kingdom was signed on 24 January 2013. The next step in this process will be an intergovernmental agreement between Ireland and the United Kingdom, setting out a detailed framework to support the development of Ireland's renewable energy resources within the context of the cooperation mechanisms under the RED.

The implementation of the Energy (Biofuels Obligation and Miscellaneous Provisions) Act, 2010 further transposed the RED into Irish law and provides for further promotion of the use of biofuels in the transport sector in order to meet the 10% target.

The overall regulatory framework (supported by various action plans published by the Government) is indicative of Ireland's commitment to become a low carbon economy based on energy efficiency and renewable energy.

#### **4. What are the principal regulatory bodies in the renewable energy sector?**

Ireland has successfully fostered a strong culture of independent regulation through the appointment of an independent energy sector regulator. The CER is an independent body and is responsible for overseeing the liberalisation of Ireland's energy sector and granting licences for the generation, transmission, distribution and supply of electricity.

The CER is Ireland's designated National Regulatory Authority ("NRA") for the purposes of the New Electricity and Gas Directives and has responsibility for gas, electricity and water regulation. In light of European and Irish energy policy, the role and functions of the CER have been expanded over time and with various legislative amendments.

Its functions are extensive, and include:

- Licensing and regulation of gas and electricity undertakings;
- Regulating allowed revenues and tariffs for incumbents;
- Overseeing market arrangements including, without limitation, approving changes to the electricity and gas industry Codes;

- Promoting and regulating gas and electricity safety;
- Cooperation with other NRAs and the European Commission;
- Settling disputes;
- Ensuring a high standard of protection for final customers in dealings with licensed suppliers; and
- Monitoring

The CER also has functions in relation to the development of an all-island energy market and the development and regulation of the SEM.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

#### *a. Tax Relief for Renewable Energy Generation Investment*

Section 486B of the Taxes Consolidation Act 1997 provides tax relief for investments in renewable energy generation. The relief applies to corporate equity investments in certain renewable energy generation projects. The energy project must be in the solar, wind, hydro or biomass technology categories, and must be approved by the Minister for Communications, Energy & Natural Resources. The relief is given in the form of a deduction from a company's profits for its direct investment in new ordinary shares in a qualifying renewable energy company.

#### *b. Revenue Business Expansion Scheme*

The Employment Investment Incentive ("EII") is a tax relief incentive that allows investors to obtain income tax relief on investments made, in each tax year, into EII certified qualifying companies. The EII

scheme has replaced the previous Business Expansion Scheme ("BES"). Investments in renewable energy companies qualify for EII/BES relief. EII relief enables investors to deduct the cost of their qualifying investment from their total income for income tax purposes and is given at the claimant's marginal rate of income tax. Securing EII/BES status therefore enhances the ability of eligible companies to attract outside investment.

#### *c. Securitisation of Carbon Credits*

Carbon is steadily increasing in significance within structured and project finance in multiple forms, such as a revenue stream, cost item, asset class and a commodity capable of being traded financially or physically. The Irish Government has created a firm securitisation regime under the governing legislation of the Taxes Consolidation Act 1997 (the "1997 Act"). Section 110 of the 1997 Act provides that the taxable profits of a company involved in the holding and/or management of "qualifying assets" should be computed on the same basis as a trading company. Thus, the cost of funding and other related expenditure is generally tax deductible, favouring minimal tax leakage and maximum return for investors. The Government extended the application of Section 110 under the Finance Act 2011, which opened up Ireland's securitisation regime to new markets. The definition of "qualifying assets" for securitisation purposes specifically includes carbon offsets.

#### *d. Research and Development ("R&D") Grants*

R&D grants and capital grants are offered to support innovative domestic and commercial schemes using biofuels, CHP, large-scale wood heating systems and domestic renewable heat technologies.

Various funding programmes are offered through the SEAI. A fund is currently available to stimulate the development and

deployment of Ocean Energy devices and systems.<sup>2</sup> The emphasis is on industry-led projects for the following types of activities:

- industry-led projects to develop and test wave and tidal energy capture devices and systems;
- independent monitoring of projects / technologies;
- industry-led R&D aimed at the integration of ocean energy into the electricity market and the national electricity grid (and network);
- data monitoring, forecasting, communications and control of OE systems; and
- specific industry-led research projects carried out by research centres, third level institutions and centres of excellence with a high level of expertise in the relevant area.

**6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

There is no purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies. However, the 1999 Act requires the Transmission System Operator to give priority dispatch into the SEM's mandatory gross pool, subject to system security considerations. Therefore, priority dispatch, coupled with a gross pool market, gives rise to an effective purchase guarantee, subject to constraints and curtailment.

In 2009, the SEM Committee commenced a review of the dispatch principles and the design of the market schedule in the SEM. In particular, it consulted on whether priority should be afforded to generators irrespective

of cost, and whether such priority dispatch should be reflected in the construction of the market schedule. On 2 September 2010 the SEM Committee published a proposed decision paper and request for further comment on its dispatch principles, *in* which the SEM Committee proposed that the greatest degree of priority would be afforded to generation with mandatory priority dispatch (renewable generators), and that priority dispatch would be afforded irrespective of cost.

In addition to the foregoing, the SEM Committee has stated that it will consider revising the current market design to align the market schedule with the dispatch schedule only where a failure to do so will result in a 'material harm' to consumers. Such a move would be one of the most significant changes to date of the SEM rules which have been in place for less than four years. The SEM Committee has deferred any decisions in this regard until an assessment framework for material harm has been devised.

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

*The Renewable Energy Feed In Tariff ("REFIT")*

While there is no minimum price guarantee under Irish legislation for electricity generated by renewable energy companies, Ireland has implemented a number of supplier compensation regimes for additional costs of renewable energy purchased, which are known as Renewable Energy Feed In Tariffs or REFIT. REFIT allows suppliers to contract with generators outside the SEM pool and provide a price floor in power purchase agreements reflecting the level of compensation available to the suppliers. These

<sup>2</sup> Available at "<http://www.seai.ie/Grants/oceanenergy>",

REFIT supported power purchase agreements operate to insulate renewable generators from fluctuations in the wholesale market price.

The first REFIT programme ("REFIT I") was opened by way of competition in 2006 by the Department of Communications, Energy and Natural Resources ("DCENR") to support the construction of new electricity generation plant powered by biomass, hydropower or wind energy. The REFIT I scheme was open for applications until 31 December 2009, and was subject to a quantitative limit which has now been reached. Since that date no new applications have been accepted; although projects accepted into the scheme before that date, which were granted an extension of time to become operational, continue to be developed. The second REFIT programme<sup>3</sup> ("REFIT II") and third REFIT programme<sup>4</sup> ("REFIT III") are now open for applications. REFIT II provides support for electricity exported to the grid in the onshore wind, hydro and biomass landfill gas technology categories subject to a quantitative limit of 4000MW in total. The maximum size of an individual plant that may be accepted into REFIT II is 125MW. Plants above 125MW will require an individual state aid application to be submitted by DCENR to the European Commission.

REFIT III covers biomass technologies and is designed to incentivise the addition of 310MW of renewable electricity capacity. Of this, 150MW will be High Efficiency CHP (HE CHP), using both Anaerobic Digestion and the thermo-chemical conversion of solid biomass, while 160MW will be reserved for biomass combustion and biomass co-firing. REFIT III provides support for electricity exported to the grid subject to the following quantitative limits:

Anerobic Digestion (including AD CHP) 50MW; Biomass CHP 100MW; Biomass Combustion (including co-firing with peat) 1603VTW. The maximum size of an individual plant that may be accepted into REFIT III is 50MW. An exception to this rule applies to peat co-firing stations which may co-fire peat and biomass up to 30% of the capacity of the plant (up to a maximum of 50MW) in any single year. Plants above 50MW will require an individual state aid application to be submitted by DCENR to the European Commission.

REFIT II projects must be built and operational by 31 December 2017. The support for any particular project cannot exceed 15 years and the support may not extend beyond 31 December 2032. In addition, applications to the REFIT II scheme will not be accepted after 31 December 2015.

In order to participate in the REFIT Schemes, renewable generators must first be accepted by the DCENR in accordance with the relevant REFIT terms and conditions. Successful generators who receive a "letter of offer" are subsequently required to enter into a power purchase agreement ("PPA") with a supplier licensed by the CER. With the benefit of a REFIT letter of offer (the generator is the addressee although details of the supplier are subsequently notified to the DCENR), the supplier counterparty to a REFIT PPA is entitled to be reimbursed its "additional costs" in performing its "public service obligation" (the "PSO") to purchase the output from the new electricity generation plant. This PSO is imposed on licensed suppliers by way of statutory instrument. Where the additional costs to suppliers of purchases under REFIT PPAs exceed market incomes in the SEM suppliers are entitled to compensation from

<sup>3</sup> A Competition for Electricity Generation —from Onshore Wind, Hydro and Biomass Landfill Gas Technologies 2010-20 IS.

<sup>4</sup> A Competition for Electricity Generation from Biomass Technologies 2010-2015.

funds collected from all consumers of electricity through the PSO levy together with a balancing payment to compensate the supplier for the costs associated with balancing renewable electricity. The balancing payment for REFIT I is 15% of the reference price for large scale wind (indexed). The balancing payment for REFIT II and REFIT III is €9.90 MWh (not indexed), payable only to the extent that the market price does not exceed the applicable reference price.

#### REFIT Reference Prices

##### a. REFIT I

The reference prices for REFIT I (Indexed from 2006) are:

- Large Scale Wind category - 5.7 eurocents per kWh.
- Small Scale Wind category - 5.9 eurocents per kWh.
- Hydro - 7.2 eurocents per kWh.
- Biomass Landfill Gas - 7 eurocents per kWh.
- Other Biomass - 7.2 eurocents per kWh.

##### b. REFIT II

The reference prices for REFIT II (Indexed from 2010) are:

- Onshore Wind (above 5MW) 6.6 eurocents per kWh.
- Onshore Wind (equal to or less than 5MW) - 6.8 eurocents per kWh.
- Hydro (equal to or less than 5MW) - 8.3 eurocents per kWh.
- Biomass Landfill Gas - 8.4 eurocents per kWh.

##### c. REFIT III

The reference prices for REFIT III (Indexed from 2010) are:

- Biomass Combustion (non *CHP*):
  - o For using Energy Crops - 9.5 eurocents per kWh.
  - o For all other biomass - 8.5 eurocents per kWh.
- Biomass CHP units greater than 1500 kWh -12 eurocents per kWh.
- Biomass CHP units less than or equal to 1500 kWh - 14 eurocents per kWh.
- AD CHP greater than 500 kWh - 13 eurocents per kWh.
- AD CHP unit less than or equal to 500 kWh - 15 eurocents per kWh.
- AD (non-CHP) units greater than 500 kWh - 10 eurocents per kWh.
- AD (non-CHP) units less than or equal to 500kWh - 11 eurocents per kWh.

#### **8. Do the renewable energy based power plants have priority for connection to the grid?**

Renewable energy power plants do not have priority connection to the grid, although priority connection for small scale generators below 5MW (see below) predominately benefit renewables (other than small scale wind).

Ireland has implemented a Third Party Access Regime under Sections 33, 34 and 34A of the 1999 Act. These Sections govern access to transmission and distribution systems and interconnectors as well as arrangements and agreements relating to the transmission system together with the Northern Ireland transmission system. Anyone may apply to

EirGrid for connection to the transmission system and to ESB Networks Limited for connection to the distribution system. Offers are subject to the applicant becoming an eligible customer or obtaining a licence or authorisation.

The CER may issue directions to the Relevant System Operator specifying the terms of connection offers from time to time. The CER may give directions in relation to matters to be specified in a connection and/or use of system agreement; terms and conditions of a connection offer; respective proportions of costs to be borne by the Relevant System Operator and connecting parties; and time periods within which an offer must be made or a refusal notified.

The only *circumstances* in which the Relevant System Operator can refuse to make a connection offer to an applicant are set out in Section 34(4) of the 1999 Act and include where the CER is satisfied that it is not in the public interest; where it would result in a breach of the 1999 Act, the regulations made under the 1999 Act, the grid code or any condition of any licence or authorisation; or where the applicant does not undertake to be bound by the terms of the grid code.

The holder of a licence to transport electricity across and maintain an interconnector is required to offer interconnector access on the basis of published non-discriminatory terms which must be approved by the CER. The interconnector operator may refuse to enter into an agreement providing access where it can demonstrate to the CER that to do so would not be in the public interest or if doing so would involve the operator breaching the 1999 Act, regulations made under the Act and as the case may be, the grid code or distribution code or, its licence or authorisation. In practice, there has

traditionally been a lack of capacity for parties seeking to connect to the transmission and distribution systems. The CER enjoys powers under Section 34(1) of the 1999 Act to issue directions relating to the terms for connections to the transmission and distribution system. Pursuant to those powers, the CER imposed until mid-2004 a moratorium on new wind farms. Since then, the CER has been implementing a group processing approach for the issue of connection offers by the Relevant System Operators under successive "Gates", but there remains a considerable backlog and delays. The issuance of offers for the Gate III process commenced in December 2009 and the issue of offers from the system operators continued until June 2011. All offers have now been issued under this Gate process.

In December 2011, the SEMC published a final decision in relation to treatment of curtailment in the SEM where the instantaneous penetration of wind exceeds 50% of system demand. However, following a number of industry submissions, the decision was partially withdrawn by the SEMC in March 2012. The decision outlined the preferred option for allocating curtailment in tie-break situations on a firm access quantity basis, i.e. giving preference to plant which had already obtained a firm access quantity (a grandfathering approach). This would mean existing plant would have different rights to new plant. On 1 March 2013, the SEMC published its final decision, which provided that all wind generators should make a contribution on a pro-rata basis to address the fact that curtailment is a system-wide problem. This decision was largely welcomed by the industry as a fair alternative which provided much needed certainty to the market.

In 2009, the CER published a Decision Paper<sup>5</sup> which details how small, renewable and low carbon generators that fulfil public interest

<sup>5</sup> CER/09/099

criteria would be processed outside the Group Processing Approach (GPA). The public interest criteria include diversity of fuel mix, predictability and power system support, environmental benefits and research or innovation. The CER decision paper also sets out a list of pre-approved classes of technology for processing outside the GPA which include:

- Bioenergy
- CHP
- Autoproducers
- Hydro
- Ocean
- Wave
- Solar
- Geothermal
- Experimental/Emerging Technologies

Renewable generators (<500kW) were previously all subject to the GPA, which is effectively a queue system. The new approach differentiates between wind and non-wind renewable generators. Applications by non-wind renewable generators with a Maximum Export Capacity (MEC) less than or equal to 5 MW will be processed outside of the queue and interaction studies will not be carried out. Only auto production wind sites, where the generator (up to 5MW) is installed on an industrial site to predominantly supply in-house demand, will be included in this new arrangement. Wind sites with a direct connection to the grid will not be included and will be subject to the full GPA. Non-wind renewable generator applicants with an MEC greater than 5 MW will also be processed outside of the GPA but interaction studies will be performed. If no interactions exist then they can proceed to be given a connection offer. If interactions do exist, then the CER will consider these on a case-by-case basis.

### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

There are no incentives for domestic manufacturing of equipment or materials used in the construction of renewable energy based power plants.

### **10. What are the other incentives available to renewable energy generation companies?**

There are various incentives available to renewable energy generation companies. The tax and financial schemes have previously been discussed under section 5. In addition, the Irish government has also introduced a number of measures to encourage investment in renewable energy including:

- 10.1 changes to planning legislation with the potential to significantly expedite the planning process for wind farms with more than 50 turbines or an output greater than 100MW and publication of revised '*Wind Energy Development Guidelines for Planning Authorities*'; and
- 10.2 the introduction of a biofuels obligation scheme, corporate investment in certain renewable energy projects and registration of hybrid electrical vehicles and flexible fuel vehicles.

## **STATISTICS**

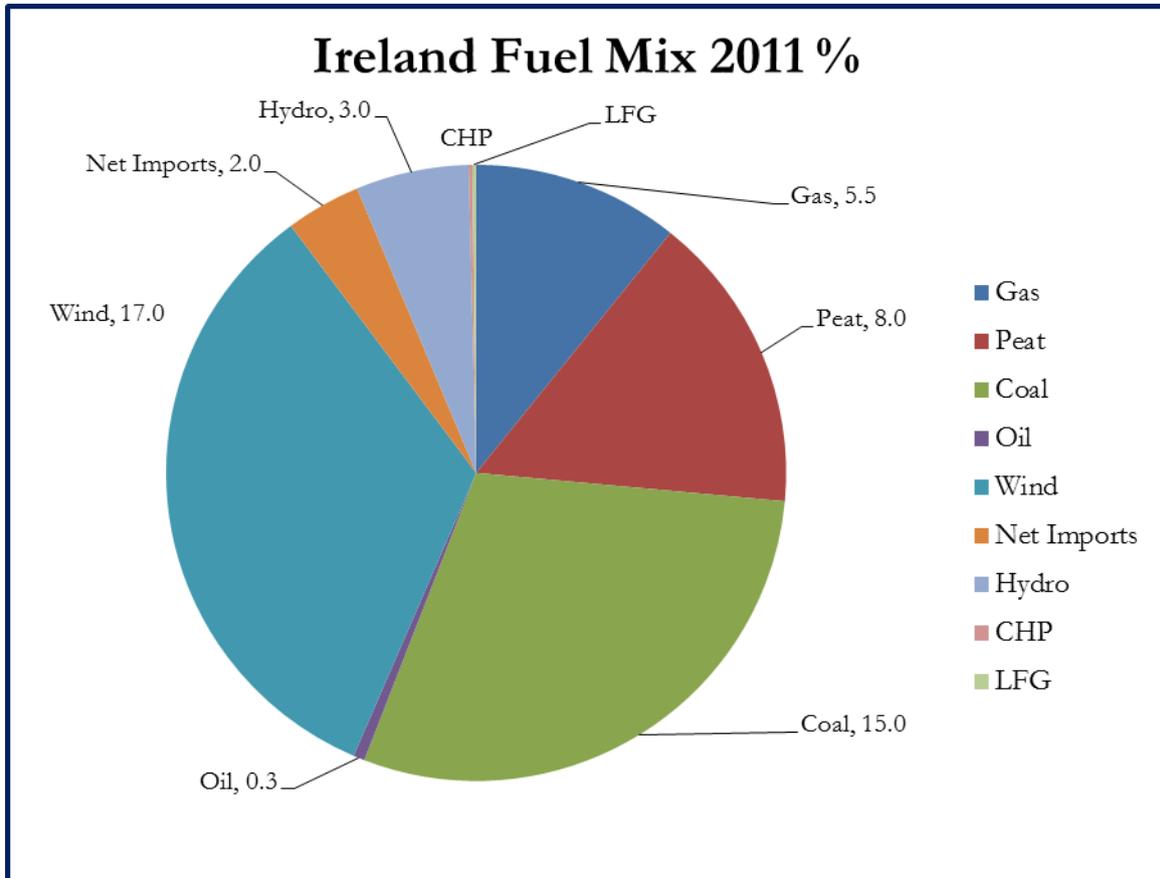
### **11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

In 2011, renewable energy sources contributed 20% of Ireland's electricity needs, with 17% of this figure arising from wind, 3% from hydro and 0.2% from landfill gas. The significant

increase in electricity produced from wind (an increase from 10% of total generation in 2010) has allowed Ireland to reduce its dependency

on imported fossil fuels. See Figure 1 for a breakdown of the fuel mix in Ireland in 2011.

Figure 1: Ireland Fuel Mix 2011<sup>6</sup>



<sup>6</sup> Figures taken from CER/12/104.

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# Italy

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CLIFFORD CHANCE

## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

#### 1.1. A country full of renewable sources

Italy's energy industry – the importance of which is constantly and rapidly increasing – is essential for satisfying Italian residential and business energy needs. However, Italy and its economy have always been and still are disadvantaged by the fact that Italy is an importer of energy sources, especially of fossil fuels (*i.e.* oil and natural gas).

Italy's strong dependence on the import of raw materials such as oil and natural gas from non-EU countries, as well as of further amounts of already-produced electricity from nearby EU-countries, the decision to stop nuclear power and Italy's availability of large potential of renewable resources<sup>1</sup>, have led to use of renewable energy sources to constantly gain increasing strategic and economic importance. Consistently, the Italian government has passed over several years a series of laws and regulations (the majority of which, in order to

<sup>1</sup> Italy has a vast expanse of coast, both in the mainland and on the islands (total of 7,468 Km) for the potential installation and exploitation of wind power plants, a wealth of water and stretches of steep slopes for hydroelectric exploitation, a sunny Mediterranean climate in the south for the exploitation of solar energy and extensive lands which may be irrigated and mechanised for production of biomass.

implement EU directives), by means of which strong mechanisms of incentives for the use of renewable energy sources have been offered to investors.

More specifically, the Italian government has been implementing a series of laws and regulation which may be divided into two main areas: one regarding the photovoltaic sector (*i.e.* feed-in tariffs – so called "*Conto Energia*"), and the other regarding the other renewable sources, including on- and off-shore wind-farms, biomass, biogas and wind power plants (*i.e.* Green certificates – so called Renewable Energy Certificates (RECs)).

#### 1.2. Market trends

During the past years, such regulatory framework has created a dynamic market, attractive for both domestic and foreign capital, especially with respect to photovoltaic, wind and biomass energy sources. However, the most recent reforms to the applicable laws and regulations – recently implemented and effective as of 11 July 2012 with respect to the renewable energy sources other than photovoltaic, and as from 27 August 2012 with respect to photovoltaic plants – have generally reduced the amount of incentives made available to renewable energy operators on one hand, while rendering more complicated the administrative procedures to be admitted to receive the incentive tariffs, thus possibly limiting the number of plants admitted to the new incentive systems and decreasing the profitability of the new investments made.

Nevertheless, opportunities for investors still exist, mainly because the plants that are already operating, and that receive incentives, are good prospects for acquisition by new operators that wish to access the market or by existing operators who wish to consolidate their market position.

Italy has shown dramatic growth in the photovoltaic sector. At the end of 2011, Italy had an installed capacity in excess of 13 GW; similarly, although at lesser levels, Italy is also showing increased capacity in the production of energy from wind and other renewable sources (see Paragraph 11). This fast growth in the renewable energy sector, however, has been fragmented: investors of all types and nationalities dove in the solar market, at each level of the production and supply chain.

The market now requires rationality and efficiency. In the second half of 2012 and in the years to come, we will witness the growth of a florid secondary market, which will lead to a concentration of plants in the hands of a few qualified operators.

## 2. What is the definition and coverage of renewable energy under the relevant legislation?

Renewable energy sources ("RES") are defined by the relevant applicable law<sup>2</sup> as "*the renewable non-fossil energy sources (including wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases sources)*".

Furthermore, the electricity produced from RES is defined by the relevant applicable law<sup>3</sup> as "*the electricity produced by plants that are powered exclusively by RES, the portion of electricity produced from RES in hybrid plants that also use conventional*

<sup>2</sup> In Italy, the definition of renewable energy is set forth in Article 2, paragraph 1(a), of Legislative Decree 29 December 2003, No. 387 ("LD 387/2003"). LD 387/2003 implemented in Italy Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from RES in the internal electricity market, and currently reflects the same definition of renewable energy given therein. Notwithstanding the repeal of Directive 2001/77/EC by Directive 2009/28/EC, the definition of renewable energy given in LD 387/2003 is still valid and complies with Directive 2009/28/EC.

<sup>3</sup> LD 387/2003, Article 2, paragraph 1(f).

*energy sources, as well as the renewable electricity used for filling storage systems, but excluding electricity produced as a result of storage systems*".

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

The renewable energy sector is mainly regulated at the national level by general provisions which implement EU directives. At the local level, the renewable energy sector is regulated by Regional provisions, which have to comply with the national laws.

Some of the principal laws and regulations currently in force in Italy at the national level are listed below:

- Legislative Decree No. 79 of 16 March 1999 ("LD 79/1999") implementing EU Electricity Directive No. 92 of 19 December 1996, which was the first main step towards the liberalisation of the electricity market;
- LD 387/2003, implementing Directive 2001/77 on the promotion of electricity produced from RES in the internal electricity market;
- Law No. 239 of 23 August 2004, which outlined a radical reform of electricity regulation in Italy, transforming the sector from a public monopoly to a free competition regime;
- Ministerial Decree No. 25336 of February 2007 ("MD 25336"), approving the criteria and procedures for supporting production of electricity by photovoltaic conversion of the solar source;
- Ministerial Decree dated 21 December 2007, introducing the system of Green Certificates;

- Law No. 244 of 24 December 2007 ("Budget Law 2008"), which created several tax advantages and introduced changes in the regime of the incentives granted for production of electricity from RES;
- Ministerial Decree of 11 April 2008 ("MD 11/04/2008"), approving the criteria and procedures for supporting production of electricity from the sun through thermodynamic cycles;
- Ministerial Decree dated 18 December 2008 ("MD 18/12/2008"), approving the criteria and procedures for supporting electricity generation from RES;
- Legislative Decree No. 28 of 3 March 2011 ("LD 28/2011"), implementing EU Directive 2009/28, which aims to achieve the objectives set out for 2020 on the overall share of renewable sources for each EU state;
- Law No. 27 of 24 March 2012 ("LD 27/2012"), which modifies Legislative Decree No. 1 of 24 January 2012 ("LD 1/2012") and aims to facilitate access to the renewable energies market;
- Ministerial Decree 5 July 2012 (the "Fifth Conto Energia"), implementing Legislative Decree No. 28 of 3 March 2011 and relating to photovoltaic plants;
- Ministerial Decree 6 July 2012 (the "RES Decree"), implementing Legislative Decree No. 28 of 3 March 2011, and relating to the new incentive system for on-shore and off-shore wind farms, biomass, biogas plants and all renewable energy sources other than photovoltaic;
- AEEG Resolution No. 280 of 6 November 2007, as subsequently amended, governing the procedures and economic terms and conditions for the purchase of electricity;
- AEEG Resolution No. 74 of 3 June 2008 ("TISP"), governing the procedure and the technical and economic terms and conditions for net metering;
- AEEG Resolution No. 99 of 23 July 2008, governing the procedure for the interconnection of power plants to the power grid; and
- AEEG Resolution No. 123 of 16 September 2008, governing the disputes among the project owners and the grid operators.

Furthermore, energy regulation has also been affected by amendments to the Italian Constitution. Among others, Constitutional Law No. 3/2001 amended Article 117 of the Italian Constitution and brought regulation of the production, transportation and distribution of national energy within the legislative control of the Regions, subject to the fundamental principles set out in the national energy legislative framework.

At the regional level, each Region in Italy is entitled to enact regional laws and regulations governing, inter alia, (i) the authorisation procedure for the construction and operation of plants fuelled by RES and (ii) the authorisation procedure for the construction of the electrical lines to connect such plants to the power grid. The provisions enacted by the Regions, however, must comply with the general principles set forth by the national legislation.

#### **4. What are the principal regulatory bodies in the renewable energy sector?**

The principal regulatory bodies in the renewable energy sector are (i) the Italian Ministry for the Economic Development, (ii) the Italian energy regulator (*Autorità per l'Energia e per il Gas* – the "AEEG"), (iii) the Gestore Servizi Energetici S.p.A. (the state-run

entity in charge of the implementation of incentive systems to promote the use of RES – the "GSE"), and (iv) the Gestore dei Mercati Energetici S.p.A. (the "GME").

- a) The Italian Ministry for the Economic Development is responsible for a wide variety of policies, including economic development and cohesion, as well as incentives for sectors such as energy and mineral resources, telecommunications, internationalisation and business. The Italian Ministry for the Economic Development has recently drafted and passed two Ministerial Decrees (the Fifth Conto Energia and the RES Decree) relating to the new incentive systems granted to operators of photovoltaic plants and plants fueled by renewable energy sources (other than photovoltaic), respectively.
- b) The AEEG is an independent body that regulates, controls and monitors the electricity and gas sectors and markets in Italy. The AEEG's role and purpose is to protect the interests of users and consumers, to promote competition and to ensure efficient, cost-effective and profitable nationwide services with satisfactory quality levels. To this end, the AEEG defines and maintains a reliable and transparent tariff system, promotes environmental protection and the efficient use of resources and sets forth observations and recommendations to the Government and to the Parliament on matters of energy.
- c) The GSE is a publicly-owned company promoting and supporting the use of RES in Italy. The GSE fosters sustainable development by providing economic support to renewable electricity generation ("RES-E") and by taking actions to raise awareness of environmentally-efficient energy use. GSE manages support schemes for RES at the central level; in the past few years, the GSE has been conferred technical

responsibilities also for the assessment of the architectural integration of solar photovoltaic (PV) plants into buildings and in relation to energy efficiency.

The GME is a company established by the "Gestore della Rete di Trasmissione Nazionale S.p.A." (that now is the GSE) with the mission of organising and economically managing the Italian Electricity Market. As part of the organisation and economic management of the Electricity Market, the GME is also vested with organising the trading of, and the market for, Green Certificates (i.e., certificates giving evidence of electricity generation from RES, the RECs (as defined below)), Energy Efficiency Certificates (the so-called "White Certificates", giving evidence of the implementation of energy-saving policies) and Emissions Allowances or Units.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

Italy's mechanisms of incentives for the utilization of RES are not primarily based on the granting of tax advantages to the operators. Instead (as described in Paragraphs 8 and 10 below), the incentive systems created throughout the years by the Italian government are essentially based on the granting of feed-in tariffs (*Conto Energia*) for a predetermined period of time to operators of photovoltaic plants, and on the assignation of Green Certificates (also called Renewable Energy Certificates ("RECs")) in proportion to, *inter alia*, the renewable electricity generated, to operators of renewable energy plants (other than photovoltaic plants)<sup>4</sup>.

<sup>4</sup> The RECs system will however been abolished starting from 1 January 2016, and a transitional period (going from 2012 to 2015) has been set out in the RES Decree (see Paragraph 10.2(b)).

Despite the above, the Italian regulatory framework still provides for some tax advantages with respect to investments relating to RES. In particular, it provides that:

- a) transactions taxes and the tax regime to be applied to the sale/purchase of the land on which to install a plant fuelled by RES depend on a number of factors, the most important one being the classification of the land at the time of the sale. In case the land were classified for agricultural use, no value added tax ("VAT") shall apply to the transfer, but the sale would be subject to registration tax at the rate of 15%, plus mortgage and cadastral taxes at the aggregate rate of 3%. Moreover, special reduced rates would apply in case of sale by farmers. However, in the case of a transfer of non-agricultural land, if the seller is deemed to be a VAT person, the transaction is subject to value added tax at the ordinary rate (currently, 21%), plus mortgage and cadastral taxes at the aggregate rate of 3%, no registration tax should apply;
- b) VAT on the purchase and construction of plants fuelled by RES is generally applied at a reduced 10% rate, rather than at the ordinary 21% rate, while VAT on purchase of RECs is applied at the ordinary 21% rate; and
- c) VAT regime applicable on the special public tariffs granted by the GSE depends on the types of such subsidies/tariffs. The "premium" tariff granted in relation to the amount of self-consumed energy is not subject to VAT. The "all-inclusive" tariff and the tariff granted to plants with a capacity of more than 1 MW (such tariff being equal to the difference between the all-inclusive tariff and the "hourly zone rate") are subject to VAT at the reduced 10% rate. Please refer to Paragraph 10

below for a detailed description of the incentives and tariffs available to renewable energy generation companies.

Furthermore, the tariffs described in point c) above are subject to the Italian corporate income tax (currently, at 27.5% rate) and to the Italian regional tax on business activities at 3.9% ordinary rate (each Region can vary the latter rate by an additional percentage up to 0.92%). Moreover, the "premium" tariff is also subject to a 4% advance withholding tax.

#### **6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

The electricity produced from RES may be sold either on the market through privately negotiated transactions or on the electric power exchange<sup>5</sup>.

However, the Italian laws and regulations regarding the RES sector provide for the following mechanisms, which guarantee the purchase of the electricity produced without the need for the operators of the plants to offer the energy on the market:

- a) *Mandatory purchase regime* ("ritiro dedicato")

Italian legislation grants to producers of electricity (i) from intermittent renewable sources of energy (including, therefore, electricity from solar and wind plants) or (ii) from other sources (in this case for up to a nominal power of 10 MW), the option to sell the electricity produced under the mandatory

<sup>5</sup> Sales through privately negotiated agreements are governed by contracts between the sellers and the purchasers. Sales on the electric power exchange are subject to the rules and regulations of the electric power exchange and accessible only to those parties that have been certified as operators on the exchange. Operators on the exchange are required to pay fees to the GME.

purchase regime (*ritiro dedicato*)<sup>6</sup>, rather than on the market. Under the mandatory purchase regime, the GSE must withdraw and purchase all the energy produced by a plant, net of any energy used for in-plant consumption, in accordance with the terms and conditions that are set forth by an agreement which is entered into by and between the GSE and the producer<sup>7</sup>. Recent amendments of the applicable legislation authorizes the GSE to transfer part of the costs deriving from the management of the mandatory purchase regime to producers trying to incentivise a greater attention by the producer of forecasted injection. In particular, GSE will charge to the producers: (i) the imbalancing costs, which will be calculated on the basis of a specific formula; and (ii) certain additional administrative costs, which cannot exceed certain specific thresholds as set out below:

Capacity	Thresholds / Euro
0<P<=200	300
200<P<=1000	1,500
1000<P<=10000	6,000
P>10000	7,000

In exchange of the electricity withdrawn, the GSE then pays to the producer, on a monthly basis, the "hourly zone price", which derives from the prices registered in open trading on the electricity exchange. However, operators of renewable energy plants with a capacity of up to 1 MW can choose to sell energy to the GSE at the pre-defined minimum guaranteed prices, rather than at the hourly zone price (see Paragraph 7 below).

<sup>6</sup> The mandatory purchase regime has been governed by AEEG Resolution No. 280/2007 since 1 January 2008. Such mechanism can only be activated upon request of the producer, by way of request to participate in the mandatory purchase regime to be filed with the GSE.

<sup>7</sup> Such agreement is executed in compliance with a standard form, has a term of one calendar year, and can be tacitly renewed. The producer, however, can withdraw from the agreement at any time, by giving 60 days' written notice to the GSE via registered mail.

b) *Net metering service* ("scambio sul posto")

Under the net metering service (*scambio sul posto*), producers/users at small power plants (up to 200 KW) may feed into the grid all the electricity generated and not immediately consumed and take-in electricity as needed at a different time.

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

The guarantee of the payment of a minimum price is a peculiarity of the mandatory purchase regime ("*ritiro dedicato*"), it is reserved to renewable energy plants with a capacity of up to 1 MW and is limited to the first 2 GWh of electricity produced per year.

With respect to such renewable energy plants, the energy withdrawn and purchased by the GSE is usually paid at an "hourly zone price" resulting from the open trading on the electricity exchange, thus receiving from the GSE the same price which they would have earned in case of sale of energy on the electric power exchange.

As an alternative to the "hourly zone price", operators of renewable energy plants with a capacity of up to 1 MW may however choose to sell the energy to the GSE at minimum guaranteed prices. These minimum guaranteed prices are updated on annual basis by the AEEG in accordance with the ISTAT index.

## 8. Do the renewable energy based power plants have priority for connection to the grid?

Renewable energy plants have interconnection priority and must be connected to the grid without delay.

### a) *Interconnection priority*

Under Legislative Decree No. 79 of 16 March 1999 ("LD 79/1999"), the energy produced by renewable energy plants has dispatch priority over plants fuelled by non-renewable energy sources. This means that the transmission grid operator has to give priority to plants fuelled by RES to inject the generated energy into the network, in the event that the national energy system becomes congested.

Notwithstanding the above, the dispatching priority must be balanced against the necessity to ensure the safety of the electric system and, therefore, also the production of electricity produced by RES may be subject to restrictions/interruptions.

### b) *Delays of interconnection to the grid*

The grid operator has the duty to allow interconnection within specific terms. In case of delays, the RES producers may reserve the right to start legal proceedings against the grid operator, filing a claim with the AEEG according to AEEG Resolution No. 123/08. If the claim is approved, the grid operator will have to pay to the company (i) an amount of money as reimbursement of all expenses related to the interconnection procedure and (ii) an amount of money as compensation for the delay occurred in the interconnection procedure, without prejudice to compensation for any greater damages that may be suffered.

## 9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?

As of today, Italian law does not provide for any monetary incentives for local manufacturing of equipment or materials used in the construction of renewable energy plants. However, alternative and "indirect" incentives are sometimes provided by the applicable laws and regulation: a clear example is represented by the recent Ministerial Decree 5 July 2012 (the Fifth Conto Energia), relating to the new incentive system granted to photovoltaic plants.

Under, the Fifth Conto Energia – which sets forth a specific procedure for the admission of certain photovoltaic plants to the incentive tariffs – if materials used to build the plants are produced in a EU member, the plants built up using such materials benefit of a preferential criteria in the selection process to be admitted to the incentive system (see Paragraph 10.1 below).

## 10. What are the other incentives available to renewable energy generation companies?

### 10.1 The incentive system for photovoltaic plants – Feed-in tariffs

#### a) *The "Fifth Conto Energia"*

With respect to the incentive system granted to photovoltaic plants' operators, the Italian regulator has made available a feed-in tariff mechanism known as "Conto Energia" since 2005.

The Fourth Conto Energia (which granted to newly-constructed and totally refitted

photovoltaic plants that commenced operations after 31 May 2011 with pre-defined feed-in tariffs paid by the GSE during a period of 20 years<sup>8</sup>) has recently been partly replaced by Ministerial Decree 5 July 2012 ("Fifth Conto Energia"), which entered into force on 12 July 2012 and will be effective as of 27 August 2012.

The intent of the Fifth Conto Energia was to reduce significantly the incentive tariffs of the Fourth Conto Energia in the current economic downturn, and the result has been a reduction ranging approximately from 30% to 60%, depending on the size of the plant.

#### b) *The new Feed-in Tariffs*

The Fifth Conto Energia provides that photovoltaic plants with a capacity above 1 kW admitted to receive the new feed-in tariffs will receive from the GSE – which will withdraw the electricity produced – an incentive calculated on the basis of different criteria, for 20 years from their commissioning date.

More specifically, the Fifth Conto Energia provides that:

- i. admitted plants with capacity of up to 1 MW will receive payment of an all-inclusive tariff, which will be calculated on the basis of the capacity and the type of the plant;
- ii. admitted plants with a capacity of more than 1 MW will receive payment of a tariff, which will be equal to the difference between the all-inclusive tariff (calculated on the basis of the capacity and the type of plant) and the "hourly zone rate".

Generally speaking, the tariffs are higher for integrated plants characterised by innovative measures and for concentration plants. With respect to the amounts of self-consumed electricity, a premium tariff will be granted.

The Fifth Conto Energia specifies the amount of the incentives that will be applicable to photovoltaic plants on a 6 months basis. The table below sets out the incentive tariffs for the second semester of the Fifth Conto Energia:

<sup>8</sup> For each semester, the incentive levels set forth in the Fourth Conto Energia varied depending on the: (i) type of plant (photovoltaic plants/plants with innovative features/solar concentration plants), (ii) whether the plant is integrated or not integrated, and (iii) installed capacity of the plant. The intent of the regulation is to promote small-sized integrated plants. The Fourth Conto Energia will continue to apply to (i) small photovoltaic plants (if built on buildings, of a capacity up to 1,000 kW; for other types of plants, of a capacity up to 200 kW), concentration photovoltaic plants and/or photovoltaic plants (characterised by innovative features) which start operations before the date on which the Fifth Conto Energia will be effective, (ii) photovoltaic plants which are built on public buildings or on areas belonging to the public administration and that start operations before 31 December 2012 and (iii) large photovoltaic plants (plants that exceed the thresholds for small plants) that are duly registered and have delivered the end-of-works notice (*Comunicazione Fine Lavori*) in due time pursuant to the Fourth Conto Energia's provisions.

Incentive tariffs for the 2 <sup>nd</sup> semester of the Fifth Conto Energia				
Size(kW)	Plants on the buildings		Other plants	
	All inclusive (€/MWh)	Self-consumed (€/MWh)	All inclusive (€/MWh)	Self-consumed (€/MWh)
1-3	182	100	176	94
3-20	171	89	165	83
20-200	157	75	151	69
200-1000	130	48	124	42
1000-5000	118	36	113	31
>5000	112	30	106	24

The incentives available under the Fifth Conto Energia are however alternative to and cannot be cumulated with the benefits deriving from (i) the mandatory purchase mechanism ("*ritiro dedicato*") and (ii) the net metering service ("*scambio sul posto*")<sup>9</sup> (see Paragraph 6.2 (a) and (b) above).

c) *Admission to the new incentives*

The Fifth Conto Energia sets out a new (dual) mechanism for the admission of photovoltaic plants to the incentive tariffs. Depending on the characteristics of the plants (mainly, on their capacity and on their specific type of plant), these will either be directly admitted to the incentive tariffs or will need to request such admission by means of the registration procedure, filing an application form with the GSE, which will then select among the applicants on the basis of a series of ad hoc criteria (see below for more detailed information).

<sup>9</sup> The net metering service will however continue to apply in case of specific request made by the operators, as an alternative to the incentive tariffs, both before and after the expiration of the period in which the incentive tariffs under the Fifth Conto Energia are payable.

More specifically, admission to the new incentive tariffs will automatically be granted to:

- i. photovoltaic plants with a capacity of up to 50 kW, if built on buildings in order to replace fibre cement or asbestos roofs;
- ii. photovoltaic plants with a capacity of up to 12 kW (including plants which have undergone restoration, as well as to an increase of capacity by up to 12 kW);
- iii. integrated photovoltaic plants (characterised by innovative measures), until the threshold of Euro 50 million of all-inclusive incentives has been reached;
- iv. concentration photovoltaic plants, until the threshold of Euro 50 million of all-inclusive incentives has been reached;
- v. photovoltaic plants built by the public entities through public tenders, until the threshold of Euro 50 million of all-inclusive incentives has been reached; and
- vi. photovoltaic plants with a capacity ranging from a minimum of 12 kW to a maximum of 20 kW (including plants which have

undergone restoration or plants whose capacity has been increased by up to 20 kW), if such plants request incentives that are lower by 20% with respect to the incentives granted to similar plants which applied for the registration procedure.

Conversely, photovoltaic plants not included in the above list may be admitted to the new incentive tariffs only by means of the registration procedure.

d) *The registration procedure*

The Fifth Conto Energia provides that the photovoltaic plants seeking admission to the incentive tariffs (but, mainly due to capacity reasons, may not be automatically admitted to receive such tariffs), will need to become registered, in a register managed by the GSE.

To this end, the Fifth Conto Energia provides that the GSE will make available – each semester – a series of registers, each of them for a pre-defined maximum amount of incentive tariffs to be granted to the eligible applicants<sup>10</sup>. Before making available the incentives reserved to each of the registers, the GSE will publish a notice (or invitation), further to which the photovoltaic plants seeking "registration" will need to submit to the GSE a series of documents within a certain period of time<sup>11</sup>. Within 20 days following the

end of the registration period, the GSE will rank all the plants admitted to the registry on the basis of specific priority criteria<sup>12</sup>.

Incentive tariffs will thus be available to those registered plants that are ranked high enough to be admitted before the incentive caps mentioned above are reached, provided that the plant begins operations within one year after the rankings are published.

The rankings so prepared by the GSE are not subject to any scrolling mechanism. This means that where a plant registers in a semester for a certain register and its position in the rankings does not lead to its admission because the caps are reached, a further application for registration of the plant will be required to request any incentives available any semester thereafter.

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notice relating to the 1<sup>st</sup> register. With respect to the 2<sup>nd</sup> and further registers, the application forms will need to be submitted within 60 days following the date of publication of the notice.

<sup>10</sup> The maximum amount of estimated incentives granted each year to the eligible plants with respect to the various registers are the following: (i) 1<sup>st</sup> register: up to Euro 140 million; (ii) 2<sup>nd</sup> register: up to Euro 120 million; and (iii) further registers: up to 80 million (until the Euro 6.7 billion threshold made available by the Fifth Conto Energia has been reached).

<sup>11</sup> The notice relating to the 1<sup>st</sup> register will be published within 20 days from publication of the implementing rules governing the registration process (which have to be published within 30 days from the date on which the Fifth Conto Energia enters into force). The application forms shall be submitted within 30 days from the publication of the

<sup>12</sup> The main priority criteria for admission to the register are the following, which have to be applied in a hierarchal order: (i) plants on buildings, with priority to those with modules installed to replace fibre cement or asbestos roofs, and in each case with a plant energy performance certificate showing at least class D performance, and ranked according to best performance; (ii) plants on buildings with modules installed to replace fibre cement or asbestos roofs; (iii) plants whose main parts are produced in a EU member country; (iv) plants located in certain contaminated sites, or on dismissed dumps, mines or caves; (v) plants with a maximum capacity of 200 kW; and (vi) plants built on buildings, canopies or greenhouses. In the event that the total amount of incentive made available were not enough to admit to such incentives all the plants which would otherwise be granted registration pursuant to the criteria listed above, the following further criteria shall be applied (in a hierarchal order): (i) plants in relation to which the operator is requesting an incentive tariff reduced by 5% with respect to the one available at the time of the start of operations; (ii) chronological priority of the authorisation to construct the plant; (iii) lower capacity of the plant; (iv) chronological priority of the application for registration.

The registration may be transferred to a third party only after the plant has been commissioned.

e) *Contributions to the GSE*

The Decree provides that the owners of plants that apply for the incentives under the Fifth Conto Energia must pay a contribution to the GSE for the preliminary investigation costs. The contribution has been set as Euro 3,00 per kW of nominal capacity of the plant, for the first 20 kW of capacity, plus Euro 2,00 for every kW of capacity in excess of 20 Kw<sup>13</sup>. The Decree also provides for an additional contribution to be paid to the GSE to reimburse administration and verification costs borne by the GSE, which has been set as 0.05 Euro cent for each KWh of energy that receives incentives; this additional contribution shall be paid by any plants benefiting of an incentive tariff.

## 10.2 The incentive system for the renewable energy plants (other than the photovoltaic sector) – Green Certificates and Feed-in Tariffs / Feed-in Premiums

a) *Current incentive system – Green Certificates*

The current incentive mechanism regarding the renewable energy sector (other than the photovoltaic sector)<sup>14</sup> provides that each qualifying plant shall be assigned a certain number of green certificates (also called Renewable Energy Certificates – RECs)<sup>15</sup>, proportionally to the renewable electricity generated multiplied by a variable factor which

<sup>13</sup> These contribution must be paid to the GSE at the time the application for either the incentive tariffs or registration is filed, as the case may be.

<sup>14</sup> Regulated by Ministerial Decree 18 December 2008.

<sup>15</sup> It shall be noted that RECs are not cumulative with the other forms of support; i.e., national, regional, local or EU support in the form of feed-in schemes, grants or loans with advanced capitalization.

depends on the type of renewable energy source used to fuel the plant.

Plants are eligible to receive RECs for a period ranging from a minimum of 8 years to a maximum of 15 years, depending on a series of conditions, including the renewable energy source used to fuel the plants and the year in which the plants were commissioned.

The energy produced or the RECs assigned to the photovoltaic plants' operators are then sold to other electricity producers and importers which (due to the fact that they are producers or importers of non-renewable energy) do not input into the national electricity system a minimum quota of electricity produced using renewable sources. This obligation to input the minimum quota, indeed, may be discharged either (i) by producing the minimum quota of energy from renewable sources (thus receiving the related RECs), or (ii) by purchasing whole or part of the minimum quota, or equivalent amount of RECs, from other producers.

b) *New incentive system – Feed-in Tariffs and Feed-in Premiums*

A new incentive system for the renewable energy plants other than photovoltaic (including on-shore and off-shore wind farms, biomass and biogas plants) has been introduced by Ministerial Decree 6 July 2012, implementing Legislative Decree No. 28 of 3 March 2011, which became effective as from 11 July 2012 (the "RES Decree").

The RES Decree will gradually replace the green certificates (RECs) incentive system (which will be abolished starting from 1 January 2016), providing however for a transitional period –to safeguard the investments in renewable plants made in the past or to be made in the future, given the investors' reasonable reliance on the incentive system –from 2012 to 2015, during which the green certificate system will continue to apply

to (i) plants that are currently benefitting from the actual regime, (ii) new plants that start operations on or before 31 December 2012 and (iii) new plants that start operations on or before 30 April 2013 and were authorised before 11 July 2012<sup>16</sup>.

The intent of the RES Decree is to reduce the amount of incentive in the current economic downturn, aiming to protect investors' legitimate reliance on the expected returns on their investment, as well as to create a stable legal environment to promote the use of renewable sources.

#### c) *Feed-in Tariffs and Feed-in Premium*

The RES Decree creates an incentive system for all renewable energy plants other than photovoltaic plants with a capacity above 1 kW commissioned after 31 December 2012 either for the first time or following repowering or total or partial refitting.

The new incentive system provides the following:

- i. admitted plants with capacity of up to 1 MW will receive payment of an all-inclusive feed-in tariff ("FiT"), to serve both as compensation for the sale of the

electricity produced, which will be withdrawn by the GSE, and as the incentive for using renewable sources<sup>17</sup>;

- ii. admitted plants with a capacity of more than 1 MW will receive payment of a feed-in premium ("FiP"), as incentive, and will be able to sell the electricity produced on the electricity stock exchange or by contract.

The RES Decree sets out the base amounts of the FiT and FiP, to be paid by the GSE in relation to each type and capacity of the plants that begins operations through 2015<sup>18</sup>, from the commissioning date throughout a period of time equal to the pre-defined expected average lifetime (ranging from 15 to 30 years, depending on the type of power source, with 20 years being the most prevalent expected average lifetime, applicable to on-shore wind-powered plants, biomass and biogas plants).

The incentive systems set forth by the RES Decree, however, are alternative to, and cannot be cumulated with, the benefits deriving from (i) the mandatory purchase mechanism ("*ritiro dedicato*") and (ii) the net metering service ("*scambio sul posto*") (see Paragraph 6.2 (a) and (b) above).

<sup>16</sup> Through 31 December 2015, these plants will continue to benefit from the green certificates system and the GSE will continue to be the buyer of last resort and purchase any unsold green certificates relating to electricity produced from 2011 to 2015, at a price equal to 78% of the reference price (the "GC Price"), determined to be Euro 180.00 less the average price of electricity produced by renewable sources during the year preceding the purchase, as determined by the Authority for Electricity and GAS (AEEG). From 1 January 2016 until the end of the respective applicable incentive period (15 years for renewable plants commissioned after 31 December 2007), plants eligible for the transitional regime will receive a feed-in premium equal to the GC Price.

<sup>17</sup> These plants may opt to switch to the FiP, but this choice will be irreversible once made.

<sup>18</sup> The higher the capacity, the lower the incentive tariffs granted to the plants: incentive tariffs may range from Euro 85/MWh for biogas plants with a capacity higher than 5,000 kW to Euro 291/MWh for on-shore wind power plants.

d) *Admission to the new incentives*

The RES Decree allows admission to the new incentive tariffs to:

- i. micro plants (which may range from maximum capacity of 50 kW for certain hydro-power plants to 200 kW for biomass plants)<sup>19</sup>, by means of automatic admission;
- ii. small plants (20 MW for geo-thermoelectric plants, 10 MW for hydro-power plants and 5 MW for all other renewable sources, excluding photovoltaic), by means of a registration admission process;
- iii. large plants (with a capacity above the applicable thresholds in paragraph (ii) above), admitted to the incentive system on the basis of reverse auction, where operators will bid on the amount of the incentive to be paid to the plant, starting from the pre-defined base amount<sup>20</sup>;

Registration for plants cannot be transferred to a third party until the registered plant is commissioned. For a given plant, an application for registration, or to participate in the reverse auction, can only be submitted if, at the time of submission, authorisation for construction and operation of the plant has already been issued and the estimate for

<sup>19</sup> Plants built by public entities through public tenders will be able to qualify even if their maximum capacity is up to double that allowed for private plants. Finally, certain special allowances are made for plants constructed pursuant to specific laws to be considered micro-plants.

<sup>20</sup> The base price for the reverse auction will differ for each source of energy. Bids to reduce the base price by less than 2% will not be accepted. The minimum FiP awarded will be up an amount that is not less than the base price, minus a maximum reduction of 30%. On the basis of such provision, it seems that a participant offering a reduction of more than 30% would in any case receive a FiP equal to 70% of the base price. The implementing regulations should provide further clarifications.

interconnection of the plant to the power grid has been accepted.

e) *Caps to new incentives*

For each renewable source, the RES Decree sets out how the new plants to be admitted to the incentive system (up to the applicable cap) will be selected, as well as the different annual caps on the overall capacity that can receive

the new incentives for the period from 2013 through 2015<sup>21</sup>.

In particular, (i) micro plants are not subject to a cap on capacity<sup>22</sup>, whereas (ii) small plants will be subject to an annual capacity cap (e.g. for wind-powered plants, 60 MW for each year in the 2013-2015 period) and (iii) large plants will be subject to an overall capacity cap (e.g. on-shore wind farms are subject to an annual cap of 500 MW per year in each of 2013, 2014 and 2015).

In addition to the caps on overall capacity, the RES Decree sets an annual aggregate spending cap of Euro 5.8 billion for all types of renewable plants other than photovoltaic plants.

f) *Contributions to the GSE*

Application for admission to the incentive system, for all plants, will require payment to the GSE of a fee of Euro 100,00 plus a variable amount depending on the plant's capacity, up to a maximum fee of Euro

<sup>21</sup> The respective capacity of two or more plants fed by the same renewable source that belong to the same operator and are installed on the same or on contiguous parcels of land are added together for the purposes of classification as a micro, small or large plant, as if the two or more plants were a single plant.

<sup>22</sup> Except for cases in which the incentives granted will be counted against the cap for small or large plants, as the case may be, and will therefore erode that category's cap.

2,300.00. Starting from 1<sup>st</sup> January 2013, and for the entire incentive period, all admitted plants will be required to pay to the GSE a fee of Euro 0.05 for each kWh produced, which will likely be set-off by the GSE against the incentives to be received.

## STATISTICS

### 11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?

In February 2013, the GSE published the draft statistics on RES for the year 2012, calculated in accordance with the relevant European provisions with regard to particular factors (for instance the biodegradable fraction of waste).

The analysis completed by the GSE shows that, as at 31 December 2012, in Italy an aggregate of 47,092 MW deriving from RES were installed nationwide, for an overall energy power production of 92,460 GWh<sup>23</sup>, which represented 27% of the overall amount of electricity consumed in Italy in 2012.

#### a) Photovoltaic power

With respect to solar power, the aggregate capacity of Italian photovoltaic plants as of

31 December 2011 was 16,350 MW, while the total power production amounted to 18,800 MW<sup>23</sup>.

#### b) Other renewable energy sources

With respect to the other main renewable energy sources, Italy's total capacity and production of electricity has seen a positive trend throughout 2012, with an increase of the capacity in almost every sector of renewable energies.

More specifically,

- **Hydroelectric:** the total capacity of Italian hydroelectric power plants as of 31 December 2012 was 18,200 MW<sup>23</sup> (mainly concentrated in northern Italy). The total power production amounted to 41,940 MW<sup>23</sup>.
- **Wind:** the aggregate capacity of Italian wind power plants as of 31 December 2012 was 7,970 MW<sup>23</sup> (mainly concentrated in southern Italy and in the islands). The total power production amounted to 13,900 MW<sup>23</sup>.
- **Biomass power:** the total capacity of Italian biomass plants as of 31 December 2012 was 3,800 MW<sup>23</sup>. The total power production amounted to 1,250 MW<sup>23</sup>.

<sup>23</sup> The respective capacity of two or more plants fed by the same renewable source that belong to the same operator and are installed on the same or on contiguous parcels of land are added together for the purposes of classification as a micro, small or large plant, as if the two or more plants were a single plant.

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# Japan

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## GENERAL

### 1. What is the nature and importance of renewable energy in your country?

*To ensure a stable and appropriate energy supply*

In Japan, the energy self-sufficiency ratio<sup>1</sup> in 2011 was 8.3%, because of poor domestic natural resources. Around 91.7% of energy resources used for generating “primary energy” (including uranium for nuclear power) are imported from overseas.<sup>2</sup>

After the oil crises in 1973 and 1979, the Japanese government recognized the importance of improving energy conservation and reducing dependency on oil by promoting new energy sources that are not based on fossil fuels. The Japanese government enacted the Act concerning the Rational Use of Energy (Act No. 49 of 1979) (the “Energy Conservation Law”) to promote technical development to improve energy efficiency. As a result of efforts by both the Japanese government and the private sector, Japan has improved its energy consumption efficiency by

about 43% in the past thirty-seven (37) years and has become the most efficient and advanced country in respect of energy efficiency in the world. However, the differences in energy efficiency between Japan and other major countries have slowly decreased in recent years.<sup>3</sup>

At the same time, the Japanese government adopted a policy to reduce oil dependence, including the enactment of the Act on the Promotion of Development and Introduction of Alternative Energy (Act No. 71 of 1980) (the “Promotion of Alternative Energy Law”). Although dependence on oil declined from 77% in 1973 to 46.0% in 2011 in respect of the primary energy supply, this percentage is still quite high in comparison with other countries. The total percentage dependence on fossil fuel energy, including oil, natural gas, LPG and coal, was around 88.8% in respect of the primary energy supply in 2011.<sup>4</sup>

In accordance with global economic development, especially new development in countries such as China and India, it is anticipated that demand for oil will continue to increase in the long term. However, natural fossil fuel resources, which are exploitable energy supply reserves, are limited. In addition, oil reserves are disproportionately located in the Middle East.<sup>5</sup> Since the Asian economic crisis in 1999, the price of crude oil remains high, and the natural resource market is not stable. The structure of the energy supply in Japan should be considered quite fragile. In order to seek a stable and appropriate energy

<sup>1</sup> The “energy self-sufficiency ratio” refers to the ratio between domestic production and primary energy supply in Japan - Energy Balance Report of Japan 2011 (Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry of Japan) (hereinafter “Energy Balance Report 2011”).

<sup>2</sup> For example: 99.6% of crude oil, 96.7% of natural gas and over 99% of coal were imported from overseas in 2011.

<sup>3</sup> In regard to primary energy supplied per GDP, Japan’s energy efficiency was 2.5 times that of the US in 1991, but only 2.0 times in 2009 - Annual Report of Energy on Japan, 2012 (Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry of Japan) (hereinafter “Annual Report of Energy, in 2012”).

<sup>4</sup> Energy Balance Report 2011.

<sup>5</sup> Over 80% of crude oil imported into Japan is from the Middle East - Annual Report of Energy, in 2012.

supply, it is very important to promote the use of renewable energy, although energy conservation is also an effective measure.

*To reduce the environmental burden*

The use of renewable energy is valuable not only for contributing to the improvement of the energy self-sufficiency ratio in Japan but also for reducing emissions of greenhouse gases to prevent global warming.

The issue of climate change is recognized to be one of greatest concerns among worldwide environmental issues. Japan committed to reducing its greenhouse gas emissions by 6% from 2008 to 2012, in comparison with the 1990 level under the Kyoto Protocol, which was adopted in 1997 and became effective in 2005.

The Japanese government proposed that, as a long-term target, the total amount of global greenhouse gas emissions should be reduced by half from the current level before 2050, with peak reductions to occur during the next 10 or 20 years. To achieve this target, the Japanese government believes that developed countries need to reduce their emissions by 70-80% of the current levels. Thus, the Cabinet decided that the amount of emissions in Japan would be reduced by 60-80% from the current level by 2050. The Cabinet also approved an action plan for a low-carbon society (the “Action Plan for Low-Carbon Society”).<sup>6</sup> The Action Plan for Low-Carbon Society includes certain action plans: construction of a fair and effective global framework, Japan’s cooperation with developing countries, innovative development of technologies, and implementation of existing advanced technologies, etc. This plan asserts that “zero-emission power generation”, which is electricity generated from renewable energy and nuclear energy, must be enhanced by 40%

<sup>6</sup> The Cabinet approved the Action Plan for Low-Carbon Society at a meeting in July 2008.

in 2006 to 50% before 2020<sup>7</sup>, because around 30% of greenhouse gases are emitted by the electricity sector in Japan.

*To reduce the dependency on nuclear energy*

The Master Plan of Energy which was adopted in June 2010 requires zero-emission power generation to be increased to 70% before 2030. Although, the Master Plan of Energy assumes that 50% of electricity power will be generated by nuclear energy, after the nuclear accident in Fukushima precipitated by the March 2011 earthquake in East Japan, the Japanese government was forced to reconsider the Master Plan of Energy and commenced discussions with the Japanese public to develop a new Master Plan of Energy. On September 14, 2012, the Japanese government announced its policy to eliminate the dependency on nuclear energy completely by 2030.<sup>8</sup> Under the policy, renewable energy use in Japan was expected to increase from 110 billion kWh per year (2010) to 300 billion kWh per year (2030).<sup>9</sup> However, because of the change of government at the general election in December 2012, the policy is being reconsidered and new discussions by the new government commenced in March 2013. In any case, the basic direction of the discussions is to (i) reinforce energy and electricity conservation measures, (ii) accelerate the development and use of renewable energy to the maximum extent possible and (iii) reduce dependency on nuclear energy.

The development and introduction of renewable energy is necessary and important to

<sup>7</sup> The Action Plan for Low-Carbon Society was adopted in July 2008.

<sup>8</sup> The Innovative Energy and Environmental Strategy (Energy and Environmental Committee, Cabinet Office) (hereinafter “Innovative Energy and Environmental Strategy”).

<sup>9</sup> Excluding water power, the renewable energy was expected to increase from 25 billion kWh per year (2010) to 190 billion kWh per year (8 times) (Innovative Energy and Environmental Strategy).

achieve Japan's target under the Kyoto Protocol, to realize a low-carbon society and to reduce the dependency on nuclear energy under the new Master Plan of Energy.<sup>10</sup>

## 2. What is the definition and coverage of renewable energy under the relevant legislation?

Act on Promotion of Use of Non-Fossil Fuel Energy Resources and Efficient Use of Fossil Fuel Energy Resources by Energy Suppliers (Act No. 72 of 2009) (the "Act on Promotion of Use of Non-Fossil Fuel Energy by Energy Suppliers") defines "renewable energy resources" as sunlight, wind power and other non-fossil energy resources that can be used permanently as energy resources and that are designated by the enforcement ordinance.<sup>11</sup>

The Enforcement Ordinance of the Act on Promotion of Use of Non-Fossil Fuel Energy by Energy Suppliers (Ordinance No. 222, August 27, 2009) designates the resources of renewable energy as follows:<sup>12</sup>

- photovoltaic power;
- wind power;
- water power;
- geothermal heat;
- solar thermal power;
- heat in the atmosphere; and
- biomass (except for fossil fuels).

<sup>10</sup> The new Master Plan of Energy is expected to be completed in 2013.

<sup>11</sup> Article 2(3) of the Act on Promotion of Use of Non-Fossil Fuel Energy by Energy Suppliers.

<sup>12</sup> Article 4 of the Enforcement Ordinance of the Act on Promotion of Use of Non-Fossil Fuel Energy by Energy Suppliers.

The Act on Special Measures concerning Procurement of Renewable Energy by Operators of Electric Utilities (Act No. 108 of 2011) (the "Renewable Energy Law"), which governs the Japanese Feed-in Tariff ("FIT") program, defines "renewable energy resources" as follows:<sup>13</sup>

- photovoltaic power;
- wind power;
- water power;
- geothermal heat and biomass (organic substances derived from plants and animals, which can be used as a source of energy, excluding crude oil, petroleum gas, combustible natural gas and coal and their by-products); and

others to be designated by ordinance, which can be permanently used as electrical energy resources.<sup>14</sup>

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

(1) the Act on Special Measures for the Promotion of New Energy Usage

Although technologies in relation to renewable energy have achieved levels sufficient for practical use, there are economic constraints to the current introduction of renewable energy.<sup>15</sup> Renewable energy is still a small percentage of Japan's energy supply. For further introduction and dissemination of renewable energy, more

<sup>13</sup> Article 2(4) of the Renewable Energy Law.

<sup>14</sup> There is no ordinance which designates other renewable energy resources at the time of writing.

<sup>15</sup> The cost of renewable energy is higher than fossil fuel energy.

progressive development of technologies is required. The Japanese government decided to promote diffusion of renewable energy at its Cabinet meeting in 1997<sup>16</sup> and enacted the Act on Special Measures for the Promotion of New Energy Usage (Act No. 37 of 1997) (the “Promotion of New Energy Law”).

The Promotion of New Energy Law focuses on “New Energy,” which is “renewable energy” generated from the sun, wind, biomass, geothermal heat, etc., and which is constantly replenished by processes derived from nature. Promotion is particularly essential to introduce energy to replace fossil fuels, because diffusion of renewable energy is insufficient, due mainly to economic constraints.<sup>17</sup> The Order for Enforcement of the Promotion of New Energy Law (ordinance No. 208, June 20, 1997) (Order for Enforcement of the Promotion New Energy Law) designated “new energy use, etc.” as follows:<sup>18</sup>

- to produce fuel from organic substances derived from plants and animals, which can be used as a source of energy (excluding crude oil, petroleum gas, combustible natural gas and coal and their by-products);
- to use biomass or fuel made from biomass to generate heat (excluding biomass or fuel made from biomass to generate electric power);
- to use solar thermal energy for heating water, heating and cooling space or other purposes;
- to use heat from sea water, river water or other water sources, utilizing refrigeration facilities;
- to use heat from snow or ice (excluding ice processed utilizing refrigeration equipment) for refrigeration, cooling space or other purposes;
- to use biomass or fuel made from biomass to generate electric power;
- to use geothermal energy to generate electric power (limited to electric power generation using ammonia-water, pentane or their liquids with a boiling point of below 100 degrees at atmospheric pressure);
- to use wind energy to generate electric power;
- to use hydraulic energy to generate electric power (limited to electric power generation using power generation facilities that are installed in a structure used for irrigation, water-utilization, sediment control or other purposes other than electric power generation, having output capacity of 1,000 kWh or less); and
- to generate electricity utilizing a solar cell.

The Promotion of New Energy Law and its related ordinances state the role of each sector, such as government, user of energy, supplier of energy, manufacturer or importer of facilities or equipment, and local government, to promote generally the introduction and development of new energy use as follows:<sup>19</sup>

The role of government:

- implementing measures for dissemination of new energy and measures for assistance in introduction for each local area;
- promoting measures to improve technologies for new energy, including reducing costs;

<sup>16</sup> Decision of the Cabinet at a meeting held on September 19, 1997.

<sup>17</sup> Article 2 of the Promotion of New Energy Law.

<sup>18</sup> Article 1 of the Order of Enforcement of the Promotion of New Energy Law.

<sup>19</sup> Explanation of Policies for New Energy, New Energy Foundation (2009).

- establishing related programs and systems for smooth use of new energy;
- education; and
- promoting international cooperation in respect of new energy use, especially cooperation with developing countries.

The role of companies as users of new energy:

- making an effort to understand the features of new energy and to use new energy for consumption of necessary energy.

General electricity companies:

- making their best efforts to purchase electricity generated from new energy use and to consider stable connections with transmission lines and other related protection equipment, etc.

Heat suppliers:

- making their best efforts to purchase heat from new energy.

Gas operators:

- making their best efforts to diffuse co-generation by using natural gas and natural gas cars.

Manufacturers and importers of facilities or equipment for new energy use, including equipment for photovoltaic power generation, wind power generation and clean energy cars, etc.:

- making their best efforts positively to develop or improve technologies and consistently supply related facilities or equipment for use of new energy at reasonable cost.

## (2) Act on Promotion of Use of Non-Fossil Fuel Energy by Energy Suppliers

To ensure stable and appropriate energy supply by promoting usage of non-fossil fuel energy and inducing efficient usage of fossil fuel energy, the Act on Promotion of Use of Non-Fossil Fuel Energy by Energy Suppliers requires the Minister of Ministry of Economy, Trade and Industry of Japan (“METI”) to stipulate (i) the basic principle concerning basic matters to be conducted by energy suppliers, and (ii) guidelines for determination of target and measures to achieve its target for each sector of energy suppliers for promoting usage of non-fossil energy and enhancing efficient usage of fuel energy.<sup>20</sup> In respect of renewable energy, the guidelines require (1) general electricity suppliers to use the electricity generated from non-fossil energy in over 50 % of all their output in 2020, and (2) oil manufacturers to produce bio ethanol at 0.5 million kl in 2017 by immingling ethanol into gasoline.

## (3) Renewable Energy Law

To promote the use of electric energy generated by renewable energy and encourage renewable energy business, the Renewable Energy Law was passed by the Japanese Diet in August 2011 and came into force on July 1, 2012. Under the Renewable Energy Law, electricity companies are obliged to purchase all electricity generated from renewable energy sources for a certain contractual period and at a fixed price designated by the Minister of METI.

<sup>20</sup> The Minister of METI provides as ministerial announcement (i) Basic Principle concerning basic matters to be conducted by energy suppliers for promoting usage of non-fossil energy and enhancing efficient usage of fuel energy (METI ministerial announcement, 2010 No. 160) and guidelines for general electricity supplier, general gas supplier, oil manufacturer (METI ministerial announcement, 2010 No. 278, 240, 241, 242 and 161).

#### 4. What are the principal regulatory bodies in the renewable energy sector?

Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry of Japan (“METI”) and Ministry of Environment (“MOE”).

### INCENTIVES

#### 5. Are tax advantages available to renewable energy generation companies?

Where small- or medium-sized private business operators<sup>21</sup> introduce a new facility that is used for new energy, 7% of costs can be deducted from the amount of corporate tax or the introduction costs can be immediately amortized up to 30%.

In relation to photovoltaic and wind power generation facilities, small- or medium-sized private business operators can choose the way in which all introduction costs are immediately amortized. Although business operators other than small- or medium-sized private business operators cannot benefit from the 7% corporate tax deduction, they can choose the amortization treatment.

Owners of renewable energy power-generating facilities which have acquired Feed-in Tariff authorization can benefit from a 33.3% discount against the value of their real-estate for the calculation of their real-estate tax for three years.

In relation to residential photovoltaic systems, 10% of installation costs can be deducted from the residential property owner’s income tax liability. A mortgage tax break also applies to new housing with residential loans. In addition, JPY30,000 to 35,000 per kWh will be provided

<sup>21</sup> A small- or medium-sized company means one whose capital amount is less than JPY100,000,000 or whose total number of employees is less than 1,000.

by the Japanese government to the residential property owner as a subsidy for the installation of residential photovoltaic systems.

#### 6. Is there a purchase guarantee given by the relevant legislation for electricity generated by renewable energy companies?

##### *FIT program*

Under the Renewable Energy Law, electricity companies are required to enter into a power purchase agreement with a METI-approved power producer of renewable energy (“Specified Supplier”) at fixed prices and for a certain period designated by METI. The Minister of METI will determine the fixed purchase price and purchase period every year after taking into consideration, the opinion of a Price Calculation Committee which consists of five independent commissioners. The calculation of the fixed purchase price is based on the (i) normal cost where the supply of renewable energy derived electricity is carried out in an efficient manner, and (ii) estimated amount of supply of renewable energy electricity, after taking into consideration the following factors:

- the current amount of renewable energy derived electricity supplied in Japan;
- the appropriate profit which the Specified Supplier should earn (METI will give special consideration to the Specified Supplier’s profit for the initial three years to encourage the use of renewable energy);
- the cost of supply of renewable energy derived electricity which existing suppliers have been paying prior to the enactment of the Renewable Energy Law; and
- the need to ensure that the cost of renewable energy is not excessive for end users.

Electricity companies can recover the cost of using renewable energy sources by applying a surcharge to end users in proportion to their power consumption. However, a particularly large business operator whose annual electricity usage amount exceeds 1,000,000 kWh and whose ratio of electricity usage to sales volume (per 1,000 yen) exceeds 5.6kWh, can apply for a special 80% reduction of the surcharge.<sup>22</sup> The cost of renewable energy and surcharges are adjusted through a clearing institution to average burden shares among electricity companies.

#### *RPS program and the buyback program*

Before the introduction of the FIT program as described above, there were two purchase guarantee programs for electricity generated by renewable energy: (1) the Renewable Portfolio Standard (“RPS”) program under the Act on Special Measures concerning New Energy Usage by Electric Utilities (Act No. 62 of 2002) (the “RPS Law”), and (2) a buyback program for photovoltaic generation, described below.

The RPS program under the RPS Law in Japan required that electricity companies use a specified amount of electricity generated from new energy. To meet their obligation, electricity companies (i) generated electricity at their plants by using new energy, (ii) purchased new energy electricity from third parties, or (iii) purchased credits for new energy through a banking system. Every four years, the

Minister of METI would set the target for the following eight years after consideration of the opinion of the investigation committee and announce the target by ministerial ordinance. With the creation of the FIT program, the RPS program was abolished on July 1, 2012.

A buyback program for photovoltaic generation was launched in November 2009 in Japan as a pilot FIT program. Under this program, electricity companies must purchase the surplus electricity generated using photovoltaic power systems at a fixed price guaranteed for ten years. The minimum price guaranteed for households was JPY42 per kWh less than 10 kW, and the minimum price for others is JPY40 per kWh in 2011. The buyback program will be integrated into the FIT program.

#### **7. Is there a minimum price guarantee given by the relevant legislation for electricity generated by renewable energy companies?**

The following table shows (i) the procurement price (per 1kWh) at which electricity companies are obliged to purchase renewable energy derived electricity, and (ii) the minimum period during which electricity companies are required to purchase renewable energy derived electricity under a purchase agreement entered in 2012<sup>23</sup>. The procurement price and the minimum purchase period will be revised annually.

<sup>22</sup> In addition to this, there is a special reduction for victims of the March 2011 East Japan Earthquake.

<sup>23</sup> A 2012 purchase agreement is one executed on or after July 1, 2012 when the Renewable Energy Law came into force and before March 31, 2013, the end of the 2012 Japanese Financial Year.

*Photovoltaic power*

	10kWh or more	Less than 10kWh	Less than 10kWh (double generation)
Procurement Price	42.00 yen	42.00 yen	34.00 yen
Minimum Period	20 years	10 years	10 years

Note: The procurement price of the photovoltaic power under a purchase agreement entered in 2013 (from April 2013 to March 2013) will be revised to 38.00 yen (10kWh or more) and to 37.8 yen (less than 10kWh), while the procurement price of the other renewable energy will be unchanged.

*Wind power*

	20kWh or more	Less than 10kWh
Procurement Price	23.10 yen	57.75 yen
Minimum Period	20 years	20 years

*Water power*

	1,000kWh or more Less than 30,000kWh	200kWh or more Less than 1,000kWh	Less than 200kWh
Procurement Price	25.20 yen	30.45 yen	35.70 yen
Minimum Period	20 years	20 years	20 years

*Geothermal heat*

	15,000kWh or more	Less than 15,000kWh
Procurement Price	27.30 yen	42.00 yen
Minimum Period	15 years	15 years

*Biomass*

	Methane fermentation gasified biomass	Unused wood	General wood (including palm shell)	Waste (excluding wood) biomass	Recycled wood
Procurement Price	40.95 yen	33.60 yen	25.20 yen	17.85 yen	13.65 yen
Minimum Period	20 years	20 years	20 years	20 years	20 years

### 8. Do renewable energy-based power plants have priority for connection to the grid?

The Renewable Energy Law obliges electricity companies to connect their facilities for substation, transmission or distribution with renewable energy-based power plants if the Specified Supplier so requires. However, electricity companies can refuse the connection if:

- the Specified Supplier does not bear the connection cost;
- there is a possibility that the smooth electricity supply by the electricity company may be disrupted by the connection;
- the Specified Supplier does not provide necessary information to the electricity company for the connection;
- the relevant connection agreement includes untrue facts, illegal contents or an excessive compensation provision against the electricity company;
- the Specified Supplier does not agree to a contractual provision under which (i) the electricity company can require the Specified Supplier to reduce electricity output without any compensation, where electricity supply exceeds demand, (ii) the electricity company will not be liable to the specified Supplier if its facilities become out of order due to natural disaster or prevention of injury or death, or (iii) the Specified Supplier is not entitled to make a claim against the electricity company for its loss in respect of the electricity company's temporary suspension of business when it undertakes regular or extraordinary investigation or construction for connection purposes;

- the Specified Supplier does not (i) permit investigation of its facilities by the electricity company, (ii) warrant non-relationship with anti-social forces, or (iii) make an agreement in Japanese which is governed by Japanese law and subject to the jurisdiction of the Japanese courts; or
- the estimated electricity supply by the Specified Supplier will exceed the capacity of transmission or acceptance by the electricity company, even if it takes reasonable measures.

### 9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?

The Japanese government assists in the introduction of manufacturing equipment for bio ethanol and bio diesel from biomass, which are produced from waste.<sup>24</sup> Companies apply to the Japanese government with an implementation plan, and the Japanese government decides whether to grant subsidies. The maximum subsidy amount must be 1/2 of the cost of installation of manufacturing equipment for bio ethanol, bio ethanol blended-gasoline or bio diesel and installation of or improvement work on facilities to supply bio ethanol blended-gasoline at gas stations.

### 10. What are other incentives available to renewable energy generation companies?

#### *New Energy Use Assistance*

The Japanese government has established assistance programs to assist companies that use new energy.<sup>25</sup> Companies must apply for this assistance program with a use plan for new

<sup>24</sup> Annual Report of Energy, in 2012.

<sup>25</sup> Explanation of Policies of New Energy, New Energy Foundation (2009).

energy; if the Minister of METI approves such use plan, the company will be granted (i) loan guarantees, (ii) interest free loans, and/or (iii) subsidies for 1/3 of the necessary costs under the approved plan. Under this program, “new energy” means photovoltaic power generation, wind power generation, using solar thermal power, thermal energy, natural gas co-generation, fuel battery, using heat from snow or ice, biomass generation, using heat from biomass, production of biomass fuel, hydro power generation and geothermal power generation.

*Others*

The Japanese government also assists or grants subsidies for examination or development of technologies in respect of renewable energy, especially solar power generation, wind power generation, biomass energy, geothermal energy. It also assists local governments in introducing

solar power generation into public facilities including public schools, roads, railroads, ports or airports, etc.<sup>26</sup> by granting subsidies to the energy service companies that provide the services. The services are provided under a “shared savings agreement” in order to reduce greenhouse gas emissions from the public facilities owned by local governments. The central government examines whether the services include advanced technologies, determines the effectiveness of power reduction or the effectiveness of introducing the technologies to other similar facilities, and decides whether subsidies should be granted.<sup>27</sup>

**STATISTICS**

**11. What is the percentage of electricity generated based on each type of renewable energy source to the total-country generation of electricity?**

		April 2011 – March 2012 (1,000kWh)	Percentage to the total country generation of electricity	
<b>Thermal Power</b>		678,527,150	79.137%	
<b>Nuclear Power</b>		101,761,003	11.868%	
<b>Renewable Energy</b>	<b>Water Power</b>	74,378,178	8.675%	8.994% (9.227%)
	<b>Wind Power</b>	179,636	0.021%	
	<b>Photovoltaic Power</b>	40,784	0.005%	
	<b>Geothermal Heat</b>	2,518,472	0.294%	
	<b>Biomass</b>	(1,784,973)	(0.208%)	
	<b>Waste</b>	(214,372)	(0.025%)	
<b>TOTAL</b>		857,405,223	100%	

- Note (1): The reference of Thermal Power includes Biomass and Waste.
- Note (2): The statistics are based on “Actual generation of electricity in 2011” (Agency for Natural Resources and Energy, METI). The statistics for 2012 were not available at the time of writing.
- Note (3): Because of the nuclear accident in Fukushima in March 2011 and the subsequent Japan-wide shutdown of nuclear energy plants, the ratio of nuclear power in this table is far less than that of 2010.

<sup>26</sup> The Annual Report of Energy, in 2012.  
<sup>27</sup> Explanation for application to Assistance for shared savings ESCO services (MOE, Global Environment Bureau, Climate Change Policies Division), April 2009

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# Jordan

Kais K. Zayadin

ALI SHARIF ZU'BI ADVOCATES &  
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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

The introduction of the Renewable Energy and Energy Efficiency Law No. 13 of 2012 (the “Renewable Energy Law”) places the renewable energy sector’s growth and development firmly on the government’s agenda. This is confirmed by the country’s energy strategy, which aims that 10% of the Country’s energy will be from renewable sources within the next decade.

Furthermore, during the last decade environmental concerns including the advancement of renewable energy in Jordan resulted in the establishment of several organizations related to renewable energy, the most relevant of which is the Jordan Renewable Energy Society headed by HRH Prince Asem Bin Nayef, which promotes the renewable energy sector in Jordan.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

Renewable energy is defined in the Renewable Energy Law as:

*“Renewable Energy: energy derived from natural resources, which have an element of perpetuity and continuance.”*

In addition, the Renewable Energy Law specifies what constitutes a renewable energy source as:

*“Natural sources of energy including solar energy, wind energy, bio-energy, geothermal energy and hydropower.”*

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

The renewable energy sector is regulated through legislation, the most recent of which is the Renewable Energy Law. Other relevant legislation includes the General Electricity Law No. 64 of 2002 and the Licensing of Electricity Companies Regulation No. 76 of 2001.

### 4. What are the principal regulatory bodies in the renewable energy sector?

- Ministry of Energy and Mineral Resources;
- Electricity Regulatory Commission; and
- Promotion of Renewable Energy and Energy Efficiency Fund.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

*Income Tax*

Article 3 of the Income Tax Law No. 28 of 2009 (the “Income Tax Law”) states that all income generated within Jordan, which is not clearly exempt by the Income Tax Law or any other legislation, is subject to income tax.

Under the Income Tax Law, income tax deduction rates are as follows:

- 30% for banks;
- 24% for telecommunication, insurance, financial intermediation companies (including exchange and finance leasing companies); and
- 14% other companies.

As the Renewable Energy Law and the Income Tax Law have not addressed income tax liabilities related to the renewable energy sector, energy generation companies would be subject to a 14% income tax. However, the Council of Ministers may issue a decision granting renewable energy generation companies income tax exemptions.

Please note that after contacting the relevant authorities, we have learned that renewable energy generation companies were to be exempt from income tax, sales tax and custom duties for a period of 10 years from the date upon which the company begins to generate renewable energy. Such exemptions were included in the draft of the Renewable Energy Law. However, they were removed in order to be included in another legislation, which is to be enacted in the near future. Nonetheless, no legislation in relation to such matter has been enacted to date.

#### *Sales Tax*

Products, processes, equipments that are used for renewable energy and energy conservation<sup>1</sup> exempt from sales tax and are not subject to any customs duties.

<sup>1</sup> Only the products listed in the Council of Ministers decision No. 898 dated 4 March 2008.

#### **6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

According to the new Renewable Energy Law, the companies licensed in Jordan to distribute energy will be obligated to purchase any and all power produced by licensed renewable energy power plants.

#### **7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

Article 10 of the Renewable Energy Law stipulates that the price of electricity generated from renewable energy sources shall be determined by virtue of instructions issued pursuant to the Renewable Energy Law. That said, it shall be noted that the aforementioned article states that the prices of electricity to be sold to the licensed distribution companies shall not be less than the purchase price determined by the licensed distribution companies.

#### **8. Do the renewable energy based power plants have priority for connection to the grid?**

No such priority is provided in the Renewable Energy Law.

#### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

No. Both locally manufactured and imported materials and equipments used in the construction of renewable energy power plants will be exempt from sales tax and custom duties.

### 10. What are the other incentives available to renewable energy generation companies?

In accordance with the Renewable Energy Law, the following incentives exist:

The cost of connecting the licensed renewable energy power plant to the grid will be borne by the companies licensed in Jordan to distribute energy.

A fund called "The Promotion of Renewable Energy and Energy Efficiency Fund" shall be established for the purposes of providing any necessary funding for renewable energy projects, including but not limited to granting loans and providing guarantees.

## STATISTICS

### 11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?

Based on the figures of 2009, the total percentage of electricity generated by renewable energy sources does not exceed 1% of the total electricity generated in Jordan.

Please note that no statistics in relation to the percentage of each type of renewable energy generated in Jordan is published.

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# Kyrgyzstan

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

In Kyrgyzstan, hydropower is the most common renewable energy source. More than 80% of all energy in the country is produced by the Toktogul cascade of hydropower plants (“HPPs”), built during the Soviet era. Kyrgyzstan’s hydropower sector has capacity to produce about 140 billion kWh per year. But today it produces not more than 10% of this amount. By the amount of electric power which can be produced by hydropower plants, Kyrgyzstan is ranked 3<sup>rd</sup> among CIS countries after Russia and Tajikistan. Other renewable energy sources (solar power, wind power, etc.) are practically not used in the republic.

Kyrgyz electric power grid consists of 15 HPPs with the total capacity of 2,950 MW. Also, there are 2 thermal power plants, thus, the total power capacity of the energy sector is 3680 MW.

Electric power sector produces about 3.9% of the gross domestic product (GDP) and 16% of the industrial production volume, 10% of the national budget revenues. Thus, electric energy sector has material impact on the economy of the country.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

The definition of renewable energy is given in the Law of the Kyrgyz Republic “On

Renewable Energy Sources” of 31 December 2008 No. 283 (the “Law on Renewable Energy”). According to Article 3 of this Law, renewable energy is ecologically clean energy produced by renewable energy sources including renewable fuel.

Renewable energy sources include:

- energy of sun, earth, vacuum, wind, and water;
- energy of non-mineral and non-carbonic origin, energy of decomposition (fermentation) of biomass of any organic waste and/or materials; and
- energy of secondary heat (graduation towers, transformation substations, other industrial installations and aggregates, operation of which results in generation of secondary thermal energy).

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

Energy sector is regulated by the Government of the Kyrgyz Republic and special authorized state body for energy. Principal laws and regulations governing renewable energy are: (i) the Law on Renewable Energy of 31 December 2008 No. 283; (ii) the Law “On Energy” of 30 October 1996 No. 56; (iii) the Law “On Electric Energy” of 28 January 1997 No. 8; (iv) the Law “On Energy Saving” of 7 July 1998 No. 88; (v) the National Energy Program of the Kyrgyz Republic for 2008-2010 and the Strategy of development of fuel and energy infrastructure until 2025, approved by Resolution of the Parliament of the Kyrgyz Republic of 24 April 2008 No. 346-IV; (vi) the Program for Development of Small and Medium Energy Sector in the Kyrgyz Republic until

2012, approved by Presidential Edict of 14 October 2008 No. 365.

#### **4. What are the principal regulatory bodies in the renewable energy sector?**

The principal regulatory bodies in the renewable energy sector are: (i) the Government; (ii) the Ministry of Energy and Industry as a special authorized body for energy, including renewable energy; (iii) formed by Presidential Edict of 2 May 2008 UP No. 155, the Directorate of the project on development of small and medium energy sector in the Kyrgyz Republic (the "Directorate"). The Directorate is not a state body, but it is vested with the authority to attract investments to the new generating capacities and to develop non-traditional and alternative energy sources.

### **INCENTIVES**

#### **5. Are tax advantages available to renewable energy generation companies?**

Kyrgyz law allows the granting to companies generating electric and thermal power using renewable energy sources, of incentives and privileges in the form of tax reduction, exemption from customs duties upon import and export of the equipment, installations and parts for renewable energy generation companies.

#### **6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

Kyrgyz law provides that energy generated by renewable energy sources is subject to mandatory purchase by energy companies. According to the last amendments to the Law on Renewable Energy electricity generated from RES and not consumed by the plant owner for its own purposes or not sold to other

consumers on a contractual basis must be acquired by the biggest power distribution company operating in the administrative territorial unit where the RES plant is located, irrespective of to which company's power networks this RES plant is connected.

Thus, there is a legislative guarantee of purchase of energy generated. In Kyrgyzstan, there are 4 energy companies: Severelectro OJCS, Vostokelectro OJSC, Oshelectro OJSC, and Jalalabadelectro OJSC. In all companies the majority shareholding is owned by the state. Energy companies not meeting their obligations to mandatorily purchase the electric power generated by renewable energy sources shall pay compensation to electric power producing companies for lost profit.

#### **7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

Under Kyrgyz law, the state sets tariffs for energy generated by renewable energy sources in the amount ensuring recoupment of renewable energy projects within up to 8 years. According to the last amendments to the Law on Renewable Energy during the payback period, tariffs for RES electricity should be determined by multiplying the maximum tariff for end consumers by a respective coefficient as specified below:

- for water power plants this coefficient is 2.1;
- for sun power plants this coefficient is 6.0;
- for biomass power plants this coefficient is 2.75;
- for wind power plants this coefficient is 2.5;
- for land power energy this coefficient is 3.35.

Upon expiration of the payback period, tariffs for RES electricity are determined by the

Government for each plant individually based on calculations taking into account costs of electricity generation and fair profit. The newly determined tariffs for RES electricity are subject to annual indexation according to the procedure defined by Kyrgyz law.

Compensation for additional costs incurred by electric power companies when purchasing RES-generated electricity is taken into account by the Government when calculating and determining traditional electricity tariffs for electric power companies.

Tariffs for electric and thermal power are set by the Ministry of Energy and Industry of the Kyrgyz Republic upon consent of the Parliament of the Kyrgyz Republic.

#### **8. Do the renewable energy based power plants have priority for connection to the grid?**

Kyrgyz law envisages guaranteed connection of small and medium HPPs to the grid. All power companies must ensure non-discriminatory access to their networks for electric power producers using RES to supply power generated by them to the power network, provided that it meets the required standards. All costs of constructing the power transmission lines up to the point of interconnection to the electric power company's network are borne by the RES plant owner.

The RES plant must be connected to the networks of the power company offering the lowest cost of connection. National electric stations networks and power distribution companies must secure unimpeded transit of electric power from the RES producers to consumers.

#### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

Kyrgyz law provides that the state economically supports the development and application of renewable energy sources. However, it does not provide incentives for domestic manufacturing of equipment or materials used in the construction of renewable energy based power plants. Economic incentives and privileges are provided to renewable energy generation companies (as described in Section 5 above).

#### **10. What are the other incentives available to renewable energy generation companies?**

Kyrgyz law sets additional privileges for companies generating electric and thermal power using renewable energy sources by providing beneficial and targeted credits.

Besides, pursuant to the last amendments to the Law on Renewable Energy licensing of activity in the area of RES was declared invalid. Thus, the entities engaged in the area of RES (generation, transmission, sale, export of electricity, construction of power plants using RES: solar, wind, and hydro power plants), are not required to obtain respective licenses.

### STATISTICS

#### **11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

As mentioned above, more than 80% of all electricity in the country is produced by the Toktogul HPPs cascade. The share of small and medium energy sector in the total volume of production does not exceed 0.5%. The use of other types of non-traditional renewable energy sources is insignificant and makes only 0.7% in the energy balance of the country.

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# Latvia

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

Renewable energy resources have historically gained an important role in the balance of primary energy resources in Latvia. In 2011 the share of renewable energy sources in total gross final energy consumption in Latvia comprised 33.1%. The majority thereof was provided by large hydro power plants (Kegums HES, Plavinas HES and Riga HES), while some was generated by wind power plants, biogas power plant, biomass combined heat and power plants, as well as small hydro power plants. The main types of renewable energy resources used in Latvia are hydro energy and solid biomass (wood-pulp). Ratio of the energy generated from renewable energy sources in the transport in Latvia constituted 4.8% in the year 2011.

According to Part A of Annex I of *Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC*, the objective of Latvia is to increase the share of energy from renewable sources in gross final consumption of energy from 32.6% in 2005 to 40% in 2020. Likewise, the objective of Latvia also intends by the year 2020 to achieve at least 10% share of renewable energy in gross final consumption of energy in transport.

- Inter alia, in 2011 in Latvia there were 19 wind farms (of capacity exceeding 0,25 MW), 18 wind farms (of capacity below 0,25 MW), 7 biomass plants, 23 biogas plants, 140 small hydro power plants and 3 large hydro power plants.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

The Energy Law defines renewable energy resources as wind, solar, geothermal, wave, tidal and water energy, as well as aerothermal (thermal energy accumulated in the air), geothermal energy (thermal energy deposited under the surface of soil) and hydrothermal energy (thermal energy found in surface waters), landfill gas and sludge gas and biogas, and biomass.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

Renewable energy sector is regulated by the following principal laws and regulations:

- Energy Law;
- Electricity Market Law;
- Law on Bio-Fuel;
- Law on Public Utilities regulators;
- Law on Natural resources tax;
- Law on Excise Tax;
- Cabinet of Ministers Regulations No.262 "Regulations on Production of Electricity, by Means of Renewable Energy Resources and Procedure for Determination of Pricing";

- Cabinet of Ministers Regulations No.221 “Regulations on Production of Electricity and Determination of Prices, when Generating Electricity in Combined Heat and Power Plants” and other.

In 2012 development of the draft Law on Renewable Energy Resources was not continued. Currently policy planning document Energy Long Term Strategy 2030 is under development, which is intended to be ratified by the Government in March, 2013. After ratification further development of renewable energy regulation will be probably continued or resumed.

#### 4. What are the principal regulatory bodies in the renewable energy sector?

Energy sector, in general, is regulated by Public Utilities Commission which acts under subordination of the Minister for Economics.

### INCENTIVES

#### 5. Are tax advantages available to renewable energy generation companies?

The Law on Natural Resources Tax provides that:

- hydro power plants do not pay natural resources tax for the use of natural resource (water);
- there are tax exemptions for carbon dioxide gas emissions for stationary technological equipment and aircraft which are included in the EU emissions trading system and

meet certain criteria to be able to trade in emissions quotas

- there is no tax payable for emission of carbon dioxide (CO<sub>2</sub>) generated, when using renewable energy resources and peat in certain stationary technological equipment.

The Law on Excise Tax provides for:

- exemptions to diesel made with specified levels of rapeseed oil and used in the agricultural sector.

Electricity Tax Law states:

- Exemptions are applicable to electricity, produced:
  - 1) from renewable energy resources;
  - 2) in hydro electric power plants;
  - 3) in combined heat and power plants, corresponding to efficiency criteria set forth by laws and regulations on generation of electricity in combined heat and power process.

#### 6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

According to Electricity Market Law, certain share of total consumption of all end consumers in Latvia shall be comprised of electricity produced from renewable energy resources. This share is determined as follows:

No	Type of renewable energy resources and power plant	In 2010 and following 10 years
1.	Hydro power plants with capacity exceeding 5 MW	34.31 %
2.	Hydro power plants with capacity of 5 MW and less	1.98 %
3.	Power plants, generating or planning to generate wind energy, if electric capacity installed in the power plant does not exceed 0.25 MW and, if electrical capacity installed at the wind farm does not exceed 0.25 MW and it is connected to electricity distribution operator's transformer 20/0.4 kV on the side of 0.4 kV	0.27 %
4.	Power plants, generating or planning to generate wind energy, if power energy is or would be generated in power plants, not mentioned in Point 3 herein above	5.10 %
5.	Biogas power plants	7.93 %
6.	Biomass power plants and plants, where biomass is used jointly with fossil fuel	4.97 %
7.	Solar power plants	0.01 %
<b>Total</b>		54.57 %

Producer generating electricity by means of renewable energy resources in Latvia theoretically may classify to two types of support:

1) Producer generating electricity by means of renewable energy resources (hydro energy, biomass, wind energy, sun energy) or planning to do so may acquire the right to sell the produced electricity to the public trader in the form of mandatory procurable amount of electricity or the rights to receive a fee for electric capacity installed (biomass, biogas) (according to Cabinet of Ministers Regulations No.262);

However, for the purpose to evaluate whether such support is economically sound and in order to prevent increase of the end tariff higher than the one expected (because costs incurred by the public trader upon purchasing

the electricity from such producers are covered by all end users of Latvia in proportion to their consumption), it is stated that during the period from 26 May 2011 till 1 January 2016 no tenders would be organized regarding acquisition of rights to sell electricity generated in biogas, biomass, sun and wind power plants within the scope of mandatory procurement, and the producer would not be able to qualify for selling of electricity within the scope of mandatory procurement and to receive for acquisition of the rights the guaranteed price for installed electric capacity.

2) Producer generating electricity in combined heat and power process by means of renewable energy resources or planning to do so may acquire the right to sell the produced electricity to the public trader in the form of mandatory procurable amount of electricity or the rights to receive a fee for electric capacity

installed in combined heat and power plant (according to Cabinet of Ministers Regulations No.221).

However, in 2012 it was stated that during the period from 10 September 2012 till 1 January 2016 the producer may not qualify for these types of support. In addition, the current recipients of the support had maximum period for receipt of the support established.

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

There is no minimum price guarantee given by the legislator. However:

- Cabinet of Ministers Regulations No.221 contain formulas, according to which to calculate (1) the price for which the trader buys the electricity generated in combined heat and power process from combined heat and power plants, which obtained the rights to sell the generated electricity within the scope of mandatory procurement, or (2) the fee for electric capacity installed in combined heat and power plant;
- Cabinet of Ministers Regulations No.221 contain formulas, according to which to calculate (1) the price for which the trader buys the generated electricity from a business person, who obtained the rights to sell electricity generated from renewable energy resources within the scope of mandatory procurement process, or (2) the fee for installed electric capacity.

**8. Do the renewable energy based power plants have priority for connection to the grid?**

No, renewable energy based power plants do not have priority for connection to the grid.

**9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

No, there is no such incentive.

**10. What are the other incentives available to renewable energy generation companies?**

There are various projects financed from the state budget and EU funds, as according to the Law on Control of Support of Commercial Activity, support is allowed for investments into generation of such energy, which is obtained by means of regenerative resources (energy resources, the renewal whereof is subject to natural processes, — sun, wind, biomass, ground heat and water potential energy), in the amount of up to 60 per cent of costs for investments:

- a) into land areas, necessary in order to achieve the purposes set for environmental protection, as well as
- b) into buildings and equipment, necessary, in order to reduce or liquidate pollution and noise; and
- c) investments, necessary, in order to adjust production technologies to the needs of environmental protection.

## STATISTICS

**11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

Please find below the available information from the Ministry of Economics of the Republic of Latvia on pro rata share of electricity produced from renewable energy sources (%) in gross electricity consumption.

	2005	2006	2007	2008	2009	2010	2011
Share of electricity produced from RES (target for 2010 – 49,3%)	48,4	37,7	36,4	41,2	49,2	48,5	41,9
Key hydropower plants	46,3	35,9	34,3	39,0	46,9	45,9	38,5
Biomass and biogas power plants	0,6	0,6	0,5	0,6	0,7	0,9	1,6
Small hydropower plants	0,9	0,5	0,9	0,9	0,9	1,0	0,9
Wind farms	0,7	0,6	0,7	0,8	0,7	0,7	1,0

Please also see below the available statistical information from the Central Statistical Bureau of the Republic of Latvia regarding electricity generated from renewable energy sources, GWh.

	2009	2010	2011
Hydroelectric power plants in total	3457	3520	2887
Wind turbines	50	49	71
Biomass power plants	4	9	13
Biogas power plants	44	57	107
<b>Total</b>	<b>3555</b>	<b>3635</b>	<b>3078</b>
<b>Pro rata share</b>	<b>49,22</b>	<b>48,47</b>	<b>41,93</b>

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# Lithuania

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

Increase of the renewable energy share in Lithuania continually remains as one of the key objectives declared at the level of national energy policy and one of the main strategic pillars established by the National Energy Independence Strategy approved on 26 June 2012, which is highly focused on security of supply, competition of energy markets and sustainable development.

Taking into account the lack of local primary energy sources and dependency on fossil fuel imports from one single supplier, development of alternative energy production is an underlying target for national energy sector. Renewable energy incentives constitute a part of the groundwork for the upcoming decade to ensure the national energy balance becomes more diversified and more sustainable.

Based on the Directive 2009/28/EC of the European Parliament and of the Council of 23 August 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, Lithuania is obliged to reach a total share of 23% of energy from renewable sources in gross final consumption of energy by 2020.

Following national energy policy strategies and international commitments, the Law on

Renewable Energy, transposing the Directive 2009/28/EC, established minimum rates for renewable energy share to be reached by 2020 in each specific sector, and in particular – at least 10% of gross final energy consumption in transport sector, at least 20% in electricity sector, and at least 60% in district heating and 80% in household heating.

With regard to the above mentioned objectives, strategic guidelines currently in force aim at reaching up to 18.8% of renewable energy share in common national energy input during 2013, and specifically up to 13% of electricity generated using renewable energy sources.

In 2012 the total electricity demand of 11.325 TWh was fulfilled by 4.706 TWh of local electricity generation and the remaining 6.619 TWh (up to 58.45% of total electricity demand, which includes loading of the Kruonis HPSP, or 63% of final electricity consumption) of imported electricity. While the biggest stake of local electricity generation in Lithuania depends on imported fossil fuels that equals approximately 65% of local generation, the share of renewable energy sources is also constantly increasing and in 2012 covered up to 24.59% of total local electricity generation (excluding electricity generated by the Kruonis HPSP).

The major part of electricity from renewable energy sources is produced by hydro power plants and wind power plants, at the same time the share of wind power plants increases rapidly together with biomass power plants.

It may be well declared that the biggest potential of renewable energy development in the Lithuanian electricity sector lies with biomass and wind energy. It is expected that electricity generation using biomass could be increased over four times by 2020, comparing to the level of installed generation capacities in 2011. However, the fastest market expansion is

still focused on wind energy facilities, given the established support schemes and private business initiatives. At the end of 2012 there were issued permits for electricity generation approximately for 217,39 MW of total installed capacity of wind power plants in Lithuania and it is well expected to increase this stake significantly up to 500 MW during the period of 2016-2020.

Under the Lithuanian legislation currently in force, only development of small hydro power plants is legitimate, as specific environmental safety regime is established due to the ecosystems of the larger rivers. Currently Kaunas HPP of 100.8 MW installed capacity and smaller hydro power plants with capacity of 31,658 MW are operated in Lithuania. Irrespective of the said restraints reconstruction of older generation facilities and development of new projects are expected to trigger slight increase of the hydro energy share by 2020.

In district heating the share of biofuels equaled around 22.8% of the fuel balance for heat production in 2011, comparing to the majority of the remaining share left for fossil fuels (75.4%) and small share of other fuels (1.8%). However, regulatory and business initiatives aim at radical reallocation of these shares: targeting for up to 60% or even 85% of renewable energy sources in fuel balance for heat production. Given the absolute majority of current renewable share is covered using biomass fired power plants, including wood and wood-waste, agricultural produce waste and biogas, usage of biomass for heat energy generation could be well developed by increased exploitation of wood lumber waste, short rotation sprouts, straw, utility waste and biodegrading waste.

In the transport sector the share of bio-fuels reached up to 4.3% in final gross gasoline and biodiesel consumption for transport in 2008 and is growing constantly. The main raw used

for bio-fuels is rape and grain crops. In 2011 there were consumed 14.6 thousand tonnes of bioethanol (compared with 2010 - 9.9% less) and 40.0 thousand tonnes of biodiesel (compared with 2010 - 1.8% more). The share of bio-fuels in the transport sector is expected to be increased up to 15% by 2020.

Development of the solar and geothermal power plants in Lithuania is still at the very early stage. In 2012 there were 2000 MWh of solar energy generated and supplied to the grid (in 2011 – 76 MWh).

## **2. What is the definition and coverage of renewable energy under the relevant legislation?**

Following Article 2(a) of the Directive 2009/28/EC, the Law on Renewable Energy provides the definition of renewable energy sources covering wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases.

Moreover the Lithuanian law extends the primary concept of renewable energy sources, thus covering “any other renewable non-fossil energy sources, exploitation of which is technologically feasible or will be feasible in the future”. Such extended definition enables the energy policy decision makers to apply relevant legislation for the benefit of new technologies becoming available for commercial use of energy production.

However, despite the renewable energy definition in force, for the purposes of electricity generation, currently the limited scope of power plants does fall under the established support framework: wind, biomass and solar power plants, as well as hydro power plants not exceeding 10 MW of installed capacity may only apply for support schemes, including fixed price (feed-in tariff) and other related guarantees, secured by the State.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

In Lithuania the renewable energy sector is mainly regulated by the State, establishing general principles for development of renewable energy generation capacities, commercial activities of energy production and energy trading. Regulations of the renewable energy sector also include the framework for the promotion of energy from renewable sources, or the support schemes secured by the State for renewable energy companies.

The regulatory framework of renewable energy sector in Lithuania is structured based on the Law on Renewable Energy (adopted in 2011 as further amended), which transposes the Directive 2009/28/EC into the national law, as well as on other laws adopted by the Parliament and promulgated by the President.

Under current legislative framework, the following acts adopted by the Parliament do form a core legal background for renewable energy in Lithuania:

- Law on Renewable Energy (adopted on 12 May 2011 as further amended) establishes legal background for public management, regulation, supervision and control of the renewable energy sector, as well as the basic principles for commercial activities in the renewable energy sector. The Law aims at sustainable development in use of renewable energy sources, promotion of new energy generation technologies, and increased consumption of energy from renewable sources. The Law structures general national framework, i.e. schemes and legal instruments, for support of renewable energy;
- Law on Implementation of the Law on Amendments and Supplement to the Law on Renewable Energy adopted on 17 January 2013. The key objective of this law is to review and slow down the uncontrolled expansion of small capacity solar power plants occurred due to regulatory loopholes and extremely high feed-in tariffs during 2012. This law aims at changing the validity period of certain issued permits to develop electricity generation capacities for solar power plants, feed-in tariff application rules, as well as respective rights and obligations of developers active in the solar energy sector;
- National Energy Independence Strategy, approved by the Parliament on 26 June 2012, sets key objectives for the Lithuanian energy sector for the period leading up to 2020 and outlining the vision of the energy sector up until 2050. As a task for development of the national energy sector, the Strategy *inter alia* targets at an increase of the share of renewable energy sources in final gross consumption of energy;
- Law on Energy (new wording adopted in December 2011 as further amended) establishes objectives of the State energy sector regulation, including promotion of use of local and renewable energy sources as one of the principal objectives. The competence of the Government, as well as competences of other public authorities acting within the energy sector is established;
- Law on Electricity (new wording adopted in January 2012 as further amended) establishes the principle of public service obligations in the electricity sector related to the public safety, environmental safety, diversification of energy sources, as well as renewable energy generation; and

- Law on Heat Sector (new wording adopted in 1 January 2008 as further amended) establishes the principle of promotion for usage of local fuel, bio-fuels and renewable energy sources for the heat energy generation. It is stated that the Government and local municipalities shall ensure support for take-off (purchase guarantee) of the heat energy produced using renewable energy sources, waste combustion and geothermal energy. Such take-offs are determined as a public service obligation.

Basic provisions established in the laws are further elaborated at more detailed procedural level by the secondary legislation acts adopted by the Government, the Ministry of Energy, the National Control Commission for Prices and Energy (National Regulatory Authority), or other competent public authorities.

By March 2013 the core secondary legislation acts establishing the legal background for renewable energy are the following:

- National Strategy for Development of Renewable Energy Sector (adopted by the Government in 2010) defines strategic energy policy objectives with regard to increased use of energy for renewable sources. The Strategy amongst others also establishes targeted annual rates of renewable energy share in final gross consumption of energy in electricity, district heating and transport sector. The Strategy is considered for update following the relevant provisions of the Law on Renewable Energy;
- Regulation on Promotion of the Use of Renewable Energy Sources for Production of Energy (adopted by the Government in July 2012) regulates in detail practical implementation of the renewable energy support schemes (mechanisms) set under the Law on Renewable Energy and

therefore establishes general criteria, requirements, procedures and conditions for energy producers intending to apply for support schemes designed to promote the use of renewable energy sources;

- Resolution on Approval of Support Quotas and Auction Zones for the Use of Renewable Energy Sources for Production of Electricity (adopted by the Government in July 2012) establishes maximum support quotas – 500MW for wind power, 10MW for solar power, 141MW for hydropower, and 355 MW for biomass – applied as a cap limit for possible application of support schemes for the use of renewable energy sources for production of electricity. This Resolution also defines the auction zones for allocation of respective support quotas among potential investors to renewable energy sector;
- Resolution on Establishment of the List of Public Service Obligations in the Electricity Sector (adopted by the Ministry of Energy in 2009 as further amended) sets a complete list of activities in the electricity sector determined as the public service obligations, including electricity generation using renewable energy sources;
- Regulation on Provision of Public Service Obligations (adopted by the Ministry of Energy in 2009 as further amended) establishes the legal principles and procedures for provision of public service obligations, including application of support schemes regarding the trade in electricity produced using renewable energy sources;
- Rules of Trade in Electricity (new wording adopted by the Ministry of Energy in June 2012) establish the principles and procedures for trade in electricity in wholesale market, including bilateral contracts, power exchange, balancing services and power reserve capacities;

- Regulation on Connection to the Power Grid of the Energy Objects of the Electricity Consumers and Producers (adopted by the Ministry of Energy in 2012) establishes procedural requirements for connection of power plants and other electrical facilities to the existing power grids operated by the transmission or distribution system operators;
- Technical Rules of Connection of Wind Power Plants to the Electric Power System of Lithuania (adopted by the Ministry of Economy in 2004) establish specific technical requirements for connection of the wind power plants to the existing power grids;
- Rules of Issuance of Permits for Activities in the Electricity Sector (adopted by the Ministry of Economy in 2001 as further amended) establish procedural requirements concerning application for and issuance of permits for activities in the electricity sector, including development of power plants and production of electricity;
- Resolutions adopted by the National Control Commission for Prices and Energy on establishment of the State regulated feed-in tariffs for electricity generated using renewable energy sources. Starting from 1 February 2013 quarterly setting of the feed-in tariffs substituted previous annual regulatory practice;
- Rules of Auctions for Allocation of Support Quotas (adopted by the National Control Commission for Prices and Energy in 2011 as further amended) establish principles and detailed procedural requirements for competitive and transparent allocation of support quotas for development of renewable energy capacities with guaranteed support schemes;
- Rules of Financing the Development of the Bio-fuels Production (adopted by the Ministry of Agriculture in 2008 as further amended) establish a support scheme for bio-fuel producers from the rape and grain crops; and
- Regulation on Conditions and Rules for Submission and Use of Security for the Performance of Obligations of Producers of Energy from Renewable Resources (adopted by the Ministry of Energy in February 2013) establishes rules and conditions for submission and use of security for the performance of obligations undertaken by developers of electricity generation capacities in solar power plants not exceeding 30 kW of installed capacity.

#### **4. What are the principal regulatory bodies in the renewable energy sector?**

The principle State authorities, performing the functions of public regulation, control and supervision of activities within the energy sector, including their competences, rights and obligations, are designated by the Law on Energy and other legal acts as described in detail hereinabove. Regulatory competencies within the renewable energy sector are further specified in the Law on Renewable Energy.

The principal regulatory bodies active in the renewable energy sector in Lithuania are the following:

- Government – forms the energy policy of the State; submits the draft National Energy Independence Strategy for consideration and adoption at the Parliament; adopts the National Programme for Development of Renewable Energy Sources; has a right to adopt the principles for establishment of the State regulated energy prices; establishes terms and conditions for application of

renewable support schemes; regulates provision of public service obligations etc.;

- Ministry of Energy – implements the national energy policy tasks; ensures international cooperation in the field of energy policy; drafts and reviews the National Energy Independence Strategy; establishes the requirements for connection of power plants to the existing electricity grids; adopts secondary legislation acts for electricity and heat energy sectors; issues permits for activities in the energy sector (except for independent supply of electricity); controls implementation of public service obligations, including trade in electricity produced from renewable energy sources, etc.;
- Ministry of Environment – makes principal decisions regarding environmental protection, environmental impact assessment for construction of power plants; participates in preparation of renewable energy sources programs, etc.;
- Ministry of Transport – drafts the programs and implements the measures for effective usage of energy resources in the transport sector, etc.;
- Ministry of Agriculture – is responsible for development of production of flammable liquid products produced from biomass; promotes cultivation of plants used for production of biofuel, bio-fuels for transport and bio-oils; prepares programs for promotion of and support for agriculture sector in usage of bio-fuels and bio-oils, etc.;
- National Control Commission for Prices and Energy – establishes the methodologies for calculation of the State regulated energy prices; establishes the price caps for the State regulated energy prices; establishes the

connection fees to the existing power grids; establishes the regulated prices (feed-in tariffs and maximum tariffs for capacity auctions) for electricity from renewable energy sources; adopts the rules of and announces auctions for allocation of support quotas for development of renewable energy capacities with guaranteed support schemes; issues licences for activities in the energy sector; controls effective unbundling and non-discriminatory activities of energy companies, etc.;

- State Energy Inspectorate under the Ministry of Energy – issues the certificates for technical exploitation of the energy objects, including power plants; controls technical safety of energy generation facilities; performs official inspections of energy objects, etc.;
- Local Municipalities – within their competence established by laws regulate supply of heat energy to the end consumers, etc.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

The tax advantages in Lithuania may be designated for certain group of taxpayers, also including energy generation companies, solely on the basis of specific law establishing certain tax as adopted by the Parliament and promulgated by the President.

Under the Lithuanian legislation currently in force the specific tax advantages for renewable energy generation are established under the Law on Excise (adopted in 2001 as further amended). The law provides that electricity generated using renewable energy sources is

free from excise tax. This principle includes both domestically produced and imported electricity. As well the Law on Excise indicates that dehydrated ethyl alcohol for use in biofuels and/or its components and/or the production of biofuels is also free from excise tax. Moreover the same law provides excise tax exemption conditions for energy products made from biomass.

Additionally the renewable energy generation companies potentially may apply for general tax advantages depending on their activities or other criteria established by laws, though this does not presume for specific tax advantages related to usage of renewable energy sources.

It is also worth mentioning that consistently increasing environmental taxes, applied for industries and energy generation companies using the fossil fuels, will have an impact for growing competitiveness of renewable energy generation in the national energy market.

#### **6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

Taking into account continual changes in regulatory scheme during the past couple of years, several groups of the renewable electricity producers may be distinguished for the purposes of the purchase guarantee.

First group are the producers to whom a permit to develop electricity generation capacities was issued not later than 23 May 2011 (i.e. before entrance into force of the Law on Renewable Energy), the power plants of which do not exceed 250 kW of installed capacity, and the producers, whose permit to produce electricity was issued from 24 May 2011 for power plants the installed capacity of which does not exceed 30 kW. All electricity generated by these producers and supplied to

the electricity grid will be compulsory purchased by the energy company nominated by the Ministry of Energy or, if producer requires, by public supplier for feed-in tariff set by the National Control Commission for Prices and Energy.

Other group are the remaining producers not indicated above (e.g. whose permit to produce electricity issued from 24 May 2011 for power plants which capacity is more than 30 kW and etc.). They have a right to sell all electricity generated and supplied to the electricity grid for the energy company nominated by the Ministry of Energy or energy suppliers for the market price and later to obtain the compensation for the remaining margin between the contract price and the feed-in tariff. That means that the purchase guarantee for these producers is optional and is implemented rather as ability to sell electricity in a centralized manner.

It should be specifically noted that following recent legislative amendments, which came into effect from 1 February 2013, producers with installed capacity up to 10 kW producing electricity for their own needs and producers with more than 10 kW of installed capacity are distinguished. Therefore purchase guarantee is ensured also for electricity consumers producing and using electricity from renewable energy sources for their own and/or household needs which installed capacity is up to 10 kW. It is ensured that the surplus electricity remaining from those producers' own and/or household needs (but not more than 50% of total electricity generation per year) shall be compulsory purchased by the public supplier in case the consumer fails to agree with any independent supplier or insists for purchase guarantee by the public supplier. Feed-in tariff for this electricity is set by the National Control Commission for Prices and Energy and ensured for no longer than 12 years period.

The costs incurred by the energy company nominated by the Ministry of Energy or public supplier due to the said purchase guarantee are designated as the public service obligations and are being respectively evaluated each year while establishing the tariff for grid services. The price guarantees for renewable electricity generation is discussed in detail herein below.

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

The Law on Renewable Energy introduced fundamentally reviewed framework for the promotion of energy from renewable sources which was amended in the beginning of 2013. The support scheme applicable to electricity producers, operating wind, biomass and solar power plants, as well as hydro power plants not exceeding 10 MW of installed capacity, is generally based on two pillars – fixed price guarantee (feed-in tariff) and market-plus guarantee, being applied alternatively.

As for the first alternative, the feed-in tariffs are applied to renewable energy companies having valid permit for development of renewable power generation capacities or permit to produce electricity issued before adoption of the Law on Renewable Energy. This allows securing the fixed price guarantee for companies that have been already granted with respective support schemes before regulatory changes in 2011.

Such feed-in tariffs for each group of supported renewable energy producers was established by the National Control Commission for Prices and Energy and shall remain unchanged for 12 years support period.

Until adoption of amendments of the Law on Renewable Energy which have come into effect from 1 February 2013 the feed-in tariffs were applied to all renewable energy companies, irrespective of the moment of

granting the support scheme, i.e. before or after adoption of Law on Renewable Energy, that produce electricity in power plants not exceeding 30 kW of installed capacity. Since 1 February 2013 new permits to develop electricity generation capacities in power plants not exceeding 30 kW of installed capacity are not being issued anymore, however producers already holding issued permits to develop electricity generation capacities in power plants not exceeding 30 kW of installed capacity are provided with right to feed-in tariff.

Since 1 February 2013 those electricity producers, who produce and use electricity from renewable energy sources for their own and/or household needs which installed capacity is up to 10 kW surplus electricity remaining from those producers' own and/or household needs (but not more than 50% of total electricity generation per year) shall be compulsory purchased for fixed feed-in tariff at the rate applicable on the day of electricity supplies to the grid.

For the second alternative, the market-based guarantee may be applied by new market entrants, as well as by renewable energy companies developing new power generation capacities or the ones without formerly granted support schemes. The market-plus model was introduced by the Law on Renewable Energy aimed at transparent allocation of limited capacity quota with secured support schemes and increase of competition among renewable energy companies.

The Law on Renewable Energy indicates the targeted capacities for generation of energy using renewable sources to be reached by 2020, and being determined as top quotas with the State guaranteed support instruments. These quotas are divided for each of renewable sources with biggest stake of 500 MW for wind power plants, 10 MW for solar power plants, 141 MW for hydro power plants and 355 MW for biomass power plants.

Renewable energy companies (until 31 January 2013 exceeding 30 kW of installed capacity and since 1 February 2013 exceeding 10 kW of installed capacity) may apply for capacity quotas with the State guaranteed support scheme through the auctions organised and announced by the national regulatory authority – the National Control Commission for Prices and Energy.

All perspective renewable energy developers participating in the auction are required to declare the market-plus margin to be added to the general market price established by the National Control Commission for Prices and Energy. The winning bidder is the one with the least market-plus margin required.

Such market-plus model was established seeking to ensure transparent allocation of limited quotas with equal rights of participation to all renewable energy companies and also to ensure price competition between different technology suppliers. The market-plus margin declared by the winning bidder is guaranteed unchanged by the State for 12-year support period.

The National Control Commission for Prices and Energy quarterly sets the rates of feed-in tariffs and maximum tariffs for capacity auctions. For 1 April 2013 – 30 June 2013 the surplus electricity feed-in tariffs and maximum tariffs for the electricity produced using different type of renewable sources are set as follows:

- Hydro energy power plants up to 10 kW of installed capacity – 0,27 LTL/kWh (approx. 0,0782 EUR/kWh); maximum tariffs for power plants from 10 kW up to 350 kW and from 350 kW up to 1000 kW of installed capacity – 0,24 LTL/kWh (approx. 0,0695 EUR/kWh); from 1000 kW of installed capacity – 0,22 LTL/kWh (approx. 0,064 EUR/kWh);
- Wind energy power plants – up to 10 kW of installed capacity – 0,33 LTL/kWh (approx. 0,0956 EUR/kWh); maximum tariffs for power plants from 10 kW up to 350 kW of installed capacity – 0,32 LTL/kWh (approx. 0,0927 EUR/kWh); and from 350 kW of installed capacity – 0,26 LTL/kWh (approx. 0,0753 EUR/kWh);
- Biomass power plants – up to 10 kW of installed capacity – 0,49 LTL/kWh (approx. 0,142 EUR/kWh); maximum tariffs for power plants from 10 kW up to 350 kW and from 350 kW up to 5000 kW of installed capacity – 0,45 LTL/kWh (approx. 0,13 EUR/kWh); from 5000 kW of installed capacity – 0,38 LTL/kWh (approx. 0,11 EUR/kWh);
- Landfill biogas power plants up to 10 kW of installed capacity – 0,43 LTL/kWh (approx. 0,125 EUR/kWh); maximum tariffs for power plants from 10 kW up to 350 kW and from 350 kW up to 500 kW of installed capacity – 0,41 LTL/kWh (approx. 0,119 EUR/kWh); from 500 kW of installed capacity – 0,33 LTL/kWh (approx. 0,0956 EUR/kWh); and
- Biogas (obtained by anaerobic method or otherwise processing biodegradable organic waste or substrates) power plants up to 10 kW of installed capacity – 0,55 LTL/kWh (approx. 0,159 EUR/kWh); maximum tariffs for power plants from 30 kW up to 350 kW and from 350 kW up to 500 kW of installed capacity – 0,51 LTL/kWh (approx. 0,148 EUR/kWh); from 500 kW up to 1000 kW of installed capacity – 0,48 LTL/kWh (approx. 0,139 EUR/kWh); from 1000 kW up to 2000 kW of installed capacity – 0,46 LTL/kWh (approx. 0,133 EUR/kWh); from 2000 kW of installed capacity – 0,44 LTL/kWh (approx. 0,127 EUR/kWh) and

- Solar (photo) energy power plants – up to 10 kW of installed capacity: 0,97 LTL/kWh (approx. 0,281 EUR/kWh) for power plants integrated into building and 0,75 LTL/kWh (approx. 0,217 EUR/kWh) for not integrated into building; maximum tariffs for power plants integrated into building over 10 kW starts from 0,87 LTL/kWh (approx. 0,252 EUR/kWh) up to 0,81 LTL/kWh (approx. 0,235 EUR/kWh) and for power plants not integrated into building starts from 0,69 LTL/kWh (approx. 0,2 EUR/kWh) up to 0,64 LTL/kWh (approx. 0,185 EUR/kWh).

The auction model for allocation of capacity quotas and support scheme was introduced by the Law on Renewable Energy in 2011; however, it was not developing very fast in practice. The very first auctions have been started in the end of 2012.

A completely different situation appeared for solar power plants the installed capacity of which does not exceed 30 kW where expansion started grow uncontrollably. Since the adoption of the Law on Renewable Energy there has been introduced favourable conditions and high feed-in tariffs (especially for solar power plants) there were 4710 permits to develop electricity generation capacities for solar power plants the installed capacity of which does not exceed 30 kW issued until 12 December 2012. As this growth was based on high feed-in tariffs this meant a dramatic future growth of electricity price for final electricity consumers.

In the beginning of 2013 amendments to the Law on Renewable Energy and the controversial Law on Implementation of Amendments and Supplement to the Law on Renewable Energy were adopted following unprecedented expedited Parliamentary procedures. Key provisions of these laws are those regarding changing the validity period of issued permits to develop electricity generation

capacities for solar power plants and changing the fixed feed-in tariff. It is now therefore required that producers having aforementioned permits must provide requests to issue generation permits (e.g. to finalize construction and installation of the power plant, and to prepare it for full operation) until 1 July 2013 (with possible extension for no longer than 7 month if more than 50% of project investments are made), while general rule applied before provided that permits to develop electricity generation capacities are valid for 24 months from their issue.

Most importantly it included clauses determining retroactive effect for feed-in tariffs, i.e. it has changed the rule, which ensured that feed-in tariff was fixed for producer at the day of issue of the permit to develop electricity generation capacities and will not be changed for 12 years since generation permit is obtained. It was determined that for producers who have provided requests to obtain permits to develop electricity generation capacities until 31 December 2012 and have obtained permits to produce electricity until 31 January 2013 for 12 years will apply feed-in tariffs which were applicable at the time of issue of the permits to develop electricity generation capacities. However for producers who have provided requests to obtain permits to develop electricity generation capacities until 31 December 2012 and have not obtained permits to produce electricity until 31 January 2013 for 12 years will apply feed-in tariffs, which will be applicable at the time of issue of the permits to produce electricity.

Taking into account that feed-in tariffs and maximum tariffs for solar power plants were significantly reduced in the beginning of 2013, it determined a negative reaction in the market as the aforementioned changes conditioned that feed-in tariff was retrospectively reduced for a large number of persons holding permits to develop electricity generation capacities in

solar power plants which previously did possess higher guaranteed feed-in tariff. Disputes regarding such legislative changes and their practical implementation might be settled in court or arbitral procedures, and the respective rulings and outcomes may be well expected for an initial kick-start during the second half of 2013.

It should be noted that new regulation indicates, that producers whose validity of the permit to develop generation capacities will not be prolonged (for additional up to 7 month from 1 July 2013) as well producers who will not apply for such prolongation shall have a right for reimbursement of direct losses due to development of the solar power plant. There shall be a special purpose commission formed by the Ministry of Energy by 1 July 2013 and special rules adopted for this procedure in order to deal with evaluation of on-going projects, the level of their actual development, possible prolongations of permits to develop generation capacities, and possible compensations for non-developed projects due to respective legal amendments.

In case the support schemes are not applied to the electricity generated using renewable energy sources, whether because of non-supported energy generation or exceeding the quotas established by the Government, such electricity has to be traded under bilateral agreements or through the power exchange with no minimum price guarantees.

#### **8. Do the renewable energy based power plants have priority for connection to the grid?**

In Lithuania the renewable energy based power plants do have a priority for connection to the electricity grid comparing to other power generation capacities. In other words the part of free capacities of the power grid is required to be reserved for renewable energy based power plants during the project

development period which is generally equal to 24 months after issuance of the permit for development of renewable energy capacities and may be extended on case by case basis following legal terms and conditions in force.

Also due to technological specificities, namely the installed capacity of generation facility, the renewable energy based power plants potentially may be subject to less stringent construction planning and authorization regime, as it may significantly shorten the project preparation phase.

Under the Lithuanian legislation the grid operator is obliged to connect the energy producers or consumers after all necessary planning and authorization procedures are fully passed. The sole legitimate precondition for rejecting the connection application is technical inability criteria of the grid and energy system. The operators are required to issue design conditions, including technical requirements for connection to the grid, before the design procedure.

Renewable energy based power plants have a guaranteed discount for the grid connection fee equal to 60% of the total connection price for the power plants exceeding 350 kW and 80% for those not exceeding 350 kW. Previously cost-free connection of power plants not exceeding 30 kW of installed capacity was rejected from 1 February 2013 following recent amendments to the Law on Renewable Energy.

The connection fee discount is estimated on the basis of the contract price of the procured contractor for the connection works. The connection fee discount is covered by the grid operator and each year being reckoned into the energy tariffs as a public service obligation.

It has to be also emphasized that the abovementioned connection fee discount, as well as any other incentives for renewable energy generation, are applied solely for the

said power plants falling within the scope of renewable energy support scheme.

**9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

There is no preferential regime for local Lithuanian manufacturing of equipment and/or materials used in the construction of renewable energy based power plants. The majority of renewable energy generation technologies installed in Lithuania are imported together with supporting operation and other related devices.

There are no specific requirements or restrictions for using imported technologies or materials, given the safety and quality of relevant equipment or materials being approved under appropriate EU or international certification.

Additionally, the environmental safety of the intended power plant construction is monitored by the Ministry of Environment through the environmental impact assessment procedures, as well as technical safety is inspected before start of exploitation of the power plants and during its entire life-cycle by the State Energy Inspectorate under the Ministry of Energy.

**10. What are the other incentives available to renewable energy generation companies?**

Under the Lithuanian legislation currently in force, the grid operators are obliged to ensure the priority transport of electricity generated using the renewable energy sources through the power grids in case the capacities of the latter are limited.

In addition to that, the abovementioned renewable energy based power plants that do fall under the renewable energy support scheme are not required for ensuring the

reserve capacities or energy generation balancing services. During the entire period of support scheme applied the responsibilities for reserve and balancing are being undertaken by the transmission system operator.

It could be also emphasized that the EU support mechanisms could be applied irrespective of national schemes in force. For the period of 2007-2013 the total sum of 165 million LTL (approx. 47.8 million EUR) from the EU structural funds is awarded for the construction projects of new biomass and cogeneration power plants at the financing intensity up to 50% of the total project value. Respectively, the total sum of 450 million LTL (approx. 130.3 million EUR) is awarded for the development of biodegradable waste management infrastructure.

Please note that granting of the EU financing for infrastructure investments to the renewable energy sector in Lithuania may preclude in certain cases from applicability of the feed-in tariff and the purchase guarantee, as doubled financing of renewable energy projects is not allowed under the Lithuanian legislation.

## STATISTICS

**11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

In 2012 there were 4.706 TWh of electricity generated in Lithuania. The share of electricity generated using renewable energy sources was equal to 24.59% in total generation of electricity in 2012. There were 8.95% (0.421 TWh) of whole generated electricity by hydro power plants (not taking into account electricity generated by the Kruonis Pumped Storage Plant), 11.43% (0.538 TWh) by wind power plants, 4.14% (0.195 TWh) by biofuel power plants and 0.04% (0.002 TWh) by solar power plants.

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# Macedonia

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

Pursuant to the new Energy Law which was enacted by the Parliament of Republic Macedonia in February, 2011 the encouragement of the consumption of Renewable Energy Sources is set out as one of the targets that are to be provided by the Law. According to this Law the Government of the Republic of Macedonia is to create policy of consumption of the Renewable Energy Sources by establishing Strategy on Renewable Energy Sources. This Strategy is suggested by the Ministry of Economy and enacted by the Government of Republic Macedonia each 5 years, and it refers to period of the next 10 years. Drafting this Strategy on Renewable Energy Sources is financed by the State.

For the purpose of the implementation of the Strategy for Renewable Energy Sources the Government of Republic of Macedonia, upon the proposal of the Ministry, passes an action plan for the renewable energy for a period of ten years. This Action plan defines the action for improvement of the consumption of the renewable energy sources.

Every two years the Ministry of the economy prepares a Report on the implementation of the action plan for Renewable Energy Sources in the past period. If based on the findings of the report it is evaluated that the planned annual dynamics are not realized, the Ministry

should propose to the Government of Republic of Macedonia additional actions and adequate modifications to the Action plan.

The Government of Republic of Macedonia, by passing a decision, provides the goals and the annual dynamics of the growth of the share of the energy from the renewable sources in the final energy consumption, in accordance with the Action plan for the Renewable Energy Sources and the obligations undertaken by the Republic of Macedonia upon the ratified international agreements.

The Energy Agency is the body which provides support to the Ministry in the preparation of the Strategy on the Renewable Energy Sources and the Action plan for renewable energy sources.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

The matter of the Renewable Energy Sources is covered by the Energy Law in a special chapter titled “Renewable energy sources”.

Definition: Renewable Energy Sources are non-fossil energy sources, i.e. hydropower, wind, solar, aero thermal, hydrothermal and geothermal energy, biomass, landfill gas, biogas and gas obtained from wastewater and biomass purification plants.

## REGULATIONS

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

The renewable energy sector is regulated within the framework of the integral energy sector. The principal provisions and regulations could be found in the Energy Law.

The implementation of the Law is ensured by the secondary legislation which includes:

Rulebook for Renewable energy sources; Rulebook on the guarantee of origin of the electricity produced from Renewable Energy Sources; Rulebook for acquiring of status of preferential/privileged producer of electricity from Renewable Energy Sources; Regulation for connection for the national grid; Manual for construction and operation of wind mills and the Rulebook on the method and procedure for establishing and approving the use of feed-in tariffs for electricity produced from biomass, small hydro power plants, wind power plants and photovoltaic systems.

#### **4. What are the principal regulatory bodies in the renewable energy sector?**

The principal regulatory bodies in the Renewable Energy Sector are the Government, the Ministry of Economy (Energy Department), The Energy Agency and the Regulatory Commission for Energy.

### **INCENTIVES**

#### **5. Are tax advantages available to renewable energy generation companies?**

According to the Energy law it is predicted that the tax advantages should present one of the measures for supporting the implementation of the Strategy on Renewable Energy Sources, and, the preferential VAT tax rate of 5% is determined (apart to the general one of 18%) for trading and importing thermal solar systems and their components. No other tax advantages are determined so far in respective legislation.

#### **6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

Yes, the operator of electricity, which is state owned company, is obliged to purchase the

total quantity of electricity generated by the Renewable Energy Sources which is delivered by the privileged producers.

#### **7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

Yes, in Macedonia there are guaranteed feed-in tariffs for electricity production from Renewable Energy Sources determined by Regulatory Commission for Energy.

#### **8. Do the renewable energy based power plants have priority for connection to the grid?**

The Energy Regulatory Commission of the Republic of Macedonia may ask from the relevant Operator to cover the expenses for connection to the grid of the producers that require it, and the latter will be able to return these costs through the price of services.

#### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

No, there is no incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants.

#### **10. What are the other incentives available to renewable energy generation companies?**

Pursuant to the Energy Law it is set out that the certain measures for supporting the implementation of the Strategy on Renewable Energy Sources could apply, especially: investment financial support, tax advantages, guaranteed purchase of the total quantity of electricity delivered by the privileged producer and an obligatory sell of the mixture of fossil fuels and bio fuels, issuance of guarantees of origin of the electricity produced from

Renewable Energy Sources, Feed-in tariffs for the electricity generated by Renewable Energy Sources, increase of the prices which consumers are paying for consumption of the Renewable Energy Sources .

Energy law also provides that the implementation of these measures could be financially supported by the State.

## STATISTICS

### 11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?

According to the State Statistical Office data, in our country actual production of renewable energy covers hydro energy, solar energy,

geothermal energy, biomass and biofuel. Hydro energy production in 2000 was half of that of biomass, whereas in 2010 production grew 108% compared to 2000, while biomass production in the same period decreased by 3.5%. In 2010, renewable energy was dominated by hydro energy and biomass.

According to the official statistics for 2011, the percentage of electricity generated from renewable sources in the total electricity production is 20,9%, which is a considerable decrease compared to 2010, when it added up to 33,5%. Hydroelectricity participates with 7% and Biomass with 10,6% in the total generation of electricity in Macedonia. Geothermal heat accounts for 0,7% of the total electricity production, while electricity production based on biofuel is about 0,2 %. Participation of solar energy in the total generation of electricity is minimal.

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# Mexico

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

There is no doubt that Mexico's energy source depends, almost completely on petroleum, which also means that it is a petroleum based economy.

Notwithstanding, Mexico has a huge potential for the development of renewable energy due to its geographic location and landscape. For that reason, almost ten years from now the Mexican Government has expressed its intent to reduce its dependence from hydrocarbons as a primary source of energy and has established some general guidelines that promote and regulate the use of these alternative sources.

In the last ten years Mexico has achieved important developments in the field of renewable energy sources, especially in the sector of Wind power, geothermal and hydropower plants. Notwithstanding the above, there are still a number of additional reforms and incentive which needs to be implemented in order to promote renewable energies in Mexico.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

For purposes of the Law for the Use of Renewable Energy and the Financing of Energy Transition (*Ley para el Aprovechamiento de Energías Renovables y el Financiamiento de la Transición Energética*, the "Renewable Energy

Law"),<sup>1</sup> which is the law that regulates the issue, the renewable energy is that which source lies in natural events, processes or materials susceptible of being transformed into energy that may be used by man, that are naturally renewed and that permanently or periodically available.

Under the Renewable Energy Law, sources of renewable energy include the following<sup>2</sup>:

- a) The wind;
- b) Solar radiation;
- c) Water movement in natural or artificial vessels;
- d) Ocean in all its aspects: motor, thermal, tidal, currents and salt concentration;
- e) Geothermal deposits;
- f) Bio-energy, (as defined by the Law for the Promotion and Development of Bioenergetics); and
- g) Others, as further determined by the Ministry of Energy, so long as they comply with the first paragraph of this section.

The following sources of electricity are excluded from coverage by Renewable Energy Law:

- a) Radioactive minerals used to produce nuclear energy;
- b) Hydraulic energy projects with the power of generating more than 30 megawatts, except:
  - i) In the case of a dam with a capacity of less than 50,000 cubic meters of water or a dam with a surface of less than 1 hectare and does not exceed such

<sup>1</sup> Published in the Federal Official Gazette on November 28, 2008, as amended.

<sup>2</sup> Article 3 Paragraph II of the Renewable Energy Law.

capacity of storage. These dams should be located in the property on which the generator has a real right.

ii) In the case of existing dams, even with more capacity than the aforementioned, that could be eligible to generate electricity.

c) The incineration or thermal treatment of industrial waste, and

Use of landfills that do not comply with the environmental regulation.

## REGULATIONS

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

In general terms, the Mexican legal system currently regulates renewable energy from two perspectives: (i) the generation of electricity from renewable resources and (ii) the production of bio-fuels.

#### I. Power generation.

The framework associated with the generation of power through renewable sources in Mexico is as follows:

- Paragraphs 6<sup>th</sup> of Art. 27 (with respect to the restrictions on the public service of electricity) and the 4th Paragraph of Art. 28 (with respect to the activities which are not considered a monopoly of the State in these matters) of the Constitution.
- Public Power Utility Law (*Ley del Servicio Público de Energía Eléctrica*, hereinafter, the “Power Law”).<sup>3</sup>

<sup>3</sup> Published in the Federal Official Gazette on December 22, 1975, as amended.

- Power Law Regulations (*Reglamento de la Ley del Servicio Público de Energía Eléctrica*, hereinafter, the “Power Regulations”).<sup>4</sup>

- Directives and Form of Contracts Issued and Approved by the Regulatory Energy Commission (*Comisión Reguladora de Energía*, the “CRE”) with respect to Interconnection, Wheeling, Transportation and Renewable Energies<sup>5</sup>.

- Law for the Use of Renewable Energy and the Financing of Energy Transition (*Ley para el Aprovechamiento de Energías Renovables y el Financiamiento de la Transición Energética*)<sup>6</sup>.

- Regulations of Law for the Use of Renewable Energy and the Financing of Energy Transition (*Reglamento de la Ley para el Aprovechamiento de Energías Renovables y el Financiamiento de la Transición Energética*)<sup>7</sup>.

- Law for the Sustainable Use of Energy (*Ley*

<sup>4</sup> Published in the Federal Official Gazette on May 31, 1993, as amended.

<sup>5</sup> In addition to the general provisions of the Power Law, the intermittent nature of energy generated from renewable resources calls for the establishment of various complementary instruments, such as an interconnection and transmission agreement (which templates are standard and approved by the CRE), both specific for energy generated from renewable sources. Among other things, these instruments allow for the compensation of monthly energy surpluses and shortages that are associated to renewable sources, by providing for yearly cutoff dates. The interconnection agreement gives an option to the generator of energy to store excess energy produced and sell such energy within the following 12 months.

The interconnection agreement also keeps track of the median capacity supplied by the generator during peak hours, which will be taken into account when calculating the billable demand.

<sup>6</sup> Published in the Federal Official Gazette on November 28, 2008, as amended.

<sup>7</sup> Published in the Federal Official Gazette on September 2, 2009, as amended.

*para el Aprovechamiento Sustentable de la Energía*).<sup>8</sup>

- Regulations for the Law for the Sustainable use of Energy (*Reglamento de la Ley para el Aprovechamiento Sustentable de la Energía*).<sup>9</sup>
- Regulations for the National Water Law (*Reglamento de la Ley de Aguas Nacionales*, hereinafter, the “Water Regulations”)<sup>10</sup>.

Generating power through renewable sources has created challenges that the Mexican laws, regulations, authorities, CFE and other participants need to face.

In Mexico, electrical power is generated primarily through a governmental utility company, Federal Electricity Commission (*Comisión Federal de Electricidad* – “CFE”), which is vertically integrated to provide the public service of electricity through out the country. Notwithstanding the above, since the early 90’s, the Mexican power regime was modified to allow private investment in certain power generation projects.

In 1992, several reforms were implemented to the Power Law and the Power Regulations, in order to authorize private investment in services considered to be “Non-Public Power Activities”, which include the following:

- a) Independent power production (“IPP”) which power shall be sold to CFE;
- b) Co-generation;
- c) Self-supply projects;
- d) Importation and/or exportation of power; and

<sup>8</sup> Published in the Federal Official Gazette on November 28, 2008, as amended.

<sup>9</sup> Published in the Federal Official Gazette on September 11, 2009, as amended.

<sup>10</sup> Published in the Federal Official Gazette on January 12, 1994, as amended.

e) Small production (under 30 MW).<sup>11</sup>

All the referred schemes require a permit that has to be issued by the CRE.

Even though Mexican authorities have vigorously promoted these activities<sup>12</sup>, several problems have arisen. IPP projects have a financial structure that limits competition since the power production, surplus or cost of the project, as the case may be, is eventually sold or transferred to CFE.<sup>13</sup>

Although co-generation and self-supply projects have provided cheaper and reliable electricity output that allows for greater expansion of other private investment projects, such projects require transparency of public power tariffs and subsidies, open access to different fuel resources and investments and capital infusion which increases the financial projections of investors not related to the power industry, furthermore, it is necessary to implement long term power purchase agreements with off-takers with acceptable financial soundness and strength, which are not easy to obtain.

<sup>11</sup> Arts. 3 and 36 of the Power Law. The excess of energy produced by these power generation projects, if any, shall be sold to CFE (except section d) above), as provided by subsections III and IV of the abovementioned article.

<sup>12</sup> As of December 2012, the CRE had granted to individuals a total of 157 permits to produce renewable energy with a capacity of 5002.0 MW (1942.0 MW of such capacity are already operating).

<sup>13</sup> The electricity output of the IPP projects is sold to CFE at a fixed-dollar base negotiated in a Power Purchase Agreement, while the BLT is leased to CFE which will eventually acquire it after a term previously agreed. In this case the *Secretaría de Hacienda y Crédito Público* must authorize the financial structure of the projects as “contingent debt” (PIDIREGA authorization) and record it in the Registry of Public Debt which assures the investor that its payments will be reflected in the annual governmental budget every year as part of the contingent debt.

Also, the numbers of potential clients in Mexico who can commit to long term power supply contracts (from renewable or non-renewable sources) with fixed capacity charges are limited. Further, the competition with CFE is difficult. Additionally, the ability to import and export power has been limited because of the lack of efficient and operative interconnection points between the transmission grids of the U.S. and Mexico.

In addition to the general provisions of the Power Law, the intermittent nature of energy generated by from renewable resources calls for the establishment of various complementary instruments, such as an interconnection and transmission agreement templates, both specific for energy generated from renewable sources.<sup>14</sup>

Among other things, these instruments allow for the compensation of monthly energy surpluses and shortages that are associated to renewable sources, by providing for yearly cutoff dates. The interconnection agreement gives an option to the generator of energy to store excess energy produced and sell such energy to CFE within the following 12 months.

The interconnection agreement also keeps track of the median capacity supplied by the generator during peak hours, which will be taken into account when calculating the billable demand.

Another complementary instrument related to the evacuation and distribution of energy are the open-season agreements, which main purpose is to provide the necessary infrastructure for the transmission and evacuation of the energy generated by the private companies under a fixed price payable to CFE.

The Law for the Use of Renewable Energy and the Financing of Energy Transition foresees three main instruments aimed at promoting the use and investment in projects for the generation of energy from renewable resources:

- i) The National Strategy for the Transition and Sustainable Use of Energy (*Estrategia Nacional para la Transición Energética y el Aprovechamiento Sustentable de la Energía*), aimed at promoting the use of clean technology; the use of and investment in renewable energy projects, as well as reducing the country's dependency on hydrocarbons.
- ii) The Special Program for the Use of Renewable Energy (*Programa Especial para el Aprovechamiento de Energías Renovables*), which sets forth elements of public policy, lists goals and describes actions to be taken on the subject.
- iii) The Fund for the Transition and Sustainable Use of Energy (*Fondo para la Transición Energética y el Aprovechamiento Sustentable de la Energía*, the "Fund"), (as will be further described in the response to question 10 below).

In accordance with the Water Regulations, no concession will be required for the exploitation, operation or use of water, in the case of hydraulic energy generation whose capacity does not exceed 30 megawatts<sup>15</sup>.

Due to recent amendments to the Renewable Energy Law, the CRE is entitled to prepare and publish a national atlas containing some of the potential areas in Mexico where national and international companies may invest and develop renewable energy projects.<sup>16</sup>

<sup>14</sup> CRE Resolution No. RES/147/2001, published in the DOF in September 19, 2001.

<sup>15</sup> Art. 120, paragraph I of the Water Regulations.

<sup>16</sup> Art. 6, section VII.

## II. Biofuel production.

Enacted in February of 2008, the Law for the Development and Promotion of Biofuels (*Ley de Promoción y Desarrollo de los Bioenergéticos*) is aimed at promoting the production of ethanol and other biofuels as a means to reduce Mexico's dependence on fossil fuels. It also promotes cleaner and environmentally friendly fuels, and develops Mexico's rural economy, specifically through the participation of the economy's agriculture sector. The law emphasizes on the importance of research and development as well as technology transfer related to biofuels, tax exemptions and subsidies to organizations.

The law also highlights the importance of preventing risks to national food requirements, and limits the issuance of biofuel production permits to those applicants whose activity may create such a risk. In addition to fines that may exceed US \$300,000.00 to those that produce biofuels without the corresponding permits, the law foresees the possibility of total or partial closure of the production facilities.

Additionally, the Mexican Government has imposed to Pemex the obligation of elaborating programs of progressive substitution of hydrocarbons by renewable energies and allocating certain percentage of its incomes to such purpose.

### 4. What are the principal regulatory bodies in the renewable energy sector?

- Federal Ministry of Energy (*Secretaría de Energía*). In charge of crafting public policy for a better use of renewable energy and of issuing permits for the production, transportation, storage and distribution of biofuels.
- CRE. Among other things, the CRE is in charge of:
  - Issuing standards, directives, methodology and other provisions of an

administrative nature that regulate the generation of energy from renewable resources;

- Determining rates to be paid for energy generated, supplied and transmitted;
- Issuing methodology to determine capacity of generation and contribution to the National Electricity System of each of the technologies
- Issuing general rules for interconnection to the National Electricity System that must be agreed to among generators and suppliers.
- National Commission for the Efficient Use of Energy (*Comisión Nacional para el Uso Eficiente de la Energía*). The responsibilities of this commission include:
  - Issuing administrative provisions on matters related to the efficient use of energy, based on applicable legal provisions;
  - Propose the creation or revision of official Mexican standards to promote the efficient use of energy.
  - Issue opinions that are binding for other agencies of the Federal Administration in connection with best practices for the sustainable use of energy.
- Federal Ministry of Agriculture (*Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación*). In charge of issuing permits for the production of biofuels from corn.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

Although certain tax benefits are available, those are limited. Additionally, more

coordination is required at the Federal and local level to provide adequate tax benefits for the development of renewable energies more in line of what is offered in other parts of the world. Among the available benefits we find the following:

- Accelerated deduction. The Income Tax Law provides that investors are allowed to the deduction of 100% of the investment made in machinery and equipment used for generation of energy from renewable sources (including biomass) after 1 year of operation, so long as the equipment is to be used for at least 5 years.
- Exemptions. At a Federal or local level certain exemptions apply for the payment of fees related to permits or other public procedures.

#### **6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

The Power Law provides that CFE is obligated to purchase the surplus power generated by:

- Individuals and companies that generate power to satisfy their necessities;
- Co-generators (they produce power with steam or another secondary thermic energy or both);
- Independent production; and
- Small production (producers that generate less than 30 megawatts).

Notwithstanding, there is not a guaranteed consideration to these purchases by CFE.

#### **7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

The Renewable Energy Law states that CFE,

prior opinion from the Ministry of Finance (*Secretaría de Hacienda y Crédito Público*), shall determine the maximum considerations to be paid to the generators who use the renewable energies. These considerations must include all costs associated with production capacity and energy generation. And will vary depending on the technology used, on the geographic location of the projects and the arising externalities, in connection with the generated energy by non-renewable sources. Currently, it is being analyzed the possibility that CFE assume a minimum price guarantee in order to incentive the investment of potential energy generators.

#### **8. Do the renewable energy based power plants have priority for connection to the grid?**

Yes, in the case that renewable energy plants are taken account, they have to be supplied in accordance to the Dispatch Rules for the National Grid, based on the “cheap energy first” principle.

#### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

The Income Tax Law provides that investors are allowed to deduct 89% of the investment made in the country for the development of new products or technology, in the same year the investment was made.

#### **10. What are the other incentives available to renewable energy generation companies?**

As mentioned above, the federal government has set the foundations for the Fund,<sup>17</sup> which

<sup>17</sup> The specifics and public policies related to this Fund are described and regulated by the National Development Plan (*Plan Nacional de Desarrollo*), which is not yet available as of this date, but the President has no longer than six months from December 1<sup>st</sup>, 2013 to publish it.

is set to receive approximately 24 million dollars from the federal government in 2013.<sup>18</sup> A technical committee must design the rules for the distribution of the resources managed by the Fund.

In addition to the foregoing, the National Strategy of Energy 2013-2027<sup>19</sup> (*Estrategia Nacional de Energía 2013-2027*) aims at providing the framework under which Mexico will meet its future energy needs in a cost-effective and sustainable manner, establishing certain objectives, recommendations and strategies to guide authorities and private companies. Some of said strategies specified in the plan are: (1) produce, deliver and use energy more efficiently; (2) support development of renewable energy supplies; (3) invest in energy and transportation infrastructure; and (4) reduce the production of carbon-based electricity. It is relevant to consider that the strategy plans to generate 35% of electricity from non-fossil energy in 2024.

## STATISTICS

### 11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?

According to CFE, as of January, 2013, installed capacity is as follows:<sup>20</sup>

Type of Generation	Effective Capacity (MW)	Percentage
Thermoelectric	22, 834.23	44.22%
Hydro	11, 266.78	21.82%
Coal	2,600.00	5.03%
Geothermal	823.40	1.59%
Eolic	86.75	0.17%
Nuclear.	1,610.00	3.12%
Solar	1.00	0.002%
Thermoelectric (IPP's)	11, 906.90	23.06%
Eolic (IPP's)	510.85	0.99%
<b>Total</b>	<b>51, 639.91</b>	<b>100%</b>

Generation according to source<sup>21</sup>:

Type of Generation	Percentage
Geothermal	2.55%
Coal	6.99%
Nuclear	5.12%
Eolic	0.11%
Solar	0.004%
IPP's	35.05%
Hydro	5.45%
Hydrocarbon	44.72%

<sup>18</sup> Considering an exchange rate of approximately MXN \$ 12.5 per dollar.

<sup>19</sup> Proposed by the Ministry of Energy and approved on February 27, 2013 by Mexico's senate.

<sup>20</sup> CFE's website.

<sup>21</sup> CFE's website.

According to CRE, the Mexican Electrical Segment is distributed as follows:

Mexican Population	112,336,538 inhabitants
Energy Installed Capacity (Public and Private Service)	64.49 GW
Transmission Lines	52, 947 km
Distribution Lines	833,081 km



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# Montenegro

Sasa Vujacic

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

In accordance with all obligations arising from the current legal and regulatory framework in Montenegro, and pursuant to all key international documents Montenegro had acceded to, as well as taking in consideration all the potentials of Montenegro, the energy sector is recognized as a pillar of overall, sustainable and long-term stable growth of Montenegro, with evident positive macroeconomic effects.

Therefore, Energy Policy of Montenegro for the period to 2030, adopted in March 2011, recognized and determined the main three priorities to be achieved in this area for the proposed period of time, as: security of energy supply; development of competitive energy market and sustainable energy development, with more than 20 key strategic objectives, of which more than 50% is directly related to activities in the field of renewable energy sources.

Taking in consideration that development of renewable energy sources is recognized as one of the strategic point, Ministry of Economy, competent for the energy framework, has initiated various studies and projects in cooperation with and financed by different international institution with the aim of detailed analysis of the potential of renewable energy sources, and in order to provide

information to domestic institutions and companies operating in Montenegro about possible changes and improvement of the energy sector.

The great job has been done concerning the changes related to the legal and regulatory framework. Some of the new legislation acts has been adopted, while other important act are in the phase of preparation, or in the process of adoption.

The plan for 2011 and 2012 was to adopt whole new regulatory framework in the area of renewable energy sources, in order to establish the complete set of rules for this area. The competent governmental bodies are well on “track” to achieve these plans.

However, most of the work remains to be done. The implementation of the newly established laws will be major challenge, as well as creation of the positive environment for development and investments in this area or promotion of the renewable energy sources as most attractive one, all previously mentioned in order to achieve national goal for renewable energy sources for Montenegro designated as 29,5%.

Considering all aforementioned it is possible to conclude that renewable energy sources in Montenegro become one of the most growing field with huge potential and more than enough space to be developed.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

Pursuant to the Energy Law (“Official Gazette of Montenegro”, no 28/10 from May 2010) renewable energy sources are defined as follow: energy sources existing in nature, fully or partially renewable, particularly the energy of water courses, wind, non-accumulated solar energy, bio fuel, biomass, biogas, geothermal energy, hydrothermal energy, aero thermal

energy, wave, tidal, landfill gas, sewage treatment plant gas energy.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

Principal Laws and regulations applicable to the area of renewable energy sources are:

- Energy Development Strategy of Montenegro to 2025, adopted in 2007;
- Action plan for the implementation of the Energy Development Strategy for the period 2008-2012;
- Energy Policy of Montenegro for the period to 2030, adopted in March 2011;
- Energy Law (“Official Gazette of Montenegro”, no 28/10 from May 2010);
- Law on Energy Efficiency (“Official Gazette of Montenegro”, no 29/10 from May 2010);
- Action plan for the energy efficiency for the period of 2010-2012, adopted in December 2010;
- Rulebook on criteria for issuance of energy licence, content of request and registry of energy licences (“Official Gazette of Montenegro”, no 49/10 from August 2010);
- Rulebook on the types and classification of plants using renewable energy and cogeneration plants (“Official Gazette of Montenegro”, no 28/11 from June 2011);
- Rulebook on detailed conditions to be met by a legal entity to measure and explore the

potential of renewable energy sources (“Official Gazette of Montenegro”, no 28/11 from June 2011);

- Regulation on the wind power plants (“Official Gazette of Montenegro”, no 67/09 from September 2009)
- Regulation on the tariff system for determining the incentive prices of electricity from renewable energy sources and high efficiency cogeneration; (“Official Gazette of Montenegro”, no 52/11 from November 2011)
- Decree on the manner of exercising the rights and status of privileged producer of electricity; (“Official Gazette of Montenegro”, no 37/11 from July 2011)
- Market rules that regulate a manner of organizing and managing the electricity market in Montenegro, issued by Montenegrin Electricity Market Operator in July 2012.

Other Laws and regulations applicable to the renewable energy sources among others are: Law on concessions; Law on Ratification of Agreement between European Union and Montenegro on forming the Energy Community; Law on construction of objects and special planning; Water Law; Law on Geological Exploration; Law on Mining; Procedure for Acquiring Concession for Detail Geologic Exploration and Exploitation of Mineral Resources; Competition Law; Company Law, as well as a number of other acts.

It is important to emphasize that in order to adopt whole new regulatory framework in the area of renewable energy sources, several other acts are in phase of preparation or in process of adoption, as:

The Program of development and use of renewable energy sources, which will define the dynamic of development of the renewable energy sources in accordance with the requirements of the energy community and strategic goals of Montenegro;

The National target for the total part of renewable energy sources in the total final energy consumption;

Regulation on the types and manner to encourage production of renewable energy sources and cogeneration;

Decree on the manner of issuance, transfer and withdrawal of the guarantee of origin of energy produced from renewable energy sources and high efficiency cogeneration.

Decision on the preparation of the Strategic Environmental Impact of Energy Development Strategy of Montenegro to 2030;

The Study of distributed source connection and operation in the electric power system of Montenegro;

Pursuant to the Energy Law development and use of renewable energy sources shall be set in the Program for development and use of renewable energy sources that shall be adopted by the Government for the period of 10 years in accordance with the Energy Development Strategy, and that shall contain specifically the national indicative target with regard to use of renewable energy sources and time schedule, i.e. timing for its implementation, together with support schemes.

Furthermore, according to the Energy Law the national indicative target for renewable energy sources means the contribution of energy produced from renewable energy sources to the gross final energy consumption that is expressed as a percentage and shall be

calculated based on the methodology set by the Ministry.

Development and use of high-efficiency cogeneration in accordance with the Energy Development Strategy shall be set in the Program for development and use of high-efficiency cogeneration that shall be adopted by the Government for the period of 10 years, and which Program shall specifically set available and feasible potential for use of high-efficiency cogeneration with planned indicative target for a period covered by the program, barriers, support schemes, time schedule, i.e. timing for its implementation and tentative financial resources required for its implementation.

#### **4. What are the principal regulatory bodies in the renewable energy sector?**

In accordance with the Energy Law the main bodies in charge for the area of renewable energy are Ministry of Economy, and Energy Regulatory Agency, each of them under the framework of their competencies, while some other public authorities might be included or authorized for performing some of the activities in connection with the various aspects of area of the renewable energy sources.

Some of the most important competencies of the Ministry of Economy concerning the area of renewable energy sources are establishment of the legal, institutional and regulatory framework; supervisory role, inspection authorities and responsibility for facilitating the procedures for new subjects in this sector, while Energy Regulatory Agency has competencies such as: supervision over the work of energy market subjects, issuing licences, authorizations, establishing prices and tariffs prescribed by the Law, promoting competition within the sector.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

It is very clear orientation of the Government stated even in the Energy Law to provide various incentives for the renewable energy sector. So, according to the Law provisions construction and use of renewable energy sources may be supported by increasing compulsory minimum contribution of renewable energy sources, by impacting on a decrease of investment costs and by increasing purchase price for energy and by other measures pursuant to the Law.

Moreover, in accordance with the Law, privileged producers may acquire a right to price support scheme for electricity generated that will be established in the tariff system for generation of electricity from renewable energy sources and cogeneration that is adopted by the Government, pursuant to the Law.

Some tax advantages for renewable energy companies has been provided by the Rulebook on the manner of use of the tax relief for investments in fixed assets used for producing energy from renewable energy resources and energy efficiency ("Official Gazette of Montenegro", no 09/09 from 2009), while some additional advantages might be provided after the new previously mentioned by-laws would be adopted.

### 6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

Beside from the previously stated incentives, the Energy Law recognizes also the purchase guarantee due to the fact that based on the Program for development and usage of renewable energy sources, and Program for

development and usage of high-efficiency cogeneration, Government shall determine minimum share of electricity generated from renewable energy sources in the total electricity supply which shall be taken over by each supplier of electricity.

Evidence about compliance with the minimum contribution from renewable energy sources requirement shall be a guarantee of origin.

Moreover, energy undertakings shall implemented measures aimed at increasing a contribution of electricity generated from renewable energy sources to the total electricity generation.

A purchase guarantee for the renewable energy companies is also given by the Regulation for the wind energy plants adopted by the Government, where there is an obligation to the state to purchase all energy generated from these companies.

### 7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

Regulation of the tariff system for determining the incentive prices of electricity from renewable energy sources and high efficiency cogeneration shall regulate the manner of determining incentive price for electricity generated by plants using renewable energy sources and high efficiency cogeneration plants, which has previously acquired the status of the privileged producer.

As according the Law, status of privileged producer lasts for 12 years, therefore the proposed incentive guarantees privileged price to producers for the same period. Tariff system of purchase prices for energy is different for different types or groups of facilities, as well as for different types of renewable sources.

### **8. Do the renewable energy based power plants have priority for connection to the grid?**

An energy undertaking if generated electricity from the renewable energy resources, and if satisfied some other requirements provided by the Law may obtained the status of privileged generator.

Privileged generator shall be entitled to: a purchase price for electricity in accordance with a tariff system and a priority in delivery of total electricity generated into the transmission or the distribution system. The Law even prescribed that in the process of operating transmission and distribution system and dispatching, operator of electricity transmission and distribution system shall give preference to the privileged generators, in accordance with technical capabilities of the system.

### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

No incentive in this field is given if the material for plant construction is locally produced, notwithstanding the fact that the costs of transport would be smaller, and no other taxes could be applicable in this case, and way of payment with domestic manufacturers could be arranged in a way that enables easier paying.

### **10. What are the other incentives available to renewable energy generation companies?**

General obligation of the Ministry, by the Law, is to facilitate easier licensing procedures for renewable energy sources, and intention of the state to enable renewable energy production in Montenegro, with special attention to the surveys and further identification of the

renewable energy sources potential, which incentives would be provided through different projects recently established or initiated in cooperation with different international institutions.

## **STATISTICS**

### **11. What is the percentage of electricity generated, based on each type of renewable energy source in the total generation of electricity at country scale?**

It is estimated that the total hydro potential in Montenegro is approximately 9846 GWh/per year, and that is possible to realize 400 GWh/per year just with small hydro power plants.

In addition, according to the preliminary estimation undertaken, Montenegro shows a wind potential of 100 MW considering only the windiest areas (wind speeds above 7 m/s) and an overall potential of 400 MW taking also into account the zones with medium potentiality.

Pursuant to the researches Montenegro has one of the greatest solar energy potential in the South-Eastern Europe: It ranks above its neighbours, as the annual amount of the solar energy estimated in Podgorica, of the order of 1.600 KWh/(m<sup>2</sup>\*d) is greater than the corresponding reference values for the most of the cities from the region.

The study has shown that great potential existing even in the area of the biomass (approximately to the amount of 400 GWh), as well as of some of the other renewable energy sources that is possible to exploit.

There is no available data on the percentage of electricity generated based on each type of renewable energy sources in the total generation of electricity at country scale.

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# Poland

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

The importance of renewable energy in Poland has increased significantly during the past few years, in line with the recent European legislation and in particular due to the adoption of the Directive No. 2009/28/EC of the European Parliament and the Council of April 23, 2009 on the promotion of use of energy from renewable resources.

The Polish Energy Policy, adopted by the Council of ministers on November 10, 2009, follows the principles enshrined in the European legislation. One of its main objectives is to increase the use of renewable energy sources, including biofuels. The Polish Energy Policy furthermore presents the approach that use of renewable energy sources will be a stabilizing factor of the national energy security.

The main objectives in the field of the renewable energy sources include:

- Increase of the share of the renewable energy in the final energy consumption up to 15 % by 2020 and further increase in the following years;
- Achieving of a 10% share of biofuels in the transport fuel market by 2020 and increase of the deployment of second generation biofuels; and

- Protection of forests from excessive exploitation for the purposes of production of biomass as well as the sustainable use of agricultural areas as renewable energy sources in order to prevent competition between renewable energy and agriculture.

Actions aiming at the increased use of renewable energy sources include in particular:

- Elaboration of a path to achieve the above mentioned share of 15 %, by division into the specific kinds of energy (electric energy, heat, cooling, bio- components) as well as into specific technologies;
- Maintenance of the existing support mechanism, including the system of certificates of origin;
- Introduction of additional support mechanisms, to extend the generation of heat and cooling from renewable energy sources;
- Further release from excise tax of the energy generated by renewable sources;
- Direct support of the construction of the new renewable energy sources and power distribution grids, using respective European funds and means cumulated in the environmental protection funds, including the substitution fees; and
- Development of industries which manufacture appliances and installations for the renewable energy sector.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

According to the Polish Energy Law of April 10, 1997<sup>1</sup> (the “Energy Law”), renewable

<sup>1</sup> Journal of Laws of 2012, item 1059, uniform text.

sources of energy are those using wind power, solar power, geothermal energy, sea wave and tidal energy, river flows, biomass, energy from landfill biogas and biogas produced in the process of sewage disposal and treatment or decomposition of plant and animal remains. Thus, renewable energy is energy generated from the above listed renewable energy sources.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

The renewable energy sector together with the renewable energy support system (certificates of origin) in Poland is mainly regulated by the Energy Law as well as by subordinate legislation issued by the competent authorities pursuant to the Energy Law (please note, however, that the Polish Ministry of Economy has prepared a draft of the new law regulating the renewable energy sector in Poland, see below). Detailed rules on the support system are determined in the Ordinance of the Minister of Economy of October 18, 2012<sup>2</sup> (the “Ordinance”). The technical requirements for grid connections and the terms of operation of enterprises using renewable energy sources are regulated by the Ordinance of the Minister of Economy of May 4, 2007<sup>3</sup> (the “System Ordinance”).

Pursuant to the Energy Law, economic activity in the field of generation of energy (including generation of electricity from renewable energy sources) is subject to obtaining a concession. Concessions are granted for a definite period of no less than 10 years and no more than 50 years, except where the entrepreneur has requested that the concession be granted for a

shorter period. Energy enterprises that are granted a concession must pay an annual fee to the state budget, which is treated as a cost of their activity and is calculated according to the following formula: enterprise’s annual revenues (only those revenues connected with the activity covered by the concession) multiplied by 0.0006.

### Draft Legislation on Renewable Energy

From the end of 2011 the Ministry of Economy (the “Ministry”) has been working on a draft of a new law that relates specifically to renewable energy sector (the “RES Act”). During intraministerial and public consultations its numerous weaknesses have been identified. Since then the Ministry amended the RES Act several times, however many of its provisions are still judged by market participants as highly controversial and possibly hindering the development of renewable technologies in Poland.

One of the principal reasons for the introduction of the new legislation on renewable energy sources is to adjust the support levels according to characteristics of investments using different renewable energy sources and their capacity and, therefore, eliminate excessive support in order to relieve the state budget (it is estimated that the economies the state budget may achieve with the new system can amount even up to PLN 1 mld per year).

The initial plan of the Ministry was for the RES Act to enter into force at the beginning of January 2013. Currently, it is estimated that the RES Act would not enter in force sooner than at the beginning of 2014.

Below we present the main principles of the RES Act in its latest wording as of October 2012. However, it has to be noted that the final wording of the RES Act may be changed significantly in course of parliamentary discussions.

<sup>2</sup> Journal of Laws of 2012, item 1229.

<sup>3</sup> Journal of Laws of 2007, No. 93, item 623, as amended.

- The RES Act provides for a complex regulation of the Polish renewable energy market. To certain extent, the RES Act repeats the legal provisions on renewable energy currently included in the Energy Law. The existing support system of tradable certificates of origin is, in principle to be maintained, however, with substantial modifications;
- Mandatory purchases of energy from all renewable installations by certain energy companies (currently so-called “last resort suppliers”; under the RES Act – “obligated suppliers”) are to be maintained. Energy produced in most small and micro-installations would be purchased at minimum prices per kWh (“feed-in tariffs”) stipulated in the new legislation; the capacity thresholds under which the feed-in tariffs would apply are to be set for each type of renewable energy source separately;
- The RES Act, while maintaining the green certificates support system, is to introduce corrective coefficients to differentiate the allocation of the green certificates depending on the source of energy generation and the capacity of renewable sources installations. It is intended that the corrective coefficients be established in ordinances of the Minister of Economy for five-year periods. In determining the corrective coefficients the Minister of Economy will take into account the possibility to return on investment and operation costs with respect to a 15-year financing period. The RES Act is to ensure that renewable energy installations will be entitled to green certificates with a fixed coefficient level for the period of 15 years starting on the date the installations were commissioned for use (except for biomass co-firing installations when this period would be counted differently), however, no longer than until December 31, 2035. Furthermore, renewable energy installations will be entitled to green certificates also in the start-up period; no more, however, than for 90 days;
- Energy producers who sell energy at prices higher than 105 % of the price for the mandatory energy purchases, will not be entitled to green certificates with respect to energy for which that higher price was paid;
- The RES Act is to address the problem of excessive supply of green certificates as it is to impose an obligation on the Polish Power Exchange to monitor the transaction prices of green certificates. If prices fall below 75% of the substitute fee during two consecutive quarters of a given year, the Minister of Economy will be entitled to increase the total amount for a given year of the share of electricity resulting from the certificates of origin in the power company’s total annual sales of electricity to final customers or total consumption (for power companies which do not trade in electricity);
- The RES Act contains rules facilitating the interconnection of RES installations in cases where the interconnection requires significant expansions of the grid. However, the priority access to the grid for all renewable energy sources installations remains an open issue; it was stipulated in the first versions of the RES Act, but the most recent version of the RES Act surprisingly does not contain any provisions on priority access for renewable energy sources.

#### 4. What are the principal regulatory bodies in the renewable energy sector?

The President of the Energy Regulatory Authority (the “President of the ERA”), the central body of government administration, is the regulator of the fuel and energy sector,

including the renewable energy sector. In general, the President of the ERA regulates the activity of the energy enterprises based on the Polish Energy Law and the state energy policy, which aims to balance the interest of the energy enterprises and customers. The President of the ERA is also the concession-granting authority.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

Electric energy generated from renewable energy sources is subject to exemption from excise tax on the basis of documents confirming the cancellation of certificate of origin (i.e., a certificate confirming that energy was generated in a renewable energy source). For details pertaining to certificates of origin please see Section 6 below. Upon submission of the document confirming the cancellation of certificates of origin, the excise tax due is decreased for the following settlement periods.

In addition, the payers of agricultural tax enjoy an investment relief if expenses were born for the purchase and installation of devices for the use of natural energy sources (wind, biogas, solar power and water) for production purposes, if such expenses were not fully or partially financed from public means. The investment relief is granted after the investment's completion and consists of a decrease of the agricultural tax due for land situated in the community where the investment was undertaken in the amount of 25% of the properly documented investment expenditure. The relief for the same investment cannot be applied for a period longer than 15 years.

As regards biofuels, apart from the exemption for biocomponents intended for use in liquid fuels and liquid biofuels from the excise duty, no other tax incentives are provided in law.

### 6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

#### *Mandatory Purchase*

Pursuant to the Energy Law, the obligation to purchase electricity generated in renewable energy sources applies to the last resort suppliers. Last resort suppliers are those companies that are obligated to supply electricity within a licensed area to customers that do not exercise their power to choose an alternative (market) supplier. Last resort suppliers are obligated to purchase all the electricity that has been generated from renewable sources of energy connected to the grid and located in the territory of the last resort suppliers' operations, offered by power companies that have obtained concessions to produce electricity from renewable energy sources. If a last resort supplier has not been elected in a tender organized by the President of the ERA (or determined by way of a decision of the President of the ERA) in a given area, the purchase obligation applies to entities performing the tasks of the last resort suppliers, i.e., the companies that were detached from the vertically integrated energy company and are engaged in the sale of energy to the end customers that do not benefit from TPA ("third party access")<sup>4</sup>. There are no maximum limitations concerning the quantity of electricity to be bought.

<sup>4</sup> TPA requires owners of electrical grid infrastructure to grant access to these facilities to third parties (other than their own customers) in order to allow them to provide services for their customers, on commercial terms comparable to those that would apply in a competitive market.

The electricity is purchased at its average market sale price in the previous calendar year, announced by the President of the ERA. In 2012 that price was 201.36 PLN/MWh, in 2011 – 198.9 PLN/MWh, in 2010 – 195.32 PLN/MWh, in 2009 – 197.21 PLN/MWh, and in 2008 – 155.44 PLN/MWh.<sup>5</sup>

#### *Certificates of Origin*

Since the cost of generating electricity from a renewable energy source is usually higher than electricity market prices, the Energy Law provides for an additional support mechanism for renewable energy producers in the form of certificates of origin – also called “**green certificates**”.

The obligation to purchase green certificates applies to: (i) energy enterprises that produce or trade in electricity and sell electricity to end customers, (ii) end customers that participate in the commodity exchange, and (iii) brokerage houses (together referred to as the “Obligated Energy Companies” – “OEC”). The OEC are required either to:

- 1) acquire green certificates and present them to the President of the ERA for cancellation, or
- 2) pay a substitute fee.

Certificates of origin are issued by the President of the ERA by decision upon a motion of a renewable energy producer, submitted via the competent electricity system operator<sup>6</sup> within 14 days from receipt of such motion. A certificate of origin confirms that electricity has been produced from a renewable energy source.

The property rights arising from a certificate of origin constitute an exchangeable commodity

<sup>5</sup> Source: Energy Regulation Office – [www.ure.gov.pl](http://www.ure.gov.pl).

<sup>6</sup> The electricity system operator is a distribution system operator where the renewable energy producer is connected.

and exist from the moment the certificate of origin is first registered on the basis of the President of the ERA’s notice to the Register of Certificates of Origin (the “Register”). Those rights can be traded on the Polish Power Exchange (*Giełda Energii*) as well as through OTC (over the counter) trading.

Upon a motion of the OEC, the Polish Power Exchange is required to issue a document confirming the property rights arising out of the company’s certificates of origin and the amount of electricity those rights pertain to.

Then, upon another motion of the OEC (the holder of the property rights arising from the certificate of origin) the President of the ERA will completely or partially cancel a certificate of origin. A certificate of origin cancelled by March 31 of a given calendar year is taken into consideration in the course of verification of the compliance of the entity with the obligation to obtain certificates of origin and submit them for cancellation, applicable for the preceding calendar year.

The President of the ERA informs the Polish Power Exchange, as the entity which maintains the Register, about issued and cancelled certificates of origin.

The property rights arising out of a green certificate expire upon its cancellation by the President of the ERA. The certificate owner may submit the certificate of origin to the President of the ERA for cancellation in any year it chooses (e.g., a certificate issued in 2009 may be submitted for cancellation in 2011).

#### *Substitute fee*

The substitute fee is a form of penalty for non-compliance with the obligation to submit the required amount of green certificates. Pursuant to the Ordinance, the obligation to obtain certificates of origin and submit them for cancellation to the President of the ERA or to pay the substitute fee will be considered to have been fulfilled if, in a given year, the total

amount of the share of electricity resulting from the certificates of origin that the OEC submitted for cancellation, or from the substitute fee it paid is no less than:

12,0 % - in 2013 r.;

13,0 % - in 2014 r.;

14,0 % - in 2015 r.;

15,0 % - w 2016 r.;

16,0 % - in 2017 r.;

17,0 % - in 2018 r.;

18,0 % - in 2019 r.;

19,0 % - in 2020 r.;

20,0 % - in 2021 r.

This share should be counted in relation to: (i) total amount of electricity sales to end users – for energy enterprises that produce or trade in electricity and sell electricity to end customers; (ii) total amount of electricity purchased on a commodity exchange for own-load by means transactions executed in their own behalf – for end customers that participate in the commodity exchange; (iii) total amount of electricity purchased on the commodity exchange upon orders of end users – for brokerage houses.

According to the Energy Law, the substitute fee is calculated in accordance with the following formula:

$$O_z = O_{zj} \times (E_o - E_u),$$

where the above symbols have the following meanings:

$O_z$  – means the substitute fee expressed in PLN;

$O_{zj}$  – means the unit substitute fee amounting to PLN 240 for each MWh; this amount is subject to indexation by

the inflation rate; the President of the ERA announces the indexed substitute fee in the *Bulletin of the Energy Regulation Office* by March 31 each year;

$E_o$  – means the quantity of electricity, expressed in MWh, resulting from the obligation to obtain a green certificate and submit it for cancellation in the relevant year; and

$E_u$  – means the quantity of electricity, expressed in MWh, under the certificates of origin which the power company submitted for cancellation in the relevant year.

The unit substitute fee ( $O_{zj}$ ) amounts to **PLN 297.35** (in 2012 it amounted to PLN 286.74, in 2011 – PLN 274.92, in 2010 – PLN 267.95, and in 2009 – PLN 258.89).

The substitute fees must be paid to the National Fund for Environmental Protection and Water Management by March 31 each year.

#### *Fines*

Non-compliance with the obligations pertaining to the acquisition of the required amount of green certificates or to paying of the substitute fee by the OEC is subject to a fine imposed by the President of the ERA.

The minimum amount of the fine is calculated as follows:

$$K_o = 1.3 \times (O_z - O_{zz})$$

where:

$K_o$  – means minimum amount of fine, expressed in PLN,

$O_z$  – means substitute fee, calculated in accordance with the formula presented above,

$O_{zz}$  – means substitute fee actually paid, expressed in PLN.

Please note that since the green certificates related obligations can be fulfilled by the OEC either by purchasing the required amount of green certificates or by payment of the substitute fee, only non-fulfillment of neither of those alternatives constitutes grounds for imposing a fine by the President of the ERA.

The same fine will be imposed by the President of the ERA on the last resort suppliers (or entities performing the tasks of last resort suppliers) for non-compliance with the mandatory purchase obligation referred to above.

### **7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

The Polish legislation does not guarantee the minimum prices for renewable energy. Such prices are determined by the market.

As regards green certificates, in practice, the amount of the substitute fee has the decisive impact on the price of green certificates (such amount is the maximum price a sensible entrepreneur would pay for the green certificates).

However, recently Poland is facing a dramatic decrease in prices of green certificates traded on the Power Exchange (in Q1 2013 the average price of green certificates sold on the Power Exchange decreased below PLN 130). This is probably due to a practice developed by energy enterprises in response to the excessive supply of green certificates and, in general, legal uncertainty regarding the future shape of the RES regime in Poland. The practice consists in issuing of a substitute fee rather than presenting green certificates for cancellation with the objective to store “cheap” green certificates and present them for cancellation later (when the price will be higher).

### **8. Do the renewable energy based power plants have priority for connection to the grid?**

The energy company engaged in transmission or distribution of energy is obligated to execute an agreement on connecting the interested entities to the grid if the interested entity fulfills the interconnection conditions provided that the interconnection is technically and economically feasible. If a given energy company refuses to execute such agreement, it is obligated to inform the President of the ERA of the refusal in writing, giving grounds for such refusal.

Although the renewable energy power plants do not enjoy any preferential treatment in terms of connection to the grid, they enjoy priority in transmission and distribution of electric energy. The electricity system operator is obligated to grant priority in transmission and distribution of electric energy generated in renewable energy sources.

### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

The manufacture of equipment used in the construction of renewable energy based power plants is supported within the framework of the EU grants awarded under the Operational Program Infrastructure and Environment-Action No. 10.3- development of industry for the renewable energy sources. This is one of the actions aiming at the financing of projects comprising the construction and development of facilities manufacturing equipment for the generation of energy from renewable energy sources. In addition, there is a possibility to apply for EU grants from 16 regional operational programs.

Investors planning to implement renewable energy related projects can also apply for

financial means from national funds aiming at the environmental protection. In particular, the National Fund for Environmental Protection and Water Management offers financial means for development of the renewable energy related projects.

#### **10. What are the other incentives available to renewable energy generation companies?**

The Polish law provides for incentives in particular for smaller renewable energy based power plants. The energy enterprises engaged in generation of electricity in renewable energy based power plants of less than 5 MW capacity are released from certain fees related to the green certificates and concession fees. Furthermore, such power plants enjoy reduced fees for connecting to the grid in the amount of 50% of the connection fee (the connection fee is calculated on the basis of the real expenditure borne for the realization of the grid connection).

Furthermore, a specific support scheme is established in the Act on Biofuels<sup>7</sup> and it regards the promotion of biofuels. It is called the National Indicative Target. An entity implementing the National Indicative Target is

obligated to ensure that during each year a specified minimum share of biocomponents and other renewable fuels in the overall amount of liquid fuels and liquid biofuels sold, traded in another form or used by it for its own purposes has been met. The obligation to fulfill the National Indicative Target requirement applies to the entrepreneurs conducting a business activity in the scope of producing, import or intracommunity purchase of liquid fuels or liquid biofuels who/which sells or disposes it in other way on the territory of Republic of Poland or uses for its own purposes. The National Indicative Target for 2013 is 7.10%.

### STATISTICS

#### **11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

The table below presents the generation of electricity (MWh) by each type of renewable energy sources and the certificates of origin in Poland in 2005 - 2011 (status as of December 10, 2012).<sup>8</sup>

<sup>7</sup> Journal of Laws of 2006, No. 169, item 1199, as amended.

<sup>8</sup> Source- Energy Regulatory Authority, also available at the website of the Polish Wind Energy Association "[www.psew.pl](http://www.psew.pl)".

Type of renewable energy source	2005	2006	2007	2008	2009	2010	2011
	Energy generated [MWh]						
Biogas based power plants	104 465	116 692	161 768	220 883	295 311	315 543	430 537
Solar power plants	0	0	0	0	0	0	178
Biomass based power plants	467 976	503 846	545 765	560 968	601 088	664 497	1 055 151
Wind based power plants	135 292	257 037	472 116	805 939	1 035 019	1 484 929	3 126 432
Water based power plants	2 175 559	2 029 636	2 252 659	2 152 822	2 375 778	2 633 162	2 316 833
Co-combustion	877 009	1 314 337	1 797 217	2 751 954	4 286 488	4 174 499	5 989 524
Total	<b>3 760 301</b>	<b>4 221 548</b>	<b>5 229 526</b>	<b>6 268 346</b>	<b>8 593 786</b>	<b>9 272 630</b>	<b>12 918 656</b>
	(5 150 certificates of origin)	(4 223 certificates of origin)	(5 739 certificates of origin)	(6931 certificates of origin)	(8533 certificates of origin)	(9016 certificates of origin)	No data

In 2011 the national consumption of energy amounted to 157,910 GWh (2% higher than it was in 2010), whereas the total volume of energy generated in Poland was 163,153 GWh (ca. 4.4% higher than in 2010). Electricity generated from renewable energy sources amounted to: (i) 9.05 % of the aggregate amounts of energy sold to final consumers, counting by numbers of green certificates issued; but only (ii) 4.77 % of the aggregate amounts of energy sold to final consumers, counting by numbers of green

certificates submitted for cancellation.<sup>9</sup> The first accessible data for 2012 indicates that the national consumption of energy decreased in 2012 for the first time since 2009 and it amounts to approximately 157 GWh.<sup>10</sup> At the same time, the share of energy generated in renewable energy sources in the total volume of energy generated in Poland in 2012 rose by approximately 15 % in comparison with 2011 rates.<sup>11</sup>

<sup>9</sup> Source: Energy Regulatory Authority.

<sup>10</sup> Source: [www.cire.pl](http://www.cire.pl)

<sup>11</sup> Source: [www.reo.pl](http://www.reo.pl)

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# Romania

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

In line with the European trend, on the Romanian market, renewable energy is gaining credibility among private investors as having the potential to become the next big industry. Romania has important competitive advantages on the European renewable energy market: it has a balanced mix of available energy and a significant potential of renewable sources, as well as relatively sophisticated energy markets for both electricity and green certificates which are operational. The Directive 2009/28/CE on the Promotion of Electricity Production from Renewable Energy establishes a specific target of a 24% share of renewable energy sources in the gross final energy consumption in Romania by 2020, whereas the overall binding target in the EU is set to 20%.

Despite the significant efforts needed, Romanian authorities declared that Romania may reach the overall target under the Renewable Energy Directive by relying exclusively on domestic production. To achieve the 24% mandatory target for 2020, Romania has to develop 50% of the total potential of its renewable energy sources which will imply significant investments in renewable energy projects. (Source: Romania's National Renewable Energy Action Plan).

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

Romanian legislation defines renewable energy as the energy produced from renewable non-fossil energy sources, such as: wind, solar and geo-thermal, wave, tidal, hydro-power, biomass, landfill gas, sewage, treatment plant gas and biogases.

The promotion system established in Romania applies to the electricity produced from: hydraulic power used in electrical groups of stations having an installed power of maximum 10 MW; wind energy; solar energy; geo-thermal energy; biomass; bioliquids; biogas; gas resulting from waste processing; mud fermentation gas of waste water purification installations.

## REGULATION

The implementation of the EU directives in the field of the renewable energy into the national legislation has led to the establishment in 2003 of the initial legal framework which formed the basis for the support mechanism of green certificates combined with mandatory quotas, thereby encouraging investments in energy produced from renewable sources. As of 2006, the legislation framework allowing the operation of the green certificates market was also adopted.

The enactment of Law No. 220 from 27 October 2008 on Establishing a System for the Promotion of electricity produced from Renewable Energy Sources ("Law No. 220/2008") was the turning point in the Romanian legislative framework. Law No. 220/2008 has been amended several times before its actual application, in October 2011. The last amendment, brought by the

Government Emergency Ordinance No. 88/2011 (“GEO No. 88/2011”) is the result of Romania’s negotiations with the European Commission in view of the authorization of the Romanian promotion system, and purport mainly to avoid overcompensation of energy producers from renewable sources. According to Romanian law requirements, GEO No. 88/2011 has been recently approved with some amendments through Law No. 134/2012, published in the Official Gazette No. 505 dated 23 July 2012 (“New E-RES Law”). In accordance with the relevant EU and Romanian law on state aid, the New E-RES Law is subject to the approval of the European Commission. The proceedings for the notification of the New E-RES Law to the European Commission are currently ongoing.

Following the adoption of GEO No. 88/2011, the main secondary legislation for the implementation of Law No. 220/2008 has been issued, or as the case may be, prepared by the Romanian Energy Regulatory Authority (“ANRE”), such as: the Regulation regarding the accreditation of E-RES producers approved by ANRE Order No. 42/2011, the Regulation regarding the issuance of green certificates approved by ANRE Order No. 43/2011, the Regulation regarding the green certificates market approved by ANRE Order No. 44/2011, the Methodology for determining the annual quotas approved by ANRE Order No. 45/2011, the Regulation on the issuance and follow-up of the origin guarantees for E-RES approved by the Government Decision No. 1232/2011, and the Methodology regarding the monitoring of the green certificates E-RES promotion system approved by ANRE Order No. 6/2012 (“Monitoring Methodology”).

Therefore, at the end of 2011, the Romanian system for promotion of E-RES became applicable.

The promotion system combines the mandatory quota system with the trading of green certificates. On the basis of an accreditation decision issued by ANRE and starting on the calendar month when the accreditation decision has been issued, E-RES producers benefit from green certificates for the electricity produced and delivered. For example, according to the currently applicable legislation, for each MWh produced and delivered to the electricity grid, wind energy producers will receive 2 green certificates until 2017 and 1 green certificate as of 2018, and solar energy producers will receive 6 green certificates. Correlatively, electricity suppliers are compelled to purchase a certain number of green certificates depending on the electricity that they supply annually to the consumers. In case the suppliers do not reach the annual mandatory quota, they are compelled to pay a penalty.

The promotion system shall apply for a period of 15 years, for the electricity produced in new power plants, and shall apply to E-RES producers, including the electricity produced during the testing period, based on the accreditation decision issued by ANRE, if the operation is started until the end of 2016.

#### **4. What are the principal regulatory bodies in the renewable energy sector?**

The main regulator in the power field, including renewable energy, is the Romanian Energy Regulatory Authority (ANRE), organized as an independent public legal body of national interest under the Vice-Prime Minister’s coordination.

ANRE’s objective is to create and implement a proper regulatory system for electricity and gas markets in terms of efficiency, competition, transparency and consumer protection. ANRE is entirely financed from the state budget, through the budget of the Secretariat General of the Government, and the revenues obtained

are fully paid to the state budget. The ANRE revenues are obtained from licenses, authorizations and other regulatory activities levied upon the regulated companies and through funds provided by international organizations, as per the legal provisions applicable to public finances.

The Romanian Ministry of Economy, Trade and Business Environment has also responsibilities in defining Romania's energy policy.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

Although several tax incentives were provided in the past by the Romanian legislation to companies investing in E-RES (e.g. the guarantee of maximum 50% of the value of medium and long-term loans; tax and fee exemptions or reductions for reinvested profits for a period of three years from an investment inception), the respective incentives have been repealed in July 2010.

### 6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

Through Law No. 220/2008, Romania has chosen to apply the mandatory quota system, combined with the trading of green certificates which has the advantage of allowing a fast growth of renewable energy, despite higher costs.

Electricity suppliers are compelled to purchase a certain number of green certificates relative to the amount of electricity annually supplied by them to the consumers.

For each year until 2020, the mandatory quotas of E-RES that the suppliers have to comply with are set up by Law No. 220/2008 as follows: for 2012 – 12%; for 2013 – 14%; for 2014 – 15%; for 2015 – 16%; for 2016 – 17%; for 2017 – 18%; for 2018 – 19%; for 2019 – 19.5%; and for 2020 – 20%.

As a general rule Law No. 220/2008 provides that in case the suppliers will not reach the annual mandatory quota, they are compelled to pay to the Environmental Fund Administration a penalty for each green certificate they were unable to buy. Currently, according to ANRE Order No. 10/2013 updating the thresholds for trading green certificates and the equivalent value of an unpurchased green certificate, applicable for 2013, the amount of the penalty to be paid by suppliers in case of failure to comply with the annual mandatory quota for 2013 is RON528.17, respectively €117.646.

The New E-RES Law provides that the suppliers have the obligation to acquire each quarter a number of green certificates equal to the mandatory annual quota of green certificates, established for the year in question, multiplied with the quantity of electricity, expressed in MWh, supplied each quarter to end consumers. The suppliers have the obligation to report, each quarter, compliance with the mandatory quotas of acquisition of green certificates determined by ANRE.

Also, the New E-RES Law provides that within maximum 45 days after the end of each trimester, the suppliers shall pay, for each green certificate that they were unable to acquire, the maximum price of the green certificates as approved by ANRE for the year in question. The payments shall be done in a guarantee fund for the functioning of the green certificates market, created and managed

by the commercial operator of the electricity market, fund which will be used for the acquisition from E-RES producers of the unsold green certificates. The green certificates for which payment has been made to the guarantee fund shall be considered in relation to the annual quota of the suppliers in question. The guarantee fund, through the commercial operator of the electricity market, buys pro-rata, according to the electricity production, from all E-RES producers that request it, unsold green certificates, at a price at least equal to the minimum price for green certificates established by law. The green certificates sold to the guarantee fund are annulled. The details regarding the use of the above mentioned fund shall be included in a regulation to be issued by ANRE within 90 days as of the entry into force of the new law.

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

E-RES producers which obtain green certificates based on the quantity of E-RES delivered to the grid are able to sell them in a competitive system, and obtain extra income in addition to the income generated by the sale of electricity.

According to the New Energy and Gas Law No. 123/2012 from 10 July 2012, published in the Official Gazette No. 485 dated 16 July 2012, energy producers have the obligation to offer publicly and non-discriminating on the competitive market all energy available. Energy transactions are made on the competitive market in a transparent, public, centralized and non-discriminating manner. On the competitive market, transactions are wholesale and retail, according to the ANRE regulations, and the prices are determined according to the request-offer method, as a result of a competitive mechanism.

Green certificates are traded separately on a green certificates market. The trading price of green certificates has both a floor and a ceiling established by law, to protect both investors (minimum price guarantee) and consumers (maximum price guarantee). According to Law No. 220/2008, for the period 2008 - 2025, the trading value of green certificates shall be limited between: a minimum trading value of €27/certificate and a maximum trading value of €55/certificate, and starting with 2011 the values mentioned above shall be annually indexed by ANRE according to the average annual inflation rate for the previous year, determined at the European Union, Eurozone level, officially communicated by EUROSTAT. Starting with 2025 the green certificates trading value shall be the one established on the green certificates market which cannot be less than the minimum trading value applicable in 2025, annually indexed. For 2013, the minimum trading value has been increased from €27 up to €28.876 and the maximum trading value has been increased from €55 up to €58.823.

Pursuant to data published by OPCOM, as market operator, the trading value on the centralized market of green certificates was at the maximum level of €55 per certificate in 2009, 2010, 2011 and 2102.

For each MWh delivered to the electricity grid, E-RES producers receive a certain number of green certificates, depending on the source used.

In furtherance, in order to reflect the requirements of the European Commission expressed during the negotiations for the authorisation of the E-RES promotion system, Law No. 220/2008 provides for a mechanism purporting to avoid the overall overcompensation of one or more technologies. In this respect, ANRE monitors the producers, beneficiaries of the promotion system, and prepares annual reports that are

available to the public on its website. If, based on such reports, it results that the specific parameters for each technology are different from the ones taken into consideration for the calculation made upon the authorisation of the promotion system, which may lead to overcompensation, ANRE proposes measures for reducing the number of green certificates currently provided by Law No. 220/2008.

Overcompensation is defined as the situation where, taking into consideration the specific medium technical and economical indicators annually realised for each technology, from the cost-benefit analysis made for the set of production capacities using the same technology, it results an internal rate of return with 10% higher than the value taken into consideration for the technology in question upon the authorization of the promotion system. Cost-benefit analysis means the economic analysis performed in view of determining the profitability of investments made in the production of electricity from renewable sources, carried out by using the updating technique applied to the investment costs, the exploitation costs and the revenues resulting from the operating life of the projects, whilst the internal rate of return is the indicator resulting from a cost-benefit analysis expressing the profitability of an investment project, namely the updating rate for which the updated revenues are equal to the updated expenses.

The Monitoring Methodology provides additional details on the overcompensation issue and states that, if, based on the performed analysis, it results that the system leads to overcompensation for one or more categories of technology, ANRE re-evaluates the number of green certificates granted to each category of technology for producing energy from renewable sources, in order for the internal rate of return for each category of technology, at aggregate level, to be equal to the internal rate of return reference value for

the relevant technology. The internal rate of return reference values are defined as the values of the internal rates of return taken into consideration for each technology, upon the authorisation of the promotion system, comprised in the Authorisation Decision issued by the European Commission C (2011) 4.938 dated 13 July 2011. For example, the internal rates of return are 10.9% for new wind power plants and 11.6% for solar.

The results of the overcompensation analysis are included in an annual report to be published on the website of ANRE each December, during the application of the promotion system. Furthermore, if the case, ANRE prepares a draft Government Decision for the approval of the reduced number of green certificates, applicable to E-RES capacities that begin production of electricity after January 1st of the year following the issuance of the relevant decision, and valid during the application of the promotion system according to the law. Such draft decision is transmitted for approval to the Government, as provided by the law.

According to the Monitoring Methodology, the first analysis on overcompensation shall be made in the first semester of 2012 and shall have an effect on the capacities that begin production after 1 January 2013.

However, the New E-RES Law brought additional clarifications on the overcompensation matter and provides that the amendment of the support scheme currently in place will only apply starting with 1 January 2015, except for solar energy producers for which the adjustment may be made starting with 1 January 2014.

Related to the overcompensation analysis, ANRE published on its web site the 2012 Report on the monitoring of the E-RES promotion system. According to such report, in order to avoid overcompensation, it is

necessary to reduce the number of green certificates granted to certain categories of E-RES producers, as follows: (i) for new wind installation, the number of green certificates shall be reduced from 2 green certificates / MWh to 1.5 green certificates / MWh; (ii) for second hand wind installations, the number of green certificates shall be reduced from 2 green certificates / MWh to 1.3 green certificates / MWh; (iii) for hydro power plants with installed power  $\leq 10$  MW, the number of green certificates shall be reduced from 3 green certificates / MWh to 2.3 green certificates / MWh; and (iv) for solar, the number of green certificates shall be reduced from 6 green certificates / MWh to 3 green certificates / MWh. In order to become applicable to E-RES producers, the above mentioned reduced number of green certificates, as resulting from ANRE's Report, should be approved through Government Decision.

In line with the requirements of the European Commission and of the Romanian Ministry of Economy, Trade and the Business Environment and of the Romanian Ministry of Environment and Forests, Law No. 220/2008, as amended in 2011, provides that E-RES producers who have benefited from other forms of state aid will receive a reduced number of green certificates. The reduction shall be made by decreasing the return reference value per MW with the value of the state aid received per MW and keeping the value of the internal return rates taking into account in the calculations submitted to the European Commission during the process of authorisation of the promotion system.

The New E-RES Law introduced an exception to the above and provides that in view of a transparent and non-discriminatory mechanism, the power plants commissioned before 1 January 2013, which until the moment of the authorisation of the support scheme by the European Commission benefited from or have been granted state aid, shall receive the

number of green certificates provided by Law No. 200/2008.

#### **8. Do the renewable energy based power plants have priority for connection to the grid?**

E-RES producers, for the energy that benefits from the promotion system provided by Law No. 220/2008, contracted and sold on the energy market, have guaranteed access to the electric transportation and distribution grid. The grid operators shall ensure the transmission and priority dispatch of E-RES for all E-RES producers, irrespective of their capacity, based on transparent and non-discriminating criteria, having the possibility to modify the relevant notifications during an operation day, according to the ANRE regulations, so that the limitation or interruption of E-RES production is made only in exceptional situations, if such action is indispensable for the maintaining of the stability and safety of the National Energetic System.

Furthermore, the New E-RES Law provides that E-RES has priority access to the transportation and distribution grid as long as the safety of the National Electro-energetic System is not affected.

#### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

The Romanian legislation does not provide specific incentives for domestic manufacturing of equipment or materials used in the construction of renewable energy based power plants like those available for the production of E-RES.

However, the Romanian market benefits from various incentives that are aimed at fostering investments (which are continually adapted to

EC requirements) among which investments in the renewable energy sector.

Investment incentives may be granted to investments through State aid measures initiated on the basis of the general framework provided in GEO No. 85/2008. The Romanian Centre for Promoting Trade and Foreign Investments acts as the contact point in relations between investors and public authorities, providing technical assistance and guidance to the investors, upon request, about the available support measures.

Pursuant to GEO No. 85/2008 on stimulating investments, support to investments is granted through various incentives falling under the State aid regime, including non-refundable financial allocations to purchase tangible and intangible assets, allocations for newly created jobs, interest bonuses or premiums granted upon contracting credits and other facilities provided by applicable legislation.

Such incentives may be granted through State aid support schemes or through ad hoc individual State aid offered by State aid grantors (including various authorities and institutions at all levels of government, public institutions involved in the privatization process, and other State-controlled bodies or enterprises).

In the energy sector, such incentives may be granted for the generation and supply of electricity and heat, as well as for the production of equipment that increases energy efficiency and utilizes energy produced from renewable sources.

An investment project cannot cumulate financing from non-refundable financial allocations from the EU or other grantors with State aid measures adopted further to the implementation of the GEO No. 85/2008.

## **10. What are the other incentives available to renewable energy generation companies?**

Following Romania's accession to the European Union in 2007, Romanian investors may benefit from EU financial support under the Structural Funds and Cohesion Funds, as well as Community Initiatives and Community Programs.

For 2007 - 2013, investors in Romania may receive financial support from several EU funds, including: (i) the European Regional Development Fund; (ii) the European Social Fund; (iii) the European Cohesion Fund; and two Complementary Actions, namely: (a) the European Fund for Agriculture and Rural Development; and (b) the European Fund for Fishing.

The entire Romanian territory is eligible for accessing financing from the above mentioned EU funds. The access to EU funds is regulated in the EU legislation, comprising general and certain specific regulations, as well as guidelines setting forth the rules in programming, managing, controlling and evaluating each initiative eligible under each EU fund. In addition to the EU legislation, the Romanian Government has enacted provisions for the management of the structural instruments.

The financing focuses mainly on small and medium-sized enterprises, however, large companies are also eligible in case they comply with the requirements of the specific financing instrument. The eligible activities for receiving financing from EU funds include acquisition of fixed assets (buildings, equipment) or of intangible assets (patents, trademarks and know-how); research and development; standardization and certification of companies.

In Romania there are six Sectoral Operational Programmes (SOPs) (Competitiveness; Development of Human Resources; Environment; Transport; Development of Administrative Capacity; and Technical Assistance) and one Regional Operational Program, through which structural funds are generally absorbed.

In general, for the production of electricity from renewable sources a Romanian investor may apply for structural funds from SOP Increase of Economic Competitiveness ("IEC"), Priority Axis 4 – Increasing energy efficiency and security of supply, in the context of combating climate change, Key Area of Intervention 4.2 – Valorisation of renewable energy sources (RES) for producing green energy, Operation: Support of investments in the modernisation and realisation of new electricity and thermal energy production capacities through valorisation of renewable energy sources.

In order to access such EU funds, the investor should comply with the specific requirements for the domain in question.

Such EU funds are not accessible to individuals, non-governmental organizations (NGOs) or to companies' associations. The energy produced should be supplied in the transportation and distribution network to the end users or should be used by the economic agent, beneficiary of the fund.

SOP IEC is managed by the Management Authority for SOP IEC within the Ministry of Economy, Trade and Business Environment, and the implementation of the Priority Axis 4 shall be made by the Intermediary Organism for Energy functioning within the General Department for Energy, Oil and Gas of the Ministry of Economy, Trade and Business Environment.

As a general rule, the beneficiary has a maximum of three years to spend the funds, or otherwise risk automatic decommissioning of the financing. The system of financial support is based on the reimbursement of expenses incurred (no advance payments).

Annually specific amounts are allocated for each operation programme and priority axis. For example, for 2010, for SOP IEC financing wind farm projects there have been allocated RON420 million (representing approximately €100 million). According to the information currently available, there are no specific activities related to SOP IEC financing wind farm projects scheduled for 2013 (Source: web site of the Management Authority for SOP IEC).

## STATISTICS

### 11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?

The expectations and plans related to the extensive use of renewable energy sources in Romania consistently gain an increasing share in the total electricity generated, shaping up the Romanian renewable energy market in a more concrete format. Encouraging enough at this stage are the estimations of the country's potential with respect to the renewable energy sources, specifically: 1,200 GWh solar annual potential, 23,000 GWh wind annual potential and 40,000 GWh hydro annual potential. (Source: Romania's National Renewable Energy Action Plan). An important point to stress is that these figures are considered to represent a theoretical potential, given the technological, economical and environmental limitations and restrictions.

Latest available official figures indicate that in 2012 the share of renewable energy sources in the total gross internal electricity consumption was of approximately 24.9% out of which 20.5% hydro and 4.4% wind (Source: web site of Romania's National Institute for Statistics).

In the near future, these figures are expected to register relevant changes in terms of wind energy as Transelectrica announced that connection contracts have been concluded for new wind power plants having capacities of 15,759.1 MW and technical connection approvals have been granted for another 2,093.52 MW. (Source: Transelectrica web-site).

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# Russia

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

As Russia has abundant reserves of traditional energy resources, with the exception of hydroelectric power, renewable sources of energy in Russia have historically played a relatively small role in the country's fuel mix. However, the outlook is slowly beginning to change, as a number of policy initiatives have been undertaken to develop wind energy, hydropower, biofuels, geothermal power and solar energy.

In 2009 the Russian Government approved a set of Guidelines for State Policies in Increasing the Effectiveness of Use of Renewable Energy Sources for the period until 2020.<sup>1</sup> The Guidelines note that renewable sources of energy (save for large-scale hydroelectric power generation) currently provide only 1% of the total volume of electricity generated in Russia and state that this proportion should be increased. Under the Guidelines, it is planned that Russia will achieve the following targets for electricity generation based on renewable sources: in 2015 – 2.5%, and in 2020 – 4.5%. Recently, the Russian Government approved amendments to the Guidelines to guarantee government financial support in the amount of RUB 70 bln. (including in the form of subsidies) to encourage the development of

renewable energy in Russia.<sup>2</sup> In addition, the Russian Government's Energy Strategy for the period up to 2030<sup>3</sup> (adopted in 2009) also addresses the development of renewable energy sources and energy-saving technologies.

In December 2010, the International Finance Corporation (IFC) officially launched its five-year Russia Renewable Energy Program, which seeks to create a platform for promoting the development of renewable energy, stimulating investment and supporting a sustainable renewable energy market in Russia through assistance in the establishment of a favorable regulatory regime, the development of national potential and expanding access to financing.<sup>4</sup>

#### Hydropower potential

Hydropower is one of Russia's greatest energy resources. Nine per cent. of the world's hydropower resources are located on Russian territory, mostly in Central and Eastern Siberia and in the Far East. The North Caucasus and western Urals are also understood to have considerable hydropower potential.<sup>5</sup>

Russia currently has 102 hydro-electric plants in operation with a capacity of over 100 MW. Russia is the world's fifth largest producer of hydropower, with a total installed capacity of hydroelectric units of about 46 000 MW. In 2011 hydroelectric plants accounted for 15.2% of Russia's total electric power production.<sup>6</sup>

In June 2012 Rushydro, the state-controlled hydropower generator, approved an investment program for the period 2013-2016

<sup>1</sup> Government Decree No. 1-r, dated 8 January 2009

<sup>2</sup> Government Decree No. 200-r, dated 16 February 2013

<sup>3</sup> Government Decree No. 1715-r, dated 13 November 2009

<sup>4</sup> IFC official press release, dated 9 December 2010

<sup>5</sup> [minenergo.gov.ru/activity/powerindustry/powersector/structure/manufacture\\_principal\\_views/](http://minenergo.gov.ru/activity/powerindustry/powersector/structure/manufacture_principal_views/)

<sup>6</sup> Ibid

in an amount of RUB 382 billion. Rushydro is planning to complete a number of projects within the framework of this program, including the construction of the Boguchanskaya, Ust-Srednekanskaya, Zagorskaya, Bizhne-Byreiskaya and Gotsatninskaya hydro-electric plants.

### Wind power potential

Russia has extensive wind resources, in particular along the Pacific and Arctic coasts and in the southern steppes, although its total installed wind power capacity is not significant. According to a recently released report of the Russian Association of the Wind Power Industry<sup>7</sup> the total capacity of wind projects at different stages of development (including feasibility) amounts to 3,000 MW, and total installed capacity for all announced projects amounts to 10,000 MW. Most of the projects are located in the south and north-western parts of Russia.<sup>8</sup> Currently reported wind power projects in Russia include, among others, the construction of a 50 MW wind farm in the Kurgan region in the South Urals, the planned construction of a 300 MW wind farm in the Leningrad region and a 150 MW wind farm in the Orenburg region, and planned investment by Siemens in the construction of a number of wind power plants, in particular in the south of Russia, including in the Krasnodar, Volgograd and Orenburg regions.<sup>9</sup> In addition, suitable sites have recently been identified for the country's largest planned wind facility near the city of Yeisk (Krasnodar region), on the shore of the Sea of Azov. In June 2012 it was also announced that a wind farm in Kaliningrad will be upgraded to increase its capacity to 20 MW.

<sup>7</sup> <http://rawi.ru/en/main.php?lang=EN>;

<sup>8</sup> <http://www.gwec.net/a-step-forward-renewables-development-russia/>

<sup>9</sup> [http://www.bellona.ru/articles\\_ru/articles\\_2012/1340181134.77](http://www.bellona.ru/articles_ru/articles_2012/1340181134.77)

### Biofuels potential

Russia has approximately 24% of the world's forests located on its territory. Forests cover approximately 45% of the entire landmass of Russia.<sup>10</sup> However, biofuels have an insignificant share in the overall energy production matrix of Russia, estimated at 1.2%, with biomass accounting for only 0.5%.<sup>11</sup> The potential of forest biomass has been estimated at 373.6 million tonnes of equivalent fuel.<sup>12</sup> Current biomass power plants include approximately 90 MW of generating capacity fuelled from refuse and approximately another 600 MW from burning peat.<sup>13</sup> It has been reported that the Ministry of Energy proposes to prioritize the use of bio resources for electric power generation.<sup>14</sup> In April 2012, the Government approved the Complex Program for the Development of Biotechnologies for the period until 2020<sup>15</sup> which addresses the establishment of the technological and technical basis for the development of bioenergy and support for regional projects in the sphere of production of energy and heat from biofuel. The bioenergy measures envisaged by the Program are to be implemented in the framework of the national program "On Energy Efficiency and Energy Development", which is being

<sup>10</sup> <http://lesa-rossii.ru/>

<sup>11</sup> Global Agriculture Information network Report: Russian Biofuels Sector Update, June 2012

<sup>12</sup> Article: *The use of renewable energy sources in RF may begin in April* published by Itar-Tass, 26 February 2010

<sup>13</sup> EBRD Renewable development initiative: Russia (country profile, 2009)

<sup>14</sup> Article: *The use of renewable energy sources in RF may begin in April* published by Itar-Tass, 26 February 2010

<sup>15</sup> VP-P8-2322.Complex Pogram for the Development of Biotechnologies in the Russian Federation for the period until 2020 approved by the Russian Government on 24 April 2012

developed by the Ministry of Energy to support biofuel production in Russia.<sup>16</sup>

The use of biomass and waste for heat generation is considered to be economically viable in a number of Russian regions, and a number of pilot research projects have been undertaken. Such projects are mostly supported by regional governments and financed by foreign investors. In particular, the Federal Forestry Agency has developed a list of priority projects for biofuel production in Russia. The total value of investments in the forestry sector for biofuel production for the period of 2009-2016 is reported to be RUB 25.8 billion.<sup>17</sup> Some of these projects are already in operation, including pellet production facilities in the Tver Region with a capacity of 60,000 tonnes/year, facilities in the Krasnoyarsk Region with a capacity of 40,000 tonnes/year and facilities in the Omsk region with a capacity of 20,000 tonnes/year, all operating since 2010.<sup>18</sup> A number of pellet production facilities are scheduled to be built in 2013, including in the Kaluga and Sverdlovsk regions with total capacity of 60,000 tonnes/year.<sup>19</sup>

There are also a number of projects that are being implemented as investment projects within the framework of national climate change policy. For example, a RUB 600 billion project to replace coal with biomass (wood

residue) is being implemented at Onega in the northern Arkhangelsk region.<sup>20</sup>

Russia has one biogas station, in the Kaluga region, that produces biogas from agricultural waste. A number of agreements have been signed recently for the construction of an additional 50 bioenergy stations in Russia using agricultural waste, including in the Belgorod, Voronezh and Rostov regions. The planned energy capacity of these stations varies from 350 KW to 10 MW, with total capacity equaling 120 MW.<sup>21</sup>

#### Geothermal power potential

Geothermal energy is used in Russia both for heat supply and for electricity generation. Russia's geothermal resources are located primarily in Kamchatka, the Kuril Islands, the Northern Caucasus and in the Kaliningrad region and have an estimated combined potential of up to 2000 MW.<sup>22</sup> Currently there is understood to be somewhere in the range of 92-129 MW of geothermal power generation capacity in operation.<sup>23</sup> The approved geothermal roadmap for the period up to 2020 provides for the construction of geothermal power and heat plants with 336 MW (power) and 552 MW (heat) of installed capacity, respectively.<sup>24</sup> In 2011, a Russian-Icelandic inter-governmental agreement on cooperation in geothermal energy development was signed,

<sup>16</sup> Clause 4 of VP-P8-2322, Complex Program for the Development of Biotechnologies in the Russian Federation for the period until 2020, approved by the Russian Government on 24 April 2012

<sup>17</sup> Article: *20 priority projects in the forestry sector for biofuel production in Russia* published by IA Inforbio, May 2011

<sup>18</sup> Ibid

<sup>19</sup> Global Agriculture Information network Report: Russian Biofuels Sector Update, June 2012

<sup>20</sup> Decree of the Ministry of Economic Development No. 709 approving the list of projects implemented in accordance with article 6 of the Kyoto Protocol, dated 30 December 2010

<sup>21</sup> Global Agriculture Information network Report: Russian Biofuels Sector Update, June 2012

<sup>22</sup> [http://www.geo-energy.org/pdf/reports/GEA\\_International\\_Market\\_Report\\_Final\\_May\\_2010.pdf](http://www.geo-energy.org/pdf/reports/GEA_International_Market_Report_Final_May_2010.pdf)

<sup>23</sup> EBRD Renewable development initiative: Russia (country profile, 2009)

<sup>24</sup> Report on Geothermal Energy Projects in Russia published in the Bulletin of Russian Academy of Physical Science, No. 1 2009

under which the parties agreed to design and build geothermal energy-generating facilities in Russia. In June 2011, Rushydro signed a cooperation agreement with Reykjavík Geothermal to build geothermal power plants in Russia (primarily in Kamchatka), with total installed capacity of up to 100 MW.<sup>25</sup>

### Solar energy potential

Russia's solar energy potential is greatest in the South-West of the country (the North Caucasus, and the Black and Caspian Sea regions) and the southern parts of Siberia and the Far East. The country is reported to have a total theoretical potential of 2,213 TWh/year, and to be planning to establish an overall solar capacity of 150 MW by 2020.<sup>26</sup> In the last few years Russia has been showing a significant interest in competing on the international market for producing solar equipment in order to boost its high-tech industry.

Currently, Russia has one full-scale solar power plant in operation, which opened in 2010 in the Belgorod region, having a capacity of 133.4 kWh/year.<sup>27</sup> It is also planned that a 1.2 GW solar power plant will be put into operation in the Omsk region in Western Siberia by 2012. In 2010 it was reported that LLC Hevel, a joint venture between the Russian high-tech companies Renova and Rosnano, had announced a plan to build a 12.3 MW solar power station in Kislovodsk.<sup>28</sup> In June 2011, the Government of the Republic of Dagestan and LLC Hevel Solar signed an agreement for, among other things, the construction of a 10 MW solar power plant in

the Republic.<sup>29</sup> In addition, in November 2012, the Ministry of Economic Development, Industrial Policy and Trade of the Orenburg region and Avelar Solar Technology, a subsidiary of the Swiss Avelar Energy Group signed an investment agreement to build solar power plants with a capacity of no less than 25 MW.<sup>30</sup> In January 2013 it was reported that Fortum plans to build a solar power plant in Chelyabinsk with a capacity of 100 MW.<sup>31</sup>

## **2. What is the definition and coverage of renewable energy under the relevant legislation?**

The definition of renewable energy sources for regulatory purposes is to be found in the principal law governing the Russian power sector, Federal Law of the Russian Federation “On Electric Power Industry”, dated 26 March 2003 No. 35-FZ (the “Electricity Law”)<sup>32</sup>. Renewable energy sources so defined include:

- solar energy;
- wind energy;
- water energy (including energy from waste water), excluding use of such energy at pumped hydroelectric power plants;
- tidal energy;
- wave energy;
- geothermal energy using natural underground heat carriers;
- low heat energy of earth, air and water with the use of special coolants;

<sup>25</sup> Rushydro official press release, dated 15 June 2011

<sup>26</sup> Article: *Sunless Russia seeks more solar energy* published in International Business Times, 8 October 2010

<sup>27</sup> [http://rusecounion.ru/ang\\_renew\\_91110](http://rusecounion.ru/ang_renew_91110)

<sup>28</sup> Article: *Russia to build its first solar power station* published by RIA Novosti, dated 3 November 2010

<sup>29</sup> Hevel official press-release, dated 16 June 2011

<sup>30</sup> <http://novostienergetiki.ru/solar-power-plants-with-capacity-over-25-mw-to-appear-in-orenburg-region/>

<sup>31</sup> <http://www.bloomberg.com/news/2012-08-15/fortum-plans-300-million-solar-plant-in-russia-kommersant-says.html>

<sup>32</sup> Article 3 of the Electricity Law

- biomass, including plants specially grown for energy generation and trees, as well as industrial and consumer wastes (excluding wastes from the use of hydrocarbon material and fuel), biogas, gas separated from industrial and consumer waste dumps; and
- gas from coal workings.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

The renewable energy sector is governed in particular by the Electricity Law, which sets out the main provisions for the trade in power and capacity derived from renewable energy sources. Further provisions are contained in resolutions of the Russian Government, decrees of the Russian President and orders of the Ministry of Energy. More detailed procedural rules are set out in instruments adopted by the governing body of the wholesale and retail electricity markets, the Market Council.<sup>33</sup>

Apart from the Electricity Law, the following are the principal laws and regulations concerning renewable energy sources:

- Federal Law No. 261-FZ “On Energy Saving and Increasing Energy Efficiency and On Amendments to Certain Legislative Acts”, dated 23 November 2009. This law establishes a legal framework for activities supporting and promoting energy saving and increasing energy efficiency by, among other things, using renewable sources.
- Government Decree No. 1-r, approving the guidelines for state policy for increasing the effectiveness of the use of renewable energy sources for the period until 2020, dated 8 January 2009 (the “Policy Guidelines”). The Policy Guidelines outline proposed steps by state authorities to promote a greater use of renewable energy sources, and establish targets for electricity generation using renewable energy sources.
- Government Decree No. 1715-r, approving the Energy Strategy of the Russian Federation for the period until 2030, dated 13 November 2009 (the “Energy Strategy”). The Energy Strategy establishes the main principles, goals and priorities of the state's long-term energy policy, including in relation renewable energy sources.
- Government Resolution No. 426, approving the rules for qualifying generating facilities as operating using renewable energy sources, dated 3 June 2008 (the “Qualification Rules”). The Qualification Rules establish the criteria and procedure for the official recognition of generating facilities as operating using renewable energy sources, which can be granted pursuant to an application submitted by the facilities' owner to the Market Council.
- Government Resolution No. 850, approving the criteria for granting subsidies from the federal budget to compensate for the costs of technological connection of generating facilities with a capacity not exceeding 25 MW qualified as facilities using renewable energy sources, dated 20 October 2010 (the “Compensation Rules”).
- Ministry of Energy Order No. 187 approving the Rules for maintaining the register of issuance and cancellation of certificates confirming volumes of power

<sup>33</sup> Non-Commercial Partnership “Council of the Market for maintaining an effective system for the wholesale and retail trade in power and capacity” (the “Market Council”).

generated by generating facilities based on renewable energy sources, dated 17 November 2008 (the “Registration Rules”). The Registration Rules set out the procedure for maintaining a register of certificates confirming the quantity of power produced by generating facilities using renewable energy sources.

- Regulations on the qualification of generating facilities using renewable energy sources and the maintenance of the register of qualifying generating facilities (Schedule 24 to the Wholesale Market Trading System Accession Contract, approved by the supervisory council of the Market Council on 19 September 2011, as amended on 26 December 2011).

Regulations on commercial accounting of the electric power of qualifying generating facilities operating on the retail electricity market (Schedule 11.1 to the Wholesale Market Trading System Accession Contract, approved by the supervisory council of the Market Council on 26 December 2011).

#### 4. What are the principal regulatory bodies in the renewable energy sector?

The principal regulatory body having immediate responsibility for the administration of incentives for power generators using renewable sources is the Market Council, which has responsibility for the wholesale power market generally. In particular, the Market Council is responsible for recognizing generating facilities using renewable energy sources as qualifying generating facilities and for maintaining the register of certificates which confirm the volumes of power generated by them.

The Ministry of Energy and the Russian Government have joint responsibility for developing and adopting applicable subordinate legislation under the Electricity

Law, with the adoption of detailed market rules being further delegated to the Market Council.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

Taxpayers who invest in the creation of facilities that pertain to sources of renewable energy are permitted to apply for investment tax credit. The credit is given in the form of a deferral of profit tax and regional and local taxes (e.g., property tax, motor vehicle tax) for a term from 1 to 5 years. The credit is offered in respect of 100% of the value of the qualifying investment. The interest rate applicable to the deferred tax is to be within the range of half to three quarters of the Russian Central Bank's refinancing rate (being, since 14 September 2012, 8.25%).

### 6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

The Electricity Law makes general provision for such guarantees, but not their actual implementation, for which additional subordinate legislation would be required.

In general, the Electricity Law provides for the following possible support mechanisms for generating facilities using renewable energy sources:

- Either (a) the addition of a premium to the wholesale market price for power (such premium to be determined in accordance with a procedure to be approved by the Russian Government) or (b) preferential treatment of renewable generators in the capacity market<sup>34</sup>. The exact mechanism (either (a) or (b)) is to be determined by the

<sup>34</sup> Article 21(1) of the Electricity Law

Russian Government, but recent publications indicate that the Government prefers to implement an incentive mechanism through the capacity market, noting that this approach has greater social acceptability among consumers, and should reduce investment risks and increase the attractiveness of investment in this area<sup>35</sup>;

- a requirement for network companies to buy power for the purposes of compensating for line losses primarily from renewable energy sources;<sup>36</sup> and
- compensation by the state for the connection costs of renewable energy installations with an installed capacity of not more than 25 MW.<sup>37</sup>

Recent developments regarding these mechanisms include the following:

- In November 2012 the Ministry of Energy published a draft regulation to establish a mechanism to support renewable generation through the capacity market. The draft regulation provides for a system of tenders for the selection of renewable generation projects which projects would, upon completion, be assured certain capacity payments over a period of time. However, no such regulation has yet been adopted.
- In October 2012 the Russian Government issued a decree requiring the preparation of a set of measures to encourage renewable generation, including pricing parameters and a tariff calculation methodology for the supply of power generated from renewable

sources for the compensation of line losses.<sup>38</sup> This package of measures is due to be delivered in the second quarter of 2013.

- In February 2013 the Government introduced amendments to the state program for energy efficiency and renewable energy to 2020 to allocate resources from the Federal Budget for the purposes of subsidizing the network connection costs of renewable generation projects<sup>39</sup>, and a draft set of rules for the provision of such subsidies was published by the Ministry of Energy in December 2012.

The support mechanisms envisaged are for the benefit of generating facilities that are acknowledged as qualifying facilities using renewable energy sources. For this purpose, the Market Council treats a facility as a qualifying facility operating on a basis of renewable energy sources if such facility:

- uses only renewable energy sources or a combination of renewable and other energy sources for generating purposes;
- is in operation (commissioned and not closed for repairs nor decommissioned);
- is connected to the grid and equipped with metering equipment as required by Russian law; and
- is included in the general scheme of location of generating facilities operating on a basis of renewable energy sources on the territory of Russia approved by the Ministry of Energy.

<sup>35</sup> Explanatory note to the draft resolution of the Russian Government approving a package of measures for stimulating electric power production by generating facilities using renewable energy sources, published in 2012

<sup>36</sup> Article 32(3) of the Electricity Law

<sup>37</sup> Article 21(1) of the Electricity Law

<sup>38</sup> Government Decree No. 1839-r, dated 4 October 2012

<sup>39</sup> Decree No. 2446-r, dated 27 December 2010, as amended by Decree No. 200-r, dated 16 February 2013

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

minimum price guarantee but, as noted above, makes general provision for an incentive mechanism through either the addition of a premium to the wholesale market price or preferential treatment in the capacity market, and the Russian Government has expressed a preference for the latter option. Although draft regulations for the capacity-based system have been published, the system has not yet been implemented. Further, tariff regulation is to apply to the purchase of power from renewable generators for the compensation of line losses.<sup>40</sup>

**8. Do the renewable energy based power plants have priority for connection to the grid?**

Power plants using renewable energy do not enjoy priority in connection. However, as noted above, there is provision for smaller renewable energy units to be granted subsidies from the federal budget towards connection costs.

**9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

Russian legislation does not currently provide such specific incentives. However, draft amendments to the Policy Guidelines and the draft regulations for the stimulation of renewable generation through the capacity market, both published in 2012, contain provisions to favor renewable generation facilities with a high degree of localization.

<sup>40</sup> Article 3(2) of Regulation No. 1178, dated 29 December 2011, On Price Formation in the Sphere of Regulated Prices (Tariffs) in Electrical Power.

**10. What are the other incentives available to renewable energy generation companies?**

In addition to the measures already mentioned, the Policy Guidelines and Energy Strategy<sup>41</sup> envisage in general terms that further initiatives may be adopted by the Russian state aimed at promoting the renewable power sector and encouraging investment in it, but few details are given.

## STATISTICS

**11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

If large scale (25 MW or more) hydroelectric stations are excluded, in 2009 the total installed capacity of generating facilities using renewable energy sources did not exceed 2200 MW, which was approximately 1% of Russia's total power generation capacity.<sup>42</sup> Likewise, the percentage of power generated from renewable sources did not exceed 1% (8.5 billion KWH) of the total volume of generation.<sup>43</sup> We are not aware of any officially published statistics breaking down this aggregate figure by specific types of renewable energy source on a country scale.

As already noted, however, large-scale hydroelectric stations make a significant contribution to Russia's power production (at approximately 15.2%).

<sup>41</sup> Part III of the Policy Guidelines, Article 10 of the Energy Strategy

<sup>42</sup> Part II of the Policy Guidelines

<sup>43</sup> Ibid

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# Slovakia

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

The energy mix of Slovakia has traditionally been dominated by conventional sources (in particular the nuclear and thermal energy), the only renewable source of any importance being the hydro power. Nevertheless, over the last few years the renewable sources have been gradually gaining on importance. The development in this area comes to a large extent as a result of Slovakia's membership in the European Union (the "EU"), with the energy policies formulated by the EU institutions being transposed to the national level. The major impetus in this area was the legislation on the support of renewable sources of energy adopted in 2009. This legislation was to create stable and predictable business environment in the renewables market; however, since its adoption, it was changed several times in order to rein in the vast increase of investments in the solar electricity sector. On the other hand, it seems that these adjustments were a necessary consequence of an overly generous initial level of feed-in tariffs for electricity generated in solar power plants.

The basic point of reference for the Slovak renewable energy policy is set by the Renewable Energy Directive.<sup>1</sup> Anchored in the

<sup>1</sup> Directive 2009/28/EC on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (the "Renewable Energy Directive").

wider context of objectives of the EU energy policy, the Renewable Energy Directive provides, among other things, for mandatory national targets of energy from renewable sources to be met by each EU Member State by 2020. The mandatory target has been set at 14% for Slovakia, having regard to its starting point of 6.7% in 2005, available renewable energy potential and existing energy mix. Given that these targets are expressed as a share of renewables in gross final energy consumption (which includes the energy supplied for electricity generation, transport and heating and cooling), and as they take into account the effects of energy efficiency measures (if the overall energy consumption decreases, the share of renewables, even if constant in absolute terms, will rise), the Member States have considerable leeway in choosing the policy options to comply with them. As of March 28, 2013 European Commission issued new green paper that initiated a discussion on new political goals of EU for the year 2030 in the field of climate and energy. New EU 2030 framework for climate and energy policy should be tabled in at the end of this year and it remains to be seen what impact it may have on the energy policy in Slovakia.

In Slovakia, the policy approach to the transposition of the EU renewable energy objectives into the national context is to a large extent shaped by (i) concerns about the higher cost of renewable energy sources in comparison to the conventional ones; (ii) the existing energy mix which is not considered suitable for supporting the electricity generation from unpredictable renewable energy sources (solar and wind); as well as (iii) the relatively high energy intensity of the Slovak economy. This is coupled with a strong political support for the generation of electricity from nuclear energy focused on the completion of two 440 MW nuclear units and a separate project of construction of a new nuclear power plant. The National Action Plan

for Renewable Energy adopted by the Ministry of Economy of the Slovak Republic (the “Ministry of Economy”) in October 2010<sup>2</sup> implies that a major part of the increase in renewable energy will be due to the growing use of biomass, geothermal energy and solar energy in the production of heat (the share of renewable energy in the production of heat and cooling should almost double from 7.6% in 2010 to 14.6% in 2020). The electricity generation is predicted to see a smaller growth in the use of energy from renewable sources (the share should rise from 19.1% in 2010 to 24% in 2020).

As regards the particular sources of renewable energy,<sup>3</sup> hydropower currently represents the only one contributing to the electricity generation in a sizeable manner (approximately 15 to 20%, depending on the annual precipitation). This contribution is mainly due to large hydropower plants where the potential for new projects is almost exhausted. As to the small hydropower plants (with the installed capacity below 10 MW), their technical potential is widely unused and their electricity generation capacity could, according to the forecasts of the National Action Plan for Renewable Energy, increase from 80 MW in 2010 to 182 MW in 2020.

Biomass represents a renewable source of energy with the highest technical potential, up to 18% of the Slovak energy consumption, with the main progress expected in the production of heat and to a lesser extent the electricity generation. The current use of biomass in the production of heat

is, nonetheless, rather low given, among other things, the high market penetration of natural gas distribution networks. The electricity generation through joint combustion of biomass and fossil fuels will likely play an important role in future. A major project in this area has been launched by the dominant electricity producer in one of its two large thermal power plants. An additional opportunity for the electricity generation from biomass is represented by biogas plants. A few smaller ones have already been put into operation and the National Action Plan for Renewable Energy expects an increase in the total installed capacity of biogas-combusting installations from 18 MW in 2010 to 110 MW in 2020.

Until recently, the use of solar energy has been insignificant, whether in the production of heat or electricity. However, the generous level of feed-in tariffs applicable to projects put into operation in 2010 and the first half of 2011 lead to a substantial increase in the total installed capacity of solar power plants. Based on the estimates of the Slovak energy regulator, the installed capacity of solar power plants amounts to approximately 490 MW and it considerably exceeds the 300 MW target expected by the National Action Plan for Renewable Energy to be reached in 2020. The increase occurred despite a rather reserved approach to the electricity generation from solar energy due to concerns about the instability of this renewable energy source, the strain it could impose on the electricity network, as well as the upward pressure on end-user electricity prices. Once it became clear that the initial level of feed-in tariffs for solar electricity would lead to overinvestment, this reserved approach led to a sequence of legislative and regulatory measures aiming at limiting the investment. These measures culminated in the abolishment of feed-in tariffs for solar projects (other than projects with the installed capacity below 100 kW – as of July 1, 2013, this threshold will be further decreased to 30 kW – located on the surface of buildings) as of July 2011.

<sup>2</sup> National Action Plan for Energy from Renewable Sources (Slovak Republic), issued by the Ministry of Economy of the Slovak Republic on 6 October 2010 (the “National Action Plan for Renewable Energy”).

<sup>3</sup> Unless stated otherwise, the data cited below are from the Strategy on Energy Security of the Slovak Republic, approved by the Slovak Government on 15 October 2008, containing the most recent official assessment of the renewable energy potential in Slovakia.

The potential for wind energy in Slovakia is rather limited, with only a few projects being implemented to date. Moreover, due to concerns about the impact of the wind electricity on the security and stability of the network, the state-owned Slovak transmission system operator (Slovenská elektrizačná a prenosová sústava, a.s. (“SEPS”)) has suspended the issuance of consents to the connection of wind farms to the network. Following the considerable increase in the installed capacity of solar power plants (with the wind and solar energy being regarded as carrying with them very similar risks), it is unlikely that wind energy projects could become of any importance in the foreseeable future.

Another renewable energy source with certain, if not large, potential is the geothermal energy. It is currently used at a local level in several locations within Slovakia mainly for the production for heat. More intensive use of geothermal energy is constrained in particular by technical barriers.

## 2. What is the definition and coverage of renewable energy under the relevant legislation?

Under the Renewable Energy Act<sup>4</sup>, a renewable energy source is defined as a non-fossil energy source, the energy potential of which is constantly replenished by natural processes or activities of people and covers the following sources:

- hydro energy (except for the electricity produced in pumped-storage hydro plants);
- solar energy;

<sup>4</sup> Act No. 309/2009 Coll. on the promotion of renewable energy sources and high-efficiency cogeneration, as amended by Act No. 492/2010 Coll., Act No. 558/2010 Coll., Act No. 117/2011 Coll., Act No. 136/2011 Coll., Act No. 189/2012 Coll., Act No. 373/2012 Coll., and Act No. 30/2013 Coll. (the “Renewable Energy Act”).

- wind energy;
- geothermal energy (defined as energy available in the form of heat under the earth’s surface);
- biomass, including all products of its processing<sup>5</sup>;
- biogas (defined as gas for energy use which is created in the process of biomass fermentation), landfill gas, sewage treatment plant gas;
- biomethane (defined as treated biogas, the technical parameters of which are comparable to those of natural gas);
- aerothermal energy (defined as energy available in the form of heat in the air); and
- hydrothermal energy (defined as energy available in the form of heat in the surface water).

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

The renewable energy sector is regulated mainly by the Renewable Energy Act, the Network Industries Act<sup>6</sup>, the Energy Act<sup>7</sup>, and

<sup>5</sup> Biomass is further defined as biodegradable fraction of a product, residue from vegetal and animal substances from agriculture, forestry and related sectors, including fishery and aquaculture, the biodegradable fraction of municipal and industrial waste, including black liquor from wood processing.

<sup>6</sup> Act No. 250/2012 Coll. on regulation in network industries (the “Network Industries Act”). This new regulation replaced the previous Act No. 276/2001 Coll. on regulation in network industries, as amended and became effective as of September 1, 2012. It was adopted due to transposition of the “third energy package” adopted by the European Union.

the price regulation decrees<sup>8</sup> issued by the Regulatory Office for Network Industries (“RONI”) which regulate prices of electricity generated from renewable sources. While the Renewable Energy Act contains specific measures ensuring the promotion of electricity generated from renewable energy sources, the Network Industries Act contains the framework for the price regulation in the energy sector and the Energy Act regulates in particular the licensing procedure and approvals of investments in the energy sector.

#### 4. What are the principal regulatory bodies in the renewable energy sector?

The principal regulatory bodies in the renewable energy sector are the Ministry of Economy and RONI. Supervisory powers are exercised by the State Energy Inspection.

The Ministry of Economy bears the main responsibility for the formulation of the renewable energy policy. It effectively regulates the construction of new renewable energy facilities through issuing certificates on compliance of the investment plan of an energy generating facility with the long-term concept of the Slovak energy policy (the “Energy Policy”).<sup>9</sup> Such compliance certificates are currently required for all power plants with the total installed capacity equal to

or greater than 1 MW except for solar power plants where a compliance certificate is required already for power plants with the total installed capacity equal to or greater than 100 kW. The Ministry of Economy may also impose obligations in the general economic interest on the electricity producers in order to ensure the use of renewable energy sources in the generation of electricity or on the distribution system operators and transmission system operator in order to ensure the preferential access, connection, transmission, distribution and supply for electricity generated from renewable energy sources. However, such obligations have not been imposed to date. The licenses for generation of electricity in facilities with the total installed output of more than 1 MW are issued by RONI, including the licenses for generation of electricity from renewable energy sources if output of these facilities exceeds the 1 MW threshold (however, generation of electricity from biomass and biogas does not require licence, there is only an obligation to notify RONI in advance). Apart from that, RONI is also responsible for the price regulation of electricity generated from renewable sources and it issues certificates of origin (evidencing that the electricity was generated in an installation eligible for support measures) and guarantees of origin (evidencing the amount of electricity generated from renewable sources of energy).

Although SEPS, the state-owned transmission system operator, does not, strictly speaking, exercise any regulatory powers, it exerts substantial influence over the renewable energy market. This is due to the fact that consent of SEPS is required before the Ministry of Economy issues the compliance certificates for new renewable energy projects, with SEPS assessing the impact of renewable energy projects on the security and reliability of the network.

The Slovak Innovation and Energy Agency (“SIEA”) is an implementing agency of the

<sup>7</sup> Act No. 251/2012 Coll. on energy, as amended (the “Energy Act”). This new act became efficient as of September 1, 2012 except certain provisions with delayed effective as of January 1, 2014. It replaced the previous Energy Act No. 656/2004 Coll. as amended due to transposition of the “third energy package”.

<sup>8</sup> Decree of RONI No. 225/2011 Coll. establishing the price regulation in the electricity sector. This new price regulation decree, applicable for the first time to the price regulation proceedings for 2012, replaces decree of RONI No. 2/2008 as amended by decrees Nos. 7/2008, 2/2009, 7/2009, 2/2010 and 7/2011.

<sup>9</sup> The Energy Policy is approved by the Government of the Slovak Republic based on a proposal prepared by the Ministry of Economy.

Ministry of Economy for use of EU structural funds.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

No tax incentives are currently available. However, the electricity generated from renewable energy sources supplied directly to end customers or used by the relevant electricity producer for its own consumption is exempted from excise duties.

### 6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

Under the Renewable Energy Act, the electricity generated from renewable sources must be off-taken by the regional distributor to which the relevant electricity producer is connected. As such electricity will be used for the purposes of covering the losses in the distribution system, it will be purchased at the price for losses in the system which is regulated by RONI. This support measure applies to (i) facilities with the total installed capacity of up to 125 MW; and (ii) facilities producing the electricity by high-efficiency cogeneration with the total installed capacity of up to 200 MW provided the share of renewable energy sources in the fuel is higher than 20%, except in each case for facilities generating electricity from hydro energy with the installed capacity exceeding 5 MW. All facilities which qualify for this support will enjoy the right to the guaranteed off-take for 15 years from the time of their commissioning or the year of their reconstruction or upgrade. However, the latest amendment to the Renewable Energy Act prescribes that the improvement in capacity, energy consumption, losses and costs must be proved by an expert

opinion in order for the reconstruction or upgrade to obtain support for the 15-year period. Where the total installed capacity of energy facilities of an electricity producer is lower than 1 MW, the right to the guaranteed off-take will apply during the whole lifetime of the energy facility.

### 7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

As long as the producer of electricity from renewable sources enjoys the right to the guaranteed off-take by the regional distributor, the purchase price for such electricity supplied to the regional distributor will be determined as the regulated price for losses. This regulated price for losses is equal to the arithmetic average of the prices of electricity for purposes of covering the losses of all three regional distributors in Slovakia, determined by RONI on an annual basis for each of these regional distributors.<sup>10</sup>

In addition, the producer of electricity from renewable sources which is entitled to the guaranteed electricity off-take also qualifies, under conditions mentioned below, for an additional payment paid by the regional distributor. This additional payment is determined as the difference between the regulated tariffs for renewable electricity (applicable for the year when the renewable energy based power plant was commissioned) and the regulated price for losses. The right to such additional payment will apply with respect to the actual amount of electricity (subject to the limits mentioned below) produced from renewable energy sources even if the electricity producer does not make use of its right to the

<sup>10</sup> This arithmetic average amounted to EUR 59.18/MWh in 2007, EUR 74.22/MWh in 2008, EUR 84.31/MWh in 2009, EUR 55.40/MWh in 2010, EUR 55.75/MWh in 2011, and EUR 60.11/MWh in 2012.

guaranteed off-take (for example, if it uses the electricity for its own consumption). The amount of such additional payment is gradually decreased if the investment costs of a reconstruction or upgrade of a facility do not exceed 50% of investment costs for new comparable technology (except for facilities

generating electricity from hydro energy with the installed capacity up to 5 MW).

Under Decree of RONI No. 225/2011 Coll. which replaced the previous price regulation decrees of RONI, the regulated tariffs for electricity from renewable sources are determined as follows:

*A. Installations put into operation in 2010:*

Renewable energy source	Total installed capacity	Regulated tariff (EUR/MWh)
<b>Water</b>	up to and including 1 MW	109.08
	from 1 MW up to and including 5 MW	97.98
	above 5 MW	61.72
<b>Solar</b>	up to and including 100 kW	430.72
	above 100 kW	425.12
<b>Wind</b>		80.91
<b>Geothermal</b>		195.84
<b>Combustion of purpose grown biomass</b>		113.10
<b>Combustion of waste biomass</b>		125.98
<b>Co-combustion of biomass or waste together with fossil fuels</b>		126.14
<b>Combustion of landfill gas or gas from sewage treatment plants</b>		96.36
<b>Combustion of biogas produced by anaerobic fermentation technology</b>	up to and including 1 MW	148.72
	above 1 MW	131.45
<b>Combustion by thermochemical gasification in a gasifier</b>		159.85

These tariffs will be further adjusted for facilities, which were commissioned, modernized or upgraded prior to 2010 by applying the relevant coefficient set out in Decree of RONI No. 225/2011 Coll.

*B. Installations put into operation from 1 January 2011 to 30 June 2011:*

Renewable energy source	Total installed capacity	Regulated tariff (EUR/MWh)
<b>Water</b>	up to and including 1 MW	109.08
	from 1 MW up to and including 5 MW	97.98
	above 5 MW	61.72
<b>Solar</b>	up to and including 100 kW located on a building	387.65
	up to and including 100 kW not located on a building	387.65
	from 100 kW up to and including 1 MW	382.61
	from 1 MW up to and excluding 4 MW	382.61
	from 4 MW	382.61
<b>Wind</b>		80.91
<b>Geothermal</b>		195.84
<b>Combustion of purpose grown biomass within the combined generation of electricity and heat</b>		113.10
<b>Combustion of waste biomass within the combined generation of electricity and heat</b>		127.98
<b>Co-combustion of biomass or waste together with fossil fuels within the combined generation of electricity and heat</b>		126.14
<b>Combustion of fermented biomass</b>		144.88
<b>Combustion of landfill gas or gas from sewage treatment plants</b>		96.36
<b>Combustion of biogas produced by anaerobic fermentation technology</b>	up to and including 1 MW	148.72
	above 1 MW	132.45
<b>Combustion by thermochemical gasification in a gasifier</b>		159.85

*C. Installations put into operation from 1 July 2011 to 31 December 2011:*

Renewable energy source	Total installed capacity	Regulated tariff (EUR/MWh)
<b>Water</b>	up to and including 1 MW	109.08
	from 1 MW up to and including 5 MW	97.98
	above 5 MW	61.72
<b>Solar</b>	up to 100 kW located on the roof or walls of a building connected to the earth by firm basement	259.17
<b>Wind</b>		79.29
<b>Geothermal</b>		195.84
<b>Combustion of purpose grown biomass within the combined generation of electricity and heat</b>		112.24
<b>Combustion of waste biomass within the combined generation of electricity and heat</b>		122.64
<b>Combustion of fermented biomass within the combined generation of electricity and heat</b>		144.88
<b>Combustion of bioliquids within the combined generation of electricity and heat</b>		115.00
<b>Co-combustion of biomass or waste together with fossil fuels within the combined generation of electricity and heat</b>		123.27
<b>Combustion of landfill gas or gas from sewage treatment plants</b>		93.08
<b>Combustion of biogas produced by anaerobic fermentation technology</b>	up to and including 1 MW	145.00
	above 1 MW	129.44
<b>Combustion by thermochemical gasification in a gasifier</b>		159.85

*D. Installations put into operation from 1 January 2012:*

Renewable energy source	Total installed capacity	Regulated tariff (EUR/MWh)
<b>Water</b>	up to and including 1 MW	109.80
	from 1 MW up to and including 5 MW	97.98
	above 5 MW	61.72
<b>Solar</b>	up to 100 kW located on the roof or walls of a building connected to the earth by firm basement	194.54
<b>Wind</b>		79.29
<b>Geothermal</b>		190.51
<b>Combustion or co-combustion of purpose grown biomass within the combined generation of electricity and heat</b>		112.24
<b>Combustion or co-combustion of waste biomass within the combined generation of electricity and heat</b>		122.64
<b>Combustion or co-combustion of fermented biomass within the combined generation of electricity and heat</b>		144.88
<b>Combustion or co-combustion of bioliquids within the combined generation of electricity and heat</b>		115.01
<b>Co-combustion of biomass or waste together with fossil fuels within the combined generation of electricity and heat (the combined generation is not required, if the share of biologically degradable waste in the communal waste is below 55%)</b>		123.27
<b>Combustion of landfill gas or gas from sewage treatment plants</b>		93.08
<b>Combustion of biogas produced by anaerobic fermentation technology</b>	up to and including 1 MW	136.33
	above 1 MW	118.13
<b>Combustion by thermochemical gasification in a gasifier</b>		139.87

*E. Installations put into operation from 1 July 2012 to 31 December 2012:*

Renewable energy source	Total installed capacity	Regulated tariff (EUR/MWh)
<b>Water</b>	up to and including 1 MW	109.80
	from 1 MW up to and including 5 MW	97.98
	above 5 MW	61.72
<b>Solar</b>	up to 100 kW located on the roof or walls of a building connected to the earth by firm basement	119.11
<b>Wind</b>		79.29
<b>Geothermal</b>		190.51
<b>Combustion or co-combustion of purpose grown biomass within the combined generation of electricity and heat</b>		112.24
<b>Combustion or co-combustion of waste biomass within the combined generation of electricity and heat</b>		122.64
<b>Combustion or co-combustion of corn straw</b>		171.00
<b>Combustion or co-combustion of bioliquids within the combined generation of electricity and heat</b>		115.01
<b>Co-combustion of biomass or waste together with fossil fuels within the combined generation of electricity and heat (the combined generation is not required, if the share of biologically degradable waste in the communal waste is below 55%)</b>		123.27
<b>Combustion of landfill gas or gas from sewage treatment plants</b>		93.08
<b>Combustion of biogas produced by anaerobic fermentation technology</b>	up to and including 1 MW	136.33
	above 1 MW	118.13
<b>Combustion by thermochemical gasification in a gasifier</b>		149.87
<b>Combustion by fermented mixture made of aerobic fermentation of biological decomposable waste</b>		144.88

*F. Installations put into operation from 1 January 2013:*

Renewable energy source	Total installed capacity	Regulated tariff (EUR/MWh)
<b>Water</b>	up to and including 1 MW	109.80
	from 1 MW up to and including 5 MW	97.98
	above 5 MW	61.72
<b>Solar</b>	up to 100 kW located on the roof or walls of a building connected to the earth by firm basement	119.11
<b>Wind</b>		79.29
<b>Geothermal</b>		190.51
<b>Combustion or co-combustion of purpose grown biomass within the combined generation of electricity and heat</b>		112.24
<b>Combustion or co-combustion of waste biomass within the combined generation of electricity and heat</b>		122.64
<b>Combustion or co-combustion of corn straw</b>		154.27
<b>Combustion or co-combustion of bioliquids within the combined generation of electricity and heat</b>		115.01
<b>Co-combustion of biomass or waste together with fossil fuels within the combined generation of electricity and heat (the combined generation is not required, if the share of biologically degradable waste in the communal waste is below 55%)</b>		123.27
<b>Combustion of landfill gas or gas from sewage treatment plants</b>		84.89
<b>Combustion of biogas produced by anaerobic fermentation technology</b>	up to and including 1 MW	134.08
	above 1 MW	118.13
<b>Combustion by thermochemical gasification in a gasifier</b>		149.87
<b>Combustion by fermented mixture made of aerobic fermentation of biological decomposable waste</b>		144.88

To the extent the construction of a new facility or the reconstruction or upgrade of an existing facility was supported from schemes financed from the state budget, the regulated tariffs will be reduced (unless such support is used to carry out measures aimed at achieving compliance with the applicable emission limits) as follows:

- support up to and including 30% of the total acquisition costs, by 4 %,
- support up to and including 40% of the total acquisition costs, by 8 %,
- support up to and including 50% of the total acquisition costs, by 12 %, and
- support of more than 50% of the total acquisition costs, by 16 %.

In order to ensure stable and predictable environment for investments into renewable energy, the Renewable Energy Act provides that RONI may not set the regulated tariffs applicable in the subsequent period, which may not exceed three years, at a level lower than 80% of the regulated tariffs applicable in a given year. As of 1 February 2011, the Renewable Energy Act provides that such limitation does not apply to solar and wind power plants.

The Renewable Energy Act provides for limits on the amount of electricity with respect to which the electricity producer may claim the additional payment from the regional distributor. Under these limits, the right to an additional payment applies only to:

- all electricity from renewable energy sources produced in a facility of an electricity producer with the total installed capacity of up to and including 10 MW;
- electricity corresponding to the proportionate amount of electricity

produced in a facility of an electricity producer with the total installed capacity of more than 10 MW, with the proportion being calculated as the ratio of 10 MW to the total installed capacity;

- the total amount of electricity produced in a facility of an electricity producer, which uses wind energy as a source, with the total installed capacity of up to and including 15 MW;
- electricity corresponding to the proportionate amount of electricity produced in a facility of an electricity producer, which uses wind energy as a source, with the total installed capacity of more than 15 MW, with the proportion being calculated as the ratio of 15 MW to the total installed capacity;
- all electricity from renewable energy sources produced by cogeneration with the total installed capacity of more than 10 MW, if the share of renewable energy sources in fuel is higher than 20% and the share of heat supplied for technological purposes does not exceed 40% of useful heat;
- all electricity from renewable energy sources produced in an installation for cogeneration with the total installed capacity of more than 10 MW, if the share of renewable energy sources in fuel is higher than 30% and the share of heat supplied for technological purposes does not exceed 40% of useful heat (as of January 1, 2015 the right to an additional payment will not apply for this category of producers).

A further restriction applies with regard to the electricity produced in biomass or bioliquids combustion and co-combustion facilities. In such case, the electricity producer will be able to claim the additional payment only if the electricity is produced by cogeneration of electricity and heat and if biomass and

bioliquids complies with the prescribed quality requirements and parameters. Certain further restrictions apply to the generation of electricity by combustion of biogas.

### **8. Do the renewable energy based power plants have priority for connection to the grid?**

Yes, the renewable energy based power plants enjoy the priority connection to the regional distribution system, priority electricity transmission, priority electricity distribution and priority electricity supply regardless of their installed capacity. In order for the eligible renewable energy power plants to be eligible, they must fully comply with the technical and commercial requirements of the distribution system operator and may not endanger the security and reliability of the system operation.

The renewable energy based power plants will be connected to the distribution system if (i) the distribution system is technically capable of such connection; (ii) it is the closest one to the power plant; and (iii) from the technical and economic point of view there is no other distribution system with better conditions for connection. The distribution system is considered technically capable of a connection also where the electricity off-take by the regional distributor requires extension of the distribution system, provided that such extension is economically justifiable.

### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

No, there are no such specific incentives.

### **10. What are the other incentives available to renewable energy generation companies?**

Renewable energy based power plants with the total installed capacity of less than 1 MW are

also supported by way of assumption of the responsibility for imbalances caused by the electricity producer (as of July 1, 2013 solar power plants have the benefit of this support measure only if their installed capacity is less than 30 kW, before July 1, 2013, this threshold was 100 kW).<sup>11</sup> Under the Renewable Energy Act, the responsibility for imbalances will be taken over by the relevant regional distributor. This supportive measure applies for a period of 15 years from commissioning, reconstruction or upgrade of the energy facility or for the whole lifetime of the energy facility, should the total installed capacity of the energy facility be lower than 1 MW. This support measure is of particular importance for producers of electricity from unpredictable (solar and wind) renewable energy sources.

In addition, renewable energy generating companies may benefit from EU structural funds which are expected to represent a major factor contributing to the development of renewable energy in future. The EU structural funds are channeled through several schemes defined at the national level, the most important one for the period between 2007 and 2013 being the Operational Program Competitiveness and Economic Growth managed by the Ministry of Economy.<sup>12</sup> Under this program, the support can be provided to projects involving the construction, upgrade and reconstruction of small water power plants with the maximum installed capacity up to 10 MW, power plants using biomass or biogas with the minimum installed capacity of 50 kW and maximum installed capacity of 30 MW, and power plants using solar energy or geothermal energy. The support is provided through SIEA

<sup>11</sup> If the permit for operation of the power plant was issued before 1 July 2011, this support measure applies if the total installed capacity is less than 4 MW.

<sup>12</sup> The total funds available under the Operational Program Competitiveness and Economic Growth for projects increasing the energy efficiency and renewable energy projects in the period between 2007 and 2013 amount to approximately EUR 144 million.

and subject to location can represent 40% or 50% of the eligible costs. Depending on the applicable state aid scheme, the support can be in the range from EUR 100,000 to EUR 6 million or from EUR 20,000 to EUR 200,000, respectively.

## STATISTICS

**11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

	Gross Electricity Production in 2011 (in GWh)	% of Gross Electricity Production in 2011
<b>Total</b>	28, 227	100
<b>Renewable Energy Sources</b>	5,367	18,98
<b>Hydro All Plants</b>	4,146	14,69
of which: hydro 1 MW (net of pumping)	89	0,32
hydro 1-10 MW (net of pumping)	245	0,87
hydro 10+ MW (net of pumping)	3,444	12,18
pumped storage <sup>13</sup>	366	1,29
<b>Geothermal</b>	x	x
<b>Solar (Photovoltaic)</b>	397	1,40
<b>Wind</b>	5	0,017
<b>Municipal Solid Wastes (Renew)</b>	24	0,085
<b>Wood/Wood Wastes/Other Solid Wastes</b>	682	2,42
<b>Sewage Sludge Gas</b>	22	0,078
<b>Other Biogas</b>	81	0,29

*Source: The data on gross electricity production in GWh are cited according to the publication Energy 2011, published by the Statistical Office of the Slovak Republic in December 2012.*

<sup>13</sup> Under the Renewable Energy Act, electricity produced in pumped storage hydropower plants is not counted towards electricity produced from renewable energy sources.

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# South Africa

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

South Africa has a gross installed electricity generation capacity of about 36 GW dominated by coal-fired electricity generation facilities, which supply 90% of its total load. Due to its dependence on energy generated from coal, South Africa has one of the highest per capita greenhouse gas emission rates in the world.

South Africa is a signatory to the United Nations Framework Convention on Climate Change, 1992 (the “UNFCCC”) and is classified as a Non-Annex-I developing country in terms of the Kyoto Protocol. Accordingly, South Africa is not bound by any mandatory targets for reducing greenhouse gas emissions. Nevertheless, at the 2009 Copenhagen conference of the parties (“COP 2009”), South Africa committed to reduce its greenhouse gas emissions by 34% by 2020 and by 42% by 2025. At the seventeenth conference of the parties in 2011 (“COP 17”) South Africa reiterated this commitment.

The first official domestic policy formulation on renewable energy, the White Paper on Renewable Energy (the “Renewable Energy White Paper”) was published in 2003 by the then Department of Minerals and Energy. The Renewable Energy White Paper sets a target of 10,000 GWh (approximately 4% of the total electrical energy demand) for renewable energy generation by 2013. By 2010, however, it

became self-evident that this target would not be achieved and it has since then come under review by the Department of Energy (the successor to the Department of Minerals and Energy) in its integrated resource planning for the entire electricity generation industry.

In May 2011, the Minister of Energy released South Africa’s Integrated Resource Plan in respect of South Africa’s forecast electricity demand for the period 2010 to 2030 (the “IRP 2010-2030”). IRP 2010-2030 proposes a 25% reduction in coal-fired generation (from 90% to 65%) and a broadly diversified generation mix including an allocation of 9% for renewable energy, by 2030. This entails a 17.8 GW or 42% allocation to renewable energy of the total proposed new generation capacity (42.6 GW) for the period covered. This 17.8 GW is predominantly taken up by onshore wind (8.4 GW) and solar photovoltaic (8.4 GW).

Under the Renewable Energy White Paper, the National Energy Regulator of South Africa (the “NERSA”), in its capacity as economic regulator of the electricity supply industry, was directed to consider and develop guidelines on renewable energy feed-in tariffs (the “REFITs”). However, in early 2011 the Department of Energy shifted its policy preference from feed-in tariffs to competitive tariffs, i.e. tariffs to be set pursuant to competitive tender proceedings, based on value for money considerations.

In August 2011, the Department of Energy (“DoE”) issued a request for qualification and proposals for new generation capacity under a procurement programme for 3,725 MW renewable energy generating capacity from independent power producers (“IPPs”) using onshore wind, solar photovoltaic, CSP, biomass, biogas, landfill gas and small hydro technologies (collectively, the “RE-IPP Procurement Programme”). The RE-IPP Procurement Programme provisionally

allocates the required 3,725 MW as follows: 1,850 MW for onshore wind, 200 MW for CSP, 1,450 MW for solar photovoltaic (“solar PV”), 12.5 MW for biomass, 12.5 MW for biogas, 25 MW for landfill gas, 75 MW for small hydro, and a further 100 MW for other small-scale renewable energy plants (between 1 MW and 5 MW).

The RE-IPP Programme is staggered into up to five bidding rounds. The first two bidding rounds have been completed:

- 28 bids with a total target installed capacity of 1,415.2 MW were awarded for the first bidding round comprising 633.99 MW for onshore wind, 631.53 MW for solar PV and 150 MW for CSP. The power purchase agreements and other agreements awarded by the DoE for these bids were concluded on 5 November 2012 and all these bids have entered their prescribed construction phase;
- 19 bids with a total target installed capacity of 1,043.9 MW were awarded for the second bidding round comprising 562.5 MW for onshore wind, 417.1 MW for solar PV, 50 MW for CSP and 14.3 MW for small hydro. The target date for the conclusion of the power purchase agreements and other agreements to be awarded by the DoE for these bids is 22-26 April 2013; and
- the bid submission date for the third bidding round has been set for August 2013.

Broad-based support for the Renewable Energy Procurement Programme is re-affirmed in the Green Economy Accord, a comprehensive private-public pact concluded between the government, organised labour and business in November 2011 (the “Accord”). The Accord contextualises South Africa’s commitments toward a greener economy

within its broader socio-economic objectives for sustainable employment creation.

## 2. What is the definition and coverage of renewable energy under the relevant legislation?

Renewable energy is defined in the Renewable Energy White Paper as electricity, gaseous and liquid fuels, heat or a combination of these deriving from naturally-occurring, cyclical and non-depleting sources of energy such as solar, wind, biomass, hydro, tidal, wave, ocean current and geothermal energy.

Under the National Energy Act, 2008, which is mainly concerned with the establishment of mechanisms for the collection, collation and analysis of energy data and integrated energy planning, “renewable energy” is defined as energy generated from natural, non-depleting resources including solar energy, wind energy, biomass energy, biological waste energy, hydro energy, geothermal energy and ocean and tidal energy.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

South Africa’s regulatory framework governing the electricity sector is in a state of flux and significant changes are underway. These changes reflect the government’s evolving policy on the managed liberalisation of the electricity supply sector to provide for the staged introduction of IPPs within a single buyer market.

The key role players in this regulatory restructuring are:

- the Minister of Energy, who is responsible for coordinating national energy policy and planning;

- the NERSA, which performs the role of the economic and technical regulator in the electricity supply industry and is responsible for giving effect to national energy policy and planning and approving electricity tariffs; and
- the national electricity supply utility, Eskom Holdings SOC Limited (“Eskom”), which is currently the de facto single buyer of electricity supplied by IPPs, as well as the monopoly transmission service provider and the dominant distribution service provider to loads and generators.

The principle laws and regulations governing South Africa’s renewable energy sector are:

- the Electricity Regulation Act, 2006 (the “ERA”), which empowers the Minister of Energy, acting in consultation with the NERSA, to determine whether any new generation capacity is needed from time to time, the types of technology and primary energy sources to be utilised for such new generation capacity, whether such capacity should be developed by Eskom or any other any state-owned utilities or by IPPs, and whether such new generation capacity and electricity deriving therefrom will be subject to any “must buy” power purchase arrangement on the part of any state-owned utility;
- the National Energy Regulator Act, 2004, which is the NERSA’s enabling legislation;
- the IRP 2010-2030;
- the Electricity Regulations on New Generation Capacity, which regulate the procedures to be implemented in relation to the procurement of new generation capacity (the “New Generation Regulations”);
- the Eskom Conversion Act, 2001, which provides for Eskom’s status as a public company generally subject to company

laws, under 100% state ownership (currently through the Ministry of Public Enterprises) and liable for the payment of dividends and taxes; and

- the National Energy Act, 2008.

Other laws and regulations applicable to the renewable energy sector include laws and regulations relating to environment, water use, wastewater management and disposal, solid waste management and disposal, biodiversity, protection of endangered plant and animal species, atmospheric emissions, protection of heritage resources, occupational health and safety, mine health and safety, hazardous materials, fire prevention, building and construction, land zoning and use, labour and employment, aviation aspects, taxation, foreign exchange control, protected fundamental human rights, consumer protection, companies, and procurement by government agencies or instrumentalities.

As mentioned above, legislative amendments are currently before the National Assembly for consideration which will significantly overhaul the legislation listed above, if enacted and brought into effect. These include:

- the Electricity Regulation Second Amendment Bill, 2011 (the “ERA Amendment Bill”);
- the National Energy Regulator Amendment Bill, 2011 (the “NERSA Amendment Bill”); and
- the Independent System and Market Operator Bill, 2012 (the “ISMO Bill”).

The ERA Amendment Bill and the NERSA Amendment Bill propose to restructure how the electricity supply industry will be regulated including the shifting over of certain technical and economic regulatory functions from the NERSA to the Minister of Energy and the substitution of the NERSA nine-member

board with a single Commissioner (or “energy tsar”) and the establishment of a separate Appeals Board for the hearing of appeals on certain NERSA decisions.

The ISMO Bill proposes the establishment of an independent system and market operator (the “ISMO”) and that the transmission business within Eskom and related assets be transferred to the ISMO, leaving Eskom with its existing generation and distribution portfolio. It also proposes that the ISMO will be exclusively empowered as the single wholesale buyer and re-seller of electricity. If this draft bill is enacted and brought into effect, the ISMO will replace Eskom as the single buyer of electricity and become a key role player in the renewable energy market.

#### 4. What are the principal regulatory bodies in the renewable energy sector?

The key role players in the renewable energy sector are:

- the Minister of Energy, who is responsible for coordinating national energy policy, and integrated resource planning and determining whether new generation capacity may be procured, the type of generations technologies and primary fuel sources to be used in generation, and whether such generation capacity will be developed and owned by the state or by IPPs;
- the DoE, which is the procuring authority for new generation capacity from IPPs including the RE-IPP Procurement Programme;
- the NERSA which is responsible for giving effect to national energy policy and planning, the IRP and approving electricity tariffs;
- the Minister of Finance, whose concurrence is required in respect of any guarantees or

financial commitments as may be provided by the Minister of Energy in respect of any new generation capacity programmes procured by it;

- Eskom in its capacity as the single buyer of electricity, the transmission system and service provider, and the main distribution system owner and service provider;
- local authorities which own and operate distribution facilities, and provide distribution services within their respective local boundaries; and
- subject to the enactment and coming into effect of the ISMO Bill, the ISMO, which will replace Eskom as the single buyer of electricity, the transmission system and service provider, and take over certain IPP procurement functions from the DoE.

### INCENTIVES

#### 5. Are tax advantages available to renewable energy generation companies?

South Africa’s taxation legislation provides the following mechanisms to encourage the uptake of electricity generated from renewable energy sources:

- a carbon tax referred to as an “environmental levy” of 3.5 South African cents per kWh (expressed in Rand or “ZAR”), which is imposed on non-renewable energy generators. This levy is anticipated to be phased out following the introduction of the carbon emissions tax referred to below;
- the cost of machinery and equipment used to produce bio-diesel or bio-ethanol or to generate electricity from wind, sunlight or gravitational water forces is deductible from the tax-payer’s taxable income over a three-

year period with 50% of the cost being deductible in the year in which the equipment is brought into use, 30% in year two and 20% in year three; provided that the machinery and equipment are affixed or mounted to a foundation or other supporting structure brought into use from 1 January 2013; and

- the proceeds received on the disposal of the carbon credits derived from projects that qualify as Clean Development Mechanism projects in terms of the Kyoto Protocol (commonly referred to as CERs) are exempt from normal tax and capital gains tax until 31 December 2020.

In addition, as a part of its response to climate change, the government intends to introduce a carbon emissions tax of R120/t (one hundred and twenty South African rand per ton) of carbon dioxide equivalent on a phased basis from 1 January 2015 with annual increases of 10% for the initial implementation period.

#### **6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

Under the ERA read with the New Generation Regulations, the Minister of Energy may issue a determination for the procurement of new generation capacity from IPPs and designate the buyer of the electricity generated from such new generation capacity. Such determination is expressed in the ERA to be binding on the seller and buyer of the electricity of the procured new generation capacity.

The provision of a purchase guarantee is within the discretion of the procuring authority. In the case of the RE-IPP Procurement Programme, successful bidders will be awarded power purchase agreements pursuant to which the single buyer designated by the Minister of Energy will be obliged to

purchase electrical energy supplied by the IPPs established by the successful bidders. The tariffs for such electrical energy will be fixed by reference to the bid prices as tendered by the successful bidders, subject to any permitted adjustments, e.g. for movements in the rate of foreign currency (to the South African Rand) used by and the base interest rates applied by the successful bidders up to financial close and permitted local inflation index adjustments over the term of the power purchase agreements.

#### **7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

In early 2011, the DoE shifted its policy preference from feed-in tariffs to competitive tariffs, i.e. tariffs to be set pursuant to competitive tender proceedings, based on value for money considerations. Accordingly, pre-set tariffs are not available under the RE-IPP Procurement Programme and the programme further sets price caps on the tariffs that bidders are permitted to propose. These price caps may potentially be lowered for each bidding round under the RE-IPP Programme depending on, amongst other things, the rate of subscription and competitiveness of the pricing proposals received in each bidding round.

#### **8. Do the renewable energy based power plants have priority for connection to the grid?**

There is no legislated provision for renewable energy generators to have priority on grid connection over non-renewable energy options. Currently, under the ERA, any transmission and distribution licensee must to the extent provided for in its license provide non-discriminatory access to the transmission and distribution networks to third parties. This ensures that network owners cannot prioritise related generators over independent generators but does not ensure a preference for any class

of generators such as renewable energy generators. What may discourage investment in the renewable energy sector are commercially prohibitive connection and use of system costs if and to the extent that these costs cannot be passed through to the buyer under power purchase arrangements.

**9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

There are no direct incentives at this time. Instead, the procurement programmes for IPP development may include domestic manufacturing targets as a bid evaluation criterion.

**10. What are the other incentives available to renewable energy generation companies?**

See the taxation incentives mentioned in paragraph 5 above.

## STATISTICS

**11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

South Africa has a gross installed electricity generation capacity of about 36 GW, of which approximately 90% is dominated by coal-fired electricity generation facilities. Electricity

production from hydro, natural gas and oil sources located in South Africa is nominal, comprising about 1%. Nuclear electricity production from the Koeberg power station, South Africa's only nuclear power station, is estimated at 5%. South Africa imports the balance of its electricity consumption requirements mainly from the Cahora Bassa hydro power plant in Mozambique and otherwise through the regional power exchange amongst members of the Southern African Power Pool.

The percentage of electricity currently generated from renewable energy sources as a proportion of the total electricity generation mix is less than 0.1% (excluding hydro-power).

The IRP 2010-2030 allocates 42% of South Africa's total anticipated new electricity generation capacity (17.8 GW) to renewable energy technologies by 2030. This will comprise 9% of South Africa's total electricity generation capacity by 2030. This 17.8 GW is predominantly taken up by onshore wind technology (8.4 GW), solar photovoltaic technology (8.4 GW) and CSP (1 GW). However, the DoE has, within the IRP 2010-2030, reserved its right to revise these allocations based on technology learning rates and the cost evolution for renewable options. It is important to note that the integrated resource plan is a rolling plan, which is expected to be revised on an annual or bi-annual basis.

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# Turkey

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ÇAKMAK AVUKATLIK BÜROSU

## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

Turkey has a large potential for renewable energies. As of May 2013, the Energy Market Regulatory Authority (“EMRA”) has issued generation licenses for 274 wind, 931 hydropower, 27 geothermal and 43 biomass power projects in Turkey. There are also 30 wind power, 377 hydropower, 22 geothermal, 20 biomass license applications and 1 wave license application currently pending before EMRA.

The promotion of renewable energy resources in the generation of electrical energy is particularly important for Turkey because of, among other reasons, large potential for renewable energies, reducing the dependence on energy imports, strengthening the security of the energy supply, protecting the environment, and creating job opportunities.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

The renewable energy resources covered by the Turkish Renewable Energy Law No. 5346<sup>1</sup> (the “Renewable Energy Law”) are wind, solar, geothermal, biomass, biogas (including landfill gas), wave, stream, tidal, river and arc type hydroelectric generation facilities, and the

<sup>1</sup> Published in the Official Gazette No. 25819 dated 18 May 2005.

hydroelectric generation facilities with a reservoir area of less than 15 square kilometers.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

The main piece of legislation governing the renewable energy sources is the Renewable Energy Law. The Renewable Energy Law of 2005 has been amended with Law No. 6094, which entered into force on 8 January 2011 (the “2011 Amendment”), and with the entry into force of this law, the long awaited amendments to Turkey’s renewable regime has finally become law as explained below.

Although geothermal energy is also covered by the Renewable Energy Law, there is a separate law specific to geothermal energy, namely the Geothermal Energy and Natural Minerals Law No. 5686.<sup>2</sup>

The Electricity Market Law No. 6446<sup>3</sup> (the “EML”), which repealed most of the provisions of the previous Electricity Market Law No. 4628, also includes several provisions which are generally or specifically applicable to renewable energy sources. The provisions of the EML do not bring any substantial changes for renewable energy facilities as compared to the previous Law.

The Electricity Market Licensing Regulation<sup>4</sup> also sets forth a number of provisions aimed at promoting the utilization of renewable energy resources in the generation of electrical energy.

<sup>2</sup> Published in the Official Gazette No. 26551 dated 13 June 2007.

<sup>3</sup> Published in the Official Gazette No. 28603 dated 30 March 2013.

<sup>4</sup> Published in the Official Gazette No. 24836 dated 4 August 2002.

Besides, a draft Licensing Regulation has been prepared by EMRA for compliance with the new EML. The draft Licensing Regulation also includes similar provisions with the current Licensing Regulation in terms of renewable energy based facilities.

#### 4. What are the principal regulatory bodies in the renewable energy sector?

EMRA is the competent administrative authority responsible for regulation and supervision of the electricity market. EMRA is authorized to take the necessary measures to promote the utilization of renewable energy resources.

The Ministry of Energy and Natural Resources also has certain authorities in the renewable energy sector, in particular, concerning the long-term strategy and planning of the sector.

### INCENTIVES

#### 5. Are tax advantages available to renewable energy generation companies?

No specific tax advantage is applicable to renewable energy companies.

#### 6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

The Renewable Energy Law provides a purchase guarantee for the electricity generated by renewable energy companies. It provides that electricity suppliers (supplying electricity to end users) are required to purchase a certain percentage of the amount of electricity that they sold in the previous year from renewable energy companies participating in the Renewable Energies Support Mechanism (YEKDEM). Such purchase guarantee is

applicable for the first 10 years of operation of renewable energy companies.

Before the Amendment, bilateral energy purchase agreements were required to be signed in order to perform the purchase obligation. The 2011 Amendment, however, set forth a new method for the performance of the purchase obligation of the suppliers. Accordingly, the purchase obligation will be performed through a program, in which all suppliers subject to purchase obligation and all renewable energy companies that prefer to participate in YEKDEM will participate, rather than executing separate bilateral agreements for each sale transaction between each supplier and each renewable energy company.

The Market Financial Settlement Centre (“MFSC”) determines (i) the total generation by each power plant included in this program for each invoice period, and (ii) the price to be paid for each power plant. The sum of the prices determined for each power plant is determined and announced for each respective invoice period.

The purchase obligation ratio of each supplier is determined by MFSC by determining the ratio of the amount of energy supplied to the final consumers by each of the suppliers for the same invoicing period to the total amount of energy supplied to all of the final consumers in Turkey. Then the amount corresponding to the share of each supplier is calculated by multiplication of the purchase obligation ratio of each supplier with the total price to be paid to the renewable energy companies and notified to the parties and invoiced to the related supplier by MFSC. The price collected by MFSC is paid *pro rata* to the related renewable energy companies. A Regulation governing the principles and procedures of this implementation has also been issued by EMRA on 21 July 2011. EMRA prepared a draft regulation to repeal the regulation issued on 21 July 2011. The draft regulation also

includes same principles regarding the purchase obligation ratio. The renewable energy companies are eligible to participate in this program on an annual basis; *i.e.*, once participated they cannot leave the program during the year and participation in the program is allowed only at the beginning of each calendar year. Those companies that do not wish to participate in the program can sell electricity to the liberal market and can sign bilateral energy sale/purchase agreements. In such cases, however, they would not be entitled to benefit from the purchase and price guarantee incentives of the Renewable Energy Law.

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

The Renewable Energy Law provides a minimum price guarantee for the electricity generated by renewable energy companies as follows:

	First 10 years of operation (US dollar cents/KWh)
Hydropower	7.3
Wind	7.3
Geothermal	10.5
Solar	13.3
Biomass (including landfill gas)	13.3

The Council of Ministers is authorized to determine the fixed guaranteed prices and the terms applicable for the renewable energy types that are not included in the table above. Note that the guaranteed prices before the 2011 Amendment were based on “euro cents/KWh” and are now based on “US dollar cents/KWh”.

These figures are envisaged to apply only for the power plants which shall be commissioned on or before 31 December 2015. The fixed guaranteed prices and the terms applicable for the power plants to be commissioned after 31 December 2015 shall be regulated by Council of Ministers’ Decrees, but such prices shall not exceed the above-stated prices.

**8. Do the renewable energy based power plants have priority for connection to the grid?**

Article 38 of the Electricity Market Licensing Regulation provides that the Turkish Electricity Transmission Company (“TEİAŞ”) and/or the legal entities holding a distribution license shall give priority to the facilities generating electricity from renewable energy resources in terms of their connection to the transmission and/or distribution systems. The draft Licensing Regulation also envisages same priority for the renewable energy based facilities.

**9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

The Renewable Energy Law provides a domestic production incentive for projects commissioned by 31 December 2015 that use mechanical and/or electromechanical components produced in Turkey. The level of additional incentives will depend on the share of domestically produced components used in the plant. The additional incentives will be available for 5 years from the date of commencement of commercial operation of the plant. Annexed to the Renewable Energy Law is a chart stating, in detail, the incentive level for each type of component.

The Council of Ministers is authorized to determine the domestic production incentives available for the renewable energy producers

to be commissioned after 31 December 2015. A regulation has been issued by the Ministry of Energy and Natural Resources regarding the procedures and principles for definition of the scope of domestic production, its standards, certification and related inspection procedures on 19 June 2011. Pursuant to an amendment made to such Regulation in July 2012, at least 55% of the equipment must be domestically produced to benefit from this incentive. In practice, this incentive has not yet started to be implemented as of the date of this publication.

#### **10. What are the other incentives available to renewable energy generation companies?**

Article 12(4) of the Electricity Market Licensing Regulation provides that legal entities which apply to EMRA to obtain a license for generation of electricity from renewable energy resources are required to pay only one percent of the license acquisition fee and are exempted from the payment obligation of the remaining 99% of such fee. In addition, they are also exempted from the annual license fee payment obligation for a period of 8 years after the completion date of the construction of the facilities stated in their licenses. Draft Licensing Regulation also includes 8 year annual license fee exemption. However, the %1 license issuance fee is increased to %10 under the draft Licensing Regulation.

Pursuant to the Renewable Energy Law, no service fee shall be collected from individuals or legal entities willing to construct generation facilities to meet their own energy needs from renewable energy resources, for the preparation of final project, planning, master plans, initial examination and initial studies to be performed by the State Hydraulic Affairs General Directorate or the Electricity Affairs General Directorate. In addition, investments for energy generation facilities, procurement of electro-mechanic systems within the country, research, development and production

investments concerning solar energy units, and research and development investments for biomass energy may benefit from these incentives if authorized by a Council of Ministers' Decree.

Pursuant to the Electricity Market Law, in the event that the forests and the lands under private ownership of the Treasury, or under the control or disposal of the State, are utilized for the generation of electricity from renewable energy resources, such lands shall be leased to, or the right-of-way or usufruct rights thereof, shall be granted to the relevant entities. A 85% discount shall be applied for the fees of such rights during the investment period and the first 10 years of the operation period, provided that the power plant is commissioned by the end of 2020.

The Renewable Energy Law also provides the following incentives for the renewable energy producers:

- Renewable energy producers are entitled to construct additional capacity on the condition that such additional capacity is constructed within the area specified in their licenses and that the power delivered to the transmission system does not exceed the installed capacity stated in their licenses.
- Priority shall be given to renewable energy projects when evaluating the connection requests of generation license applicants to the transmission system.
- Renewable energy projects can be developed in the national parks, natural parks, natural protection zones, protected forests, natural sites, etc. on the condition of receiving affirmative opinion of the relevant Ministry or the relevant general directorate of protection, as the case may be.
- Pursuant to Supplementary Article 2 of Law No. 4706 Concerning the Immovable

Properties of the Treasury, for the establishment of usufruct rights over the Treasury and State owned lands, the right holder must pay 1% of its revenues to the Treasury in addition to the usufruct fee. The 2011 Amendment removes this 1% payment obligation for the renewable energy producers.

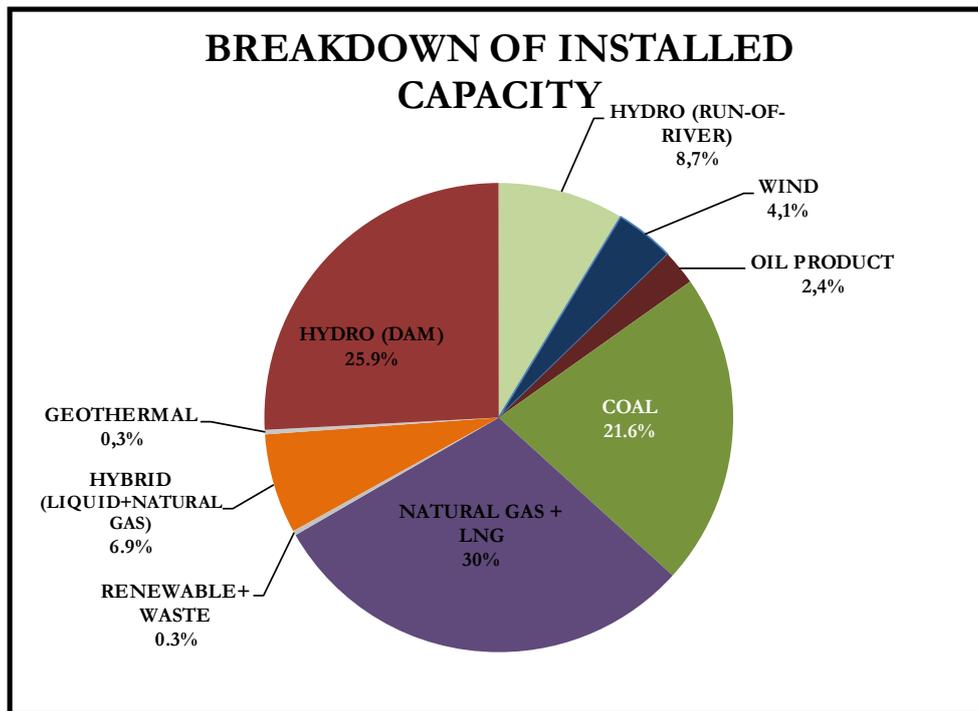
- EMRA has issued a regulation regarding the procedures for application, permitting, inspection, technical and financial matters for renewable energy based generation facilities with a minimum established power of 500 KW and micro cogeneration facilities exempt from the obligation to obtain a license and establish a special purpose company on 21 July 2011. The 500 MW limit has later been increased

to 1 MW with the EML. Individuals and legal entities generating electricity within the scope of this article shall benefit from the above stated guaranteed prices for 10 years if they generate more than their needs and transmit such excess to the system.

**STATISTICS**

**11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

The installed capacity of Turkey as of March 2013 is 57,523.2 MW. The breakdown of such installed capacity is as follows (Source: TEİAŞ)



The electricity generation in Turkey was approximately 239.1 billion kWh in 2012 while electricity consumption was 241.9 billion kWh in the same year. Out of this, 174.5 billion

kWh (73%) was based on thermal plants and 64.6 billion kWh (27%) was generated by renewable sources such as hydro, geothermal and wind (Source: TEİAŞ).

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# United Arab Emirates

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

There is a relatively new focus on renewable energy in the UAE that is increasingly important politically and economically. Recently, the UAE has participated in some of the most significant renewable energy projects in the region and the world.

Within the UAE, Abu Dhabi is the leading Emirate in participating in renewable energy projects and investment. The Abu Dhabi government formed Abu Dhabi Future Energy Company (“ADFEC”, also branded as “Masdar”) by legislation in 2007 as a vehicle for implementing renewable energy policy.

ADFEC is mandated to develop and invest in projects in various sectors in accordance with its sustainability objectives, including renewable energy, carbon reduction and energy efficiency projects.

One of ADFEC’s flagship projects is Masdar City, a USD 22 billion development aimed at being one of the most sustainable and carbon neutral cities in the world. Masdar City will host the research and development activities of a number of international energy and materials companies (such as BASF, Siemens, GE and Schneider) as well as the headquarters of the International Renewable Energy Agency.

Increasingly, Dubai is also investing in renewables projects. The Dubai government is promoting investment pursuant to the “Dubai Integrated Energy Strategy 2030” aimed at increasing the role of renewable energy in the Emirate’s energy mix. Dubai is currently procuring a 13 MW photovoltaic solar power plant representing the first step in implementing this strategy. This strategy will likely be supported by continuing support from the private sector.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

Despite significant political and economic support for renewable energy in the UAE and its Emirates, the relevant statutory regimes regulating the electricity industry give very little attention to renewable energy and, as such, renewable energy is largely an undefined concept under UAE law.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

There is no separate regulatory treatment for renewable energy in the body of UAE and Emiri laws regulating the electricity sector. As a consequence, there are no legislative regimes encouraging development of renewable energy projects, such as feed-in-tariffs.

Instead, governments in the UAE implement renewable energy policy via government-owned utilities or, in the case of Abu Dhabi, via ADFEC.

It is anticipated that some Emirates will adopt laws giving specific treatment to renewable energy in the coming years.

#### 4. What are the principal regulatory bodies in the renewable energy sector?

There are no regulatory bodies that have been separately established in the UAE to independently regulate the renewable energy sector.

This means electricity generated using renewable sources falls within the regulatory scope of the relevant power and water authorities of each Emirate.

Abu Dhabi and Dubai have established regulatory bodies that function independently from the relevant authorities in connection with the electricity and water privatisation schemes of those Emirates. Fujairah and Sharjah have established electricity authorities that perform a regulatory role. Regulation in the remaining Emirates in the UAE is supported by a federal regulator established by the UAE government.

### INCENTIVES

#### 5. Are tax advantages available to renewable energy generation companies?

The UAE is largely tax free and so there are no specific tax advantages for companies engaged in renewable energy generation.

However, project companies involved in key renewable energy projects in the UAE have been contractually entitled to exemption from paying duties and taxes on the importation of plant, equipment and materials for those renewable energy projects.

#### 6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

There is no legislative right to a purchase guarantee for electricity generated by renewable energy companies.

However, some of the renewable energy projects undertaken in the UAE have involved contractual rights for project companies that are comparable to a legislative purchase guarantee.

#### 7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

There is no legislative right to a minimum price guarantee for electricity generated by renewable energy companies.

However, a unique feature of key renewable energy projects planned and operating in Abu Dhabi is the Green Payment Agreement (“GPA”). Broadly, the GPA obliges the Abu Dhabi government to pay the project company additional amounts of the electricity tariff. This mechanic essentially operates as a private right to a long term feed-in-tariff.

#### 8. Do the renewable energy based power plants have priority for connection to the grid?

There is no legislative right to priority connection of renewable energy power projects to the electricity grid.

#### 9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?

There is no legislative right to incentives for domestic manufacture of equipment or materials used to construct renewable energy power projects.

#### 10. What are the other incentives available to renewable energy generation companies?

Power projects in the UAE typically involve a government-related entity as a sponsor and therefore tend to benefit from advantages that are not available on other infrastructure projects

(such as government guarantees, priority access to land and streamlined permitting), although these advantages are equally applicable to fossil fuel power projects.

There are no official statistics published for renewable generation capacity installed in the UAE.

**STATISTICS**

**11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

Renewable energy projects in the UAE use direct and indirect solar (photovoltaic and concentrated) and wind for electricity generation (although ADFEC has explored alternatives, such as geothermal energy). These projects represent a small percentage of the total installed capacity in the UAE.

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# United Kingdom

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

The use and generation of renewable energy is essential to the UK's commitments to reduce carbon emissions, avert climate change and generally "green" the UK economy.

As an EU Member State, the UK has been one of the most pragmatic in developing and applying carbon reduction and other environmental sustainability priorities. The challenge of shifting to a low-carbon, 'green economy' continues to require the adoption and implementation of comprehensive environmental objectives and effective policy measures supporting them. In the UK this includes:

- The Climate Change Act, which establishes a reduction of UK greenhouse gas emissions by 80% by 2050, with an interim target of emissions reductions by 34% by 2020, compared with 1990. A 50% reduction from 1990 levels must be achieved by 2025 (for the period 2023–2027).<sup>1</sup> The UK continues to support the EU Emissions Trading System (EU ETS)

as a means of achieving over 50% of carbon emission reductions by 2025.

- Implementing the Renewable Energy Target under which the UK has committed to deriving 15% of all energy from renewable sources by 2020 (in line with the EU Renewable Energy Directive);
- A carbon price floor, due to be implemented on 1 April 2013<sup>2</sup>;
- Electricity market reform through Contracts for Differences ("CfDs"), which provide lower risks and better incentives for investors in low-carbon technologies, and the Capacity Market, which financially incentivizes service providers to offer reliable clean energy supplies;
- the UK Green Deal (for domestic energy efficiency); and
- Government support for carbon capture and storage technology development (currently estimated at £1 billion available).

On 28 November 2012, the UK became the first country in the world to create a bank dedicated to the green economy with the launch of the Green Investment Bank (GIB)<sup>3</sup>. With its £3 billion capital, it is hoped that the GIB will also aid sectors such as non-domestic energy efficiency and waste (including energy-from-waste), with a potential to grow beyond these to other renewable power sources. The GIB is designed to be a catalyst to encourage private sector lenders and investors, by partnering with those already committed to

<sup>1</sup> See [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/47614/3751-carbon-plan-executive-summary-dec-2011.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47614/3751-carbon-plan-executive-summary-dec-2011.pdf), page 3

<sup>2</sup> See [http://www.hm-treasury.gov.uk/d/carbon\\_price\\_floor.pdf](http://www.hm-treasury.gov.uk/d/carbon_price_floor.pdf)

<sup>3</sup> See <http://www.greeninvestmentbank.com/>

the green economy and providing additional capital<sup>4</sup>.

*Promoting a diverse mix of renewable and low-carbon energy sources*

Harnessing natural resources to reduce the UK's dependence on fossil fuels is considered essential to ensure greater security of energy supply and development of technology for a cleaner environment, as well as reducing greenhouse gas emissions. Potential resources include wind, biomass, biofuels and hydroelectric power.

The UK is considered to have significant potential for wind energy (hosting one of the world's largest offshore wind farms), and one of the greatest potential wave and tidal resources given its geographic location. In addition, the Government sees potential in replacing coal with biomass energy, which is typically of lower cost than other renewables, as it involves the use of existing assets<sup>5</sup>.

Biomass is fast becoming the largest source of renewable energy in the UK. Half of all biomass power in the UK is generated from landfill gas, and the remainder from wood, sewage gas, bioliquids, animal and plant residues and other wastes<sup>6</sup>. The UK's first coal-fired to biomass-fired electricity generation conversion opened at Tilbury in 2012.

Following the launch of a public consultation in September 2012<sup>7</sup>, the

<sup>4</sup> See <http://www.greeninvestmentbank.com/userfiles/files/Our-Investment-Approach.pdf>

<sup>5</sup> See [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/42852/5936-renewables-obligation-consultation-the-government.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42852/5936-renewables-obligation-consultation-the-government.pdf), page 46.

<sup>6</sup> See [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/65850/5956-dukes-2012-chapter-6-renewable.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/65850/5956-dukes-2012-chapter-6-renewable.pdf)

<sup>7</sup> See [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/66519/6339-consultation-on-biomass-electricity-combined-bea.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/66519/6339-consultation-on-biomass-electricity-combined-bea.pdf)

Government has also announced the introduction of a non-legislative 400MW cap on new-build dedicated biomass power generation under the UK Renewables Obligation ("RO"), which will help ensure the RO brings new biomass projects into existence that are both cost and carbon effective.

Approximately 1.5% of the UK's electricity is derived from hydroelectric power. Whilst the potential for large-scale development (hydro plants producing more than 5MW) is limited because of environmental concerns and the reality that most economically attractive sites for hydroelectric schemes have previously been utilised, the UK's remaining small-scale hydro resources (producing less than 5MW) are being exploited in a sustainable manner. It is estimated that a viable hydro potential of 850 to 1550MW remains available, constituting approximately 1-2% of current UK generating capacity<sup>8</sup>.

#### *Renewable Energy Policy*

Recently, the following major pieces of policy have determined the UK Government's approach to renewable energy: the Stern Review on the Economics of Climate Change (2006), the Energy White Paper: meeting the energy challenge (2007), the Renewable Energy Strategy (2009), the UK Low Carbon Transition Plan White Paper (2009), 'Smarter Grids: The Opportunity' (2009), the Electricity Market Reform White Paper (2011), the Electricity Market Reform: policy overview (2012), the Energy Security Strategy (2012) and the updated UK Renewables Energy Roadmap (2012). In addition, Government Climate Change Plans, such as Defra's Climate Change Plan 2010<sup>9</sup> and DCMS' Climate

<sup>8</sup> See <https://www.gov.uk/harnessing-hydroelectric-power>

<sup>9</sup> See <http://www.defra.gov.uk/publications/2011/03/26/climate-change-plan-2010-pb13358/>

Change Plan 2010-2012<sup>10</sup> set out the actions specific government departments are taking to reduce greenhouse gas emissions across their policy areas. Carbon budgets that place a restriction on the total amount of greenhouse gases the UK can emit over a 5-year period are a further measure the UK is taking to drive the UK's transition to a low-carbon economy.

With the backdrop of the 2006 Stern Review on the Economics of Climate Change, in 2007 the UK Government released its Energy White Paper on the UK's international strategy to tackle climate change and energy security together, so as to ensure secure and affordable energy supplies.

Following on from this, the Renewable Energy Strategy (2009)<sup>11</sup>, which addresses the UK's obligations toward the EU's 20% renewables target by 2020, sets a target of 15% of the UK's energy supply coming from renewable sources by 2020. The government has targeted approximately 30% renewable sources for electricity generation, 11% for heat and 10% for transportation.<sup>12</sup>

The Low Carbon Transition White Paper commits to GHG cuts of 18% on 2008 levels by 2020 by, amongst other things, substantially increasing the requirement for

electricity suppliers to sell renewable electricity.<sup>13</sup>

On 27 December 2012, the Government updated the UK Renewable Energy Roadmap<sup>14</sup>, which sets out the steps required to accelerate the use and production of renewable energy in the UK to assist the UK Government in meeting its 2020 target.<sup>15</sup> The Government's key priorities over the coming year are to i) introduce the domestic Renewable Heat Incentive ("RHI", discussed further below), ii) implement the Renewables Obligation banding review, iii) legislate for energy market reform, and iv) set strike prices for the new CfDs. The Roadmap focuses on key technologies to achieve the UK's legally binding 2020 emissions target, including onshore and offshore wind, marine energy, biomass electricity and biomass heat, solar and renewable transport technologies, and provides an update on the deployment of renewables in the UK. Between July 2011 and July 2012, the UK saw a 27% increase in overall renewable energy generated (with more than 10% of all energy generated in the UK coming from renewable sources). In addition, there was a 40% increase in UK renewable capacity, driven by a 60% increase in offshore wind capacity and a five-fold increase in solar PV capacity, the latter largely due to a 50% fall in price.<sup>16</sup>

<sup>10</sup> See [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/78335/DCMS\\_Climate\\_Change\\_Plan2010\\_12.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/78335/DCMS_Climate_Change_Plan2010_12.pdf)

<sup>11</sup> See Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

<sup>12</sup> See also [www.decc.gov.uk/en/content/cms/what\\_we\\_do/uk\\_supply/energy\\_mix/renewable/policy](http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/policy).

<http://centralcontent.fco.gov.uk/central-content/campaigns/action-copenhagen/resources/en/pdf/DECC-Low-Carbon-Transition-Plan>

<sup>14</sup> See [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/80246/11-02-13\\_UK\\_Renewable\\_Energy\\_Roadmap\\_Update\\_FINAL\\_DRAFT.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/80246/11-02-13_UK_Renewable_Energy_Roadmap_Update_FINAL_DRAFT.pdf)

<sup>15</sup> See <http://www.decc.gov.uk/assets/decc/11/meeting-demand/renewable-energy/2167-uk-renewable-energy-roadmap.pdf>.

<sup>16</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/80246/11-02-13\\_UK\\_Renewable\\_Energy\\_Roadmap\\_Update\\_FINAL\\_DRAFT.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/80246/11-02-13_UK_Renewable_Energy_Roadmap_Update_FINAL_DRAFT.pdf)

Alongside the Renewable Energy Roadmap, the Government published the Electricity Market Reform White Paper which incorporates reforms to decarbonize electricity in the UK, in particular through the introduction of a carbon price floor and Feed-In Tariffs with CfDs for low-carbon electricity generators.<sup>17</sup> The Electricity Market Reform is implemented through the Energy Bill 2012-2013, which was presented to Parliament on 29 November 2012 and is due to achieve Royal Assent in the first quarter of 2013.

In February of this year, the Government appointed an Electricity Market Reform Panel of Technical Experts, which will provide independent scrutiny of the Electricity Market Reform. This analysis will subsequently inform the Government's first Electricity Market Reform Delivery Plan.

#### *Important Legislation*

Numerous pieces of legislation have come into effect over the past few years to support these policies.

The UK Climate Change Act 2008 mandates the Secretary of State to ensure that the net UK carbon emissions by 2050 are at least 80% lower than the 1990 baseline (for the period 2023–2027).<sup>18</sup> The use and generation of renewable power, along with energy efficiency, is considered essential for achieving this goal. One of the tools to enable this is the system of a 'carbon budget', which allows for only a certain amount of greenhouse gases to be released by the UK over a certain period.

The UK Energy Act 2008, which came into force in November 2008, implements the

legislative aspects of the Energy White Paper and updates energy regulation to protect the environment, meet security of supply needs, and reflect the availability of new technologies (such as emerging renewable technologies).<sup>19</sup>

The UK Renewables Obligation, which is translated into secondary legislation in the form of the Renewables Obligation Order 2009 ("ROO 2009"), as amended by the Renewables Obligation (Amendment) Order 2011 (discussed further below), is considered the main support for renewable power generation in the UK, providing, amongst other things, a financial incentive for the generation of energy from renewable sources.<sup>20</sup>

The Energy Act 2011, which received Royal Assent on 18 October 2011, establishes the framework to implement the Coalition Government's "Green Deal"<sup>21</sup> plan, and is a flagship initiative designed to improve the energy efficiency of properties in the UK. The Act also implements provisions for the Energy Companies Obligation (ECO), the Government's new domestic energy efficiency programme, which replaces pre-existing Carbon Emission Reduction Target

<sup>19</sup> See [www.decc.gov.uk/en/content/cms/legislation/energy\\_act\\_08](http://www.decc.gov.uk/en/content/cms/legislation/energy_act_08).

<sup>20</sup> The England & Wales and Scotland Renewables Obligation Orders were introduced in April 2002. In Northern Ireland, it was introduced in April 2005. Northern Ireland Renewables Obligation (NIRO) is administered by Ofgem on behalf of the Northern Ireland Authority for Energy Regulation (NIAER). For details in each jurisdiction, see [www.ofgem.gov.uk/Sustainability/Environment/RenewablObl/Pages/RenewablObl.aspx](http://www.ofgem.gov.uk/Sustainability/Environment/RenewablObl/Pages/RenewablObl.aspx).

<sup>21</sup> This is a framework currently being established by the UK Government where companies can offer their customers improvements to their homes, communal areas and businesses at no initial cost, and then charge customers in installments on their energy bills subsequently.

<sup>17</sup> See <http://www.decc.gov.uk/assets/decc/11/policy-legislation/EMR/2176-emr-white-paper.pdf>.

<sup>18</sup> Section 1(1), Climate Change Act 2008, Ch. 27, Part 1.

(CERT)<sup>22</sup> and Community Energy Saving (CESP)<sup>23</sup> programmes, both of which closed at the end of 2012.

The ECO, which will run until 31 March 2015, provides a legal obligation on energy suppliers to improve the energy efficiency of households via three distinct targets: i) the Carbon Emissions Reduction Obligation, ii) the Carbon Saving Community Obligation and iii) the Home Heating Cost Reduction Obligation. The Office of the Gas and Electricity Markets (Ofgem) (discussed further below) will administer the ECO for its duration.

The Energy Bill 2012-2013 provides for energy efficiency in homes and businesses, is designed to secure low-carbon energy supplies and is a fair playing field for energy companies. It establishes a framework to reform the electricity market in order that secure, affordable and clean electricity may be delivered, including an Emissions Performance Standard to limit emissions production from fossil fuel power stations.<sup>24</sup>

## 2. What is the definition and coverage of renewable energy under the relevant legislation?

Generally, a renewable (or low-carbon) source of energy is defined in the Energy Act 2004 as: biomass; biofuels; fuel cells; photovoltaics; water (including waves and tides); wind; solar power; geothermal sources; combined heat and power systems; another sources of energy and technologies for the generation of electricity or the production of heat, the use of which would, in the opinion of the Secretary of State, cut

emissions of greenhouse gases in Great Britain<sup>25</sup>.

Under the Utilities Act 2000, “renewable sources” means sources of energy (other than fossil fuel or nuclear fuel), but includes waste of which not more than a specified proportion is waste which is, or is derived from, fossil fuel (i.e., “coal, substances produced directly or indirectly from coal, lignite, natural gas, crude liquid petroleum, or petroleum products”).<sup>26</sup>

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

As a result of the complexity of issues surrounding the need for and implementation of policies supporting clean technologies, reduction of greenhouse gas emissions, energy security and fuel poverty, the regulation of renewable energy sources is equally complex in the UK. Increasing numbers of leading countries are investing in clean technology.

The legislation governing various aspects of renewable power, such as taxation, planning, environmental protection and funding clean technologies, is administered by various governmental departments for which new mandates have been created, and most regulatory infrastructure for renewable power is managed separately by the administrations in England & Wales, Scotland and Northern Ireland.

The UK renewable energy sector is regulated generally by the Department of Energy & Climate Change (DECC), established in October 2008, to bring together energy and

<sup>22</sup> See <http://www.ofgem.gov.uk/Sustainability/Environment/EnergyEff/Pages/EnergyEff.aspx>

<sup>23</sup> See <http://www.ofgem.gov.uk/Sustainability/Environment/EnergyEff/cesp/Pages/cesp.aspx>

<sup>24</sup> See [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/48367/5315-aide-memoire-on-emissions-performance-standard.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48367/5315-aide-memoire-on-emissions-performance-standard.pdf)

<sup>25</sup> Section 82(7), Energy Act 2004 Part 2, Ch. 1.

<sup>26</sup> Utilities Act 2000, Ch. 27, Part V (amending the Electricity Act 1989).

climate change policy in the UK. DECC's strategic objectives are to:

- save energy with the 'Green Deal' and support vulnerable consumers, specifically by reducing household, business and public sector energy use, and helping to protect the fuel poor;
- secure a low carbon energy future, specifically by reforming the energy market to ensure it is diverse, safe, secure and affordable and incentivising low carbon investment and deployment;
- push forward action on climate change in the UK and abroad, specifically by working for international action to tackle climate change, and working with other government departments to ensure that UK carbon budgets are met; and
- manage energy responsibly and cost-effectively, specifically by ensuring public safety and value for money in the way it manages nuclear, coal and other energy liabilities<sup>27</sup>.

The principle UK laws and regulations relevant to the renewable energy sector are:

- the Climate Change Act 2008, which sets an 80% target for the year 2050<sup>28</sup> for the reduction of certain greenhouse gas emissions by supporting a system of carbon budgeting (in the form of five-year commitments to reduce carbon emissions and the means to achieve the targets).

It also confers powers to establish trading schemes or activities for limiting or reducing GHG emissions, and addresses

<sup>27</sup> See [www.decc.gov.uk/en/content/cms/about/our\\_goals/our\\_goals.aspx](http://www.decc.gov.uk/en/content/cms/about/our_goals/our_goals.aspx).

<sup>28</sup> Brought into force by the Climate Change Act 2008 (2020 Target, Credit Limit and Definitions) Order 2009 No. 1258.

adaptation to climate change impacts. These all rely greatly on the contribution of renewable power<sup>29</sup>;

- the Energy Act 2011<sup>30</sup>, which drives forward the use of new technologies (such as carbon capture and storage and emerging renewable technologies), increase the ways in which the UK generates electricity, helps the electricity industry lower its carbon emissions, regulates electricity generated from renewable sources, electricity transmission, payments to small-scale generators of low-carbon electricity, and payments in respect of the renewable generation of heat;
- the Energy Bill 2012-2013, which (when enacted) will succeed the Energy Act 2010, focuses on reform of the electricity market and setting decarbonisation targets;
- the Planning Act 2008<sup>31</sup>, which makes provisions for infrastructure in Renewable Energy Zones (being areas outside the UK's territorial sea to be exploited for energy production)<sup>32</sup>;
- the Planning and Energy Act 2008<sup>33</sup>, which allows local planning authorities to include policies imposing reasonable

<sup>29</sup> Related legislation includes: CRC Energy Efficiency Scheme (Amendment) Order 2011 (SI 2011/234); Carbon Accounting (Amendment) Regulations 2009 (SI 2009/3146); Carbon Budgets Order 2009 (SI 2009/1259); Climate Change Act 2008 (2020 Target, Credit Limit and Definitions) Order 2009 (SI 2009/1258).

<sup>30</sup> Brought into force by the Energy Act 2011 (Commencement No. 2 and Saving) Order 2013.

<sup>31</sup> Brought into force by the Planning Act 2008 (Commencement No. 1) (England) Order 2009 No. 1303 (C. 70).

<sup>32</sup> As defined in section 84(4), Energy Act 2004, Part 2, Ch. 2.

<sup>33</sup> See [www.opsi.gov.uk](http://www.opsi.gov.uk).

requirements for a proportion of energy used in regional development to be energy from renewable sources in the locality of the development;

- the Utilities Act 2000<sup>34</sup>, which requires a certain level of renewable source energy production and, amongst other things, empowers the Secretary of State to order electricity suppliers to produce evidence that customers have been provided with a certain amount of electricity generated through renewable sources<sup>35</sup>; and
- the Carbon Plan, published in December 2011, which sets out plans for achieving the emissions reductions up to 2027 pledged in previous carbon budgets, including the intention to reduce UK emissions by 80% from 1990 levels in 2050.<sup>36</sup> The first four carbon budgets have been set into law for the period 2008-2027. According to the latest projections, the UK is on track to meet the first 3 legislated carbon budgets, but there is an estimated shortfall of 205MtCO<sub>2</sub> over the fourth<sup>37</sup>.

#### 4. What are the principal regulatory bodies in the renewable energy sector?

The principal regulatory body in respect of renewable power is Ofgem, an independent body which regulates the pricing, transmission and production of energy in

the UK. Ofgem administers the Renewables Obligation and its role includes<sup>38</sup>:

- accrediting renewable source electricity generating stations;
- issuing and revoking ROCs as discussed further below;
- maintaining the ROCs register;
- monitoring compliance with the requirements of Renewables Obligation Orders;
- calculating the buy-out price;
- receiving buy-out and late payments and redistributing the funds; and
- reporting annually on the state of compliance with Renewables Obligation Orders and their operation.

In 2009, Ofgem established a new business unit, Ofgem E-Serve, which runs Government schemes such as:

- the Renewables Obligation Smart Meters<sup>39</sup>;
- Offshore Electricity Transmission for renewable and non-renewable sources<sup>40</sup>;
- the administration of Government environmental programmes (e.g. the Renewables Obligation, Climate Change Levy exemptions and the Carbon Emission Reduction Target<sup>41</sup>, which obliges energy suppliers to provide grants and offers to enable individuals to pay for energy efficiency measures and renewable energy technologies in their homes; and

<sup>34</sup> Brought into force by the Utilities Act 2000 (Commencement No. 1 and Saving) Order 2000 No. 2412 (C. 67).

<sup>35</sup> Related legislation includes the Electricity and Gas (Carbon Emissions Reduction) (Amendment) Order 2010 (SI 2010/1958).

<sup>36</sup> See [http://www.decc.gov.uk/en/content/cms/emissions/carbon\\_budgets/carbon\\_budgets.aspx](http://www.decc.gov.uk/en/content/cms/emissions/carbon_budgets/carbon_budgets.aspx).

<sup>37</sup> See <https://www.gov.uk/government/policies/reducing-the-uk-s-greenhouse-gas-emissions-by-80-by-2050/supporting-pages/carbon-budgets>

<sup>38</sup> Ofgem also administers the NIRO.

<sup>39</sup> See [www.ofgem.gov.uk/e-serve](http://www.ofgem.gov.uk/e-serve).

<sup>40</sup> See [www.ofgem.gov.uk/Networks](http://www.ofgem.gov.uk/Networks).

<sup>41</sup> See [www.ofgem.gov.uk/Sustainability](http://www.ofgem.gov.uk/Sustainability).

- the RHI (discussed further below)<sup>42</sup>.

Ofgem has been recently restructured to give greater focus on sustainability and the need to ensure that the UK's high-voltage networks can meet the challenge of connecting more renewable generation. Ofgem is currently consulting on amendments to its administration of the RHI, including the introduction of biogas production plants as eligible equipment to generate heat and amending its approach to metering heat loss between buildings.<sup>43</sup>

Ofgem announced changes to the UK's energy market regulation in February 2013, which will allow for simplification of domestic energy tariffs<sup>44</sup>. Utilities will be limited to four tariffs per fuel type, of which one must be a standard variable rate tariff. Energy customers will be put on their supplier's lowest variable rate unless they choose otherwise.

Another regulatory body is the Office for Renewable Energy Deployment ("ORED"), launched by the Government in 2009 to ensure that the UK meets its targets for renewable energy. It is run under DECC, and its work includes:

- ensuring that renewable technologies can efficiently be deployed by supporting and giving importance to a strong planning system, supply chains and connection to the grid;

<sup>42</sup> See [www.ofgem.gov.uk](http://www.ofgem.gov.uk).

<sup>43</sup> See <http://www.ofgem.gov.uk/e-serve/RHI/Documents1/Consultation%20on%20amendments%20to%20Ofgems%20administration%20of%20the%20Renewable%20Heat%20Incentive%20scheme.pdf>.

<sup>44</sup> See <http://www.ofgem.gov.uk/Media/PressRel/Documents1/RMR%2021-02-13.pdf>

- providing the opportunity for local communities to have communal renewable energy schemes to share and benefit from;
- enabling the acceleration of technologies which will be important contributors in the future, such as marine energy, in which the UK has a strong presence as the innovator of the world's first full-scale devices to harness the power of waves and tides; and
- aiding a current project to encourage manufacturers of wind turbines to use the UK's potential and another project to develop an offshore electricity grid.<sup>45</sup>

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

One major tax advantage for renewable energy generation companies comes in the form of an exemption from the requirement to pay the Climate Change Levy.<sup>46</sup> Electricity that is generated from renewable sources is exempt from this tax, provided that the renewable energy source qualifies under the conditions stipulated in the legislation to obtain a Levy Exemption Certificate (LEC).<sup>47</sup>

<sup>45</sup> See [www.decc.gov.uk/en/content/cms/meeting\\_energy/renewable\\_ener/ored/ored.aspx](http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/ored/ored.aspx).

<sup>46</sup> The aim of the CCL is to provide an incentive to increase energy efficiency and to reduce carbon emissions.

The Climate Change Levy (General) Regulations 2001 (Statutory Instrument 2001 No. 838), subsequently amended by, most recently, The Climate Change Levy (General) (Amendment) Regulations 2010 No. 643. See also "[www.customs.hmrc.gov.uk](http://www.customs.hmrc.gov.uk)".

<sup>47</sup> Part V, Sections 48 and 49 of the CCL.

On 1 April 2010, the Government introduced the concept of ‘feed-in tariffs’ (FITs) for micro-generation. These are payments to producers of renewable electricity up to 5 MW, whether used by the generator for its own purposes or exported to the national transmission system (National Grid). The tariffs are designed to incentivize the generation of renewable electricity on a small scale<sup>48</sup>. The FITs scheme supports renewable energy projects which involve new anaerobic digestion, hydro, solar photovoltaic and wind energy. A pilot programme is also being set up, whereby the first 30,000 micro combined heat and power installations with an electrical capacity of 2kW or less are supported by FITs. More than 21,000 installations, mostly domestic, have been registered to date<sup>49</sup>.

On 7 February 2011, the UK Government undertook a review of the FITs scheme to determine how it could be improved in order to meet the target of 10% of savings in 2014/15, as committed in the 2010 Spending Review. This addressed issues such as tariff levels, eligible technologies and administrative and regulatory arrangements.

The review was separated into three phases, and included consideration of (i) linking small-scale solar photovoltaic (PV) tariffs to minimum energy efficiency requirements and introducing new multi-installation tariff rates for aggregated solar PV schemes; (ii) solar PV cost control mechanisms; and (iii) wind, anaerobic digestion and micro-

combined heat and power and scheme administration issues.

On 24 May 2012, the Government responded to the consultation on solar PV cost control mechanisms, which included setting out solar PV tariffs for new installations from 1 August 2012. It also set tariffs on a quarterly basis based on deployment during the year (through modifications to the Standard Conditions of Electricity Supply Licences).

The government also addressed a broad range of other issues, including tariffs for anaerobic digestion, hydro, micro CHP and wind, the treatment of community-owned installations and a preliminary accreditation mechanism<sup>50</sup>, through changes that came into force on 1 December 2012<sup>51</sup>.

**6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

There is currently no legislation providing for the guaranteed purchase of electricity created by renewable energy companies.

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

The FITs with CfDs mentioned above are long term contracts allocated by the National Grid to developers of low carbon generation and which will guarantee a set price for the electricity produced over an extended period of time.

<sup>48</sup> Section 41, Energy Act 2008 gives the Secretary of State authority to introduce FITs. The Statutory Instrument to put the FITs into practice is the Feed-in Tariffs (Specified Maximum Capacity and Functions) Order 2010 (S.I. 2010/678) as amended by the Feed-in Tariffs (Specified Maximum Capacity and Functions) (Amendment) Order 2011 (S.I. 2011/1181).

<sup>49</sup> See <https://www.gov.uk/government/news/buhne-takes-action-on-solar-farm-threat>

<sup>50</sup> See [http://www.fitariffs.co.uk/library/regulation/1207\\_Phase2B\\_response.pdf](http://www.fitariffs.co.uk/library/regulation/1207_Phase2B_response.pdf)

<sup>51</sup> See <https://www.gov.uk/government/consultations/tariffs-for-non-pv-technologies-comprehensive-review-phase-2b>

### **8. Do the renewable energy based power plants have priority for connection to the grid?**

The National Grid is the UK's electricity transmission system. The Connection and Use of System Code (CUSC) is the contractual framework for connection to and use of National Grid's system. Under this Code, there is not, at this time, any priority of connection for power generators using renewable energy sources.

DECC released in 2009 its policy 'Smarter Grids: The Opportunity', which recognizes the need for an intelligent grid suited to managing the fluctuating input of energy from renewable sources. As part of this policy, the UK Government is planning to roll out Smart Meters (as mentioned in question 4 above) to 30 million homes by 2019. In addition, Ofgem is providing £500m from April 2010 to March 2015 to support smart grid trials, and DECC is providing £2.8m for smaller smart grid demonstration projects.<sup>52</sup>

### **9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

According to the UK Low Carbon Transition Plan, the Government will help make the UK a "centre of green industry" by supporting the development and use of clean technologies. It promises to provide a supportive climate for investment in low carbon infrastructure, and is itself investing in research and development of new low carbon technologies.

The 2009 Budget designated £405 million to support low-carbon industries and advance

green manufacturing to boost technologies where the UK has the greatest potential, including investments of up to £120 million in offshore wind and £60 million in marine energy strategies.<sup>53</sup> In the 2010 UK Budget, DECC announced its intention to provide up to £60 million of government funding to manufacturers of offshore wind turbines looking to locate new facilities in the UK in order to support infrastructure such as the development of ports.<sup>54</sup> The 2011 budget introduced a carbon price floor for electricity generation from 1 April 2013 to spur investment in the low-carbon power sector. This has been predicted to start at around £16 per tonne of carbon dioxide in 2013 and follow a linear path to £30 per tonne in 2020. The budget also extended Climate Change Agreements (CCAs) to 2023 and increased the levy discount on electricity for CCA participants from 65 to 80 per cent from April 2013 to continue to support energy intensive businesses exposed to international competition. In addition, the Government highlighted it remains committed to providing funding for four CCS demonstration plants. In the 2012 UK budget, the Government announced its intention to consult on simplifying the Carbon Reduction Credit (CRC) energy efficiency scheme to reduce administrative burdens on business and highlighted that should the simplifications not alleviate administrative burdens, it would replace CRC revenues with an alternative environmental tax.

The Government introduced the Enhanced Capital Allowances (ECA) scheme in 2001 to encourage businesses to invest in low carbon, energy-saving equipment<sup>55</sup>. The scheme provides a tax incentive to businesses that invest in equipment that

<sup>52</sup> See [www.decc.gov.uk/en/content/cms/meeting\\_energy/network/strategy/strategy.aspx](http://www.decc.gov.uk/en/content/cms/meeting_energy/network/strategy/strategy.aspx).

<sup>53</sup> See [www.hm-treasury.gov.uk](http://www.hm-treasury.gov.uk).

<sup>54</sup> *Ibid.*

<sup>55</sup> See [www.eca.gov.uk/](http://www.eca.gov.uk/).

meets published energy-saving criteria. The ECA scheme allows the full cost of an investment in designated energy-saving plant and machinery to be written off against the taxable profits of the period in which the investment is made.

However, in the 2012 Budget, expenditure on plant and machinery for which tariff payments are received under FITs or RHIs will not be entitled to enhanced capital allowances. The number of FITs taken up exceeded expectations<sup>56</sup>, and the Government stressed that although such schemes are ‘targeted incentives’, they must ‘complement, rather than duplicate’ the effects of other incentives.<sup>57</sup> There has been a lukewarm reaction to such changes, in particular by those businesses who have invested in assets which generate energy from FITs and RHIs, and will consequently lose out on the capital allowances.

#### 10. What are the other incentives available to renewable energy generation companies?

The RO was introduced in 2002 under the Electricity Act 1989 to require all licensed electricity suppliers in England and Wales to supply a specified proportion of their electricity sales from renewable sources.<sup>58</sup> The Government’s intention, according to the Electricity Market Reform White Paper, is for the Feed-In Tariffs with CfDs to

replace the RO in due course. The Renewables Obligation Order 2002 (“ROO 2002”) was designed to incentivize the deployment of large-scale renewable electricity generation. Under the ROO 2002, UK electricity suppliers must source an increasing proportion of their electricity from renewable sources and a renewables obligation certificate (“ROC”) is issued for each MWh.<sup>59</sup> Electricity suppliers must demonstrate compliance with their target each year (1 April to 31 March) by either (or a combination of):

- a) surrendering equivalent ROCs to Ofgem for each MWh of its obligation; or
- b) making a “buy-out” payment to Ofgem for each MWh of its obligation.<sup>60</sup>

ROCs are effectively guarantees of the amount of electricity, in megawatt hours, having been produced by renewable sources and ROCs are themselves tradable certificates. The value at which ROCs have been traded has provided a financial incentive for energy generation companies to use renewable sources.

Since the introduction of the Order in 2002, growth in renewable electricity generation has more than doubled in the UK, attributed to the financial benefit of trading ROCs.<sup>61</sup>

<sup>56</sup> See <http://www.decc.gov.uk/assets/decc/Consultations/fits-review/4311-feed-in-tariff-scheme-phase-2b-consultation-docume.pdf>.

<sup>57</sup> See [http://www.hm-treasury.gov.uk/d/capital\\_allowances\\_fits.pdf](http://www.hm-treasury.gov.uk/d/capital_allowances_fits.pdf).

<sup>58</sup> For ease of reference the dates for England and Wales are used. The Renewables Obligation Orders for England & Wales and Scotland were introduced in April 2002. In Northern Ireland, it was introduced in April 2005. For further information see [www.decc.gov.uk](http://www.decc.gov.uk).

<sup>59</sup> The Renewables Obligation Order 2009 requires the Secretary of State to publish the number of ROCs that each electricity supplier is required to produce for each MWh of electricity supplied by it to customers in England and Wales (during the relevant compliance period) in order to discharge its RO for that period. For further information, see [www.decc.gov.uk/en/content/cms/what\\_we\\_do/uk\\_supply/energy\\_mix/renewable](http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable).

<sup>60</sup> The buy-out price for 1 April 2011 to 31 March 2012 is £38.69 per MWh.

<sup>61</sup> It has succeeded in bringing forward more economic technologies such as co-firing, landfill gas, onshore wind and sewage gas. See the UK Low Carbon Industrial Strategy at “[www.decc.gov.uk](http://www.decc.gov.uk)”.

Following a consultation between October 2011 and January 2012<sup>62</sup>, the Government's first banding review amendments are due to be introduced to the RO from 1 April 2013, under the Renewables Obligation (Amendment) Order 2013. The Order specifies the amount of support that individual technologies will receive under the RO for the period 2013-2017. The RO banding changes are estimated to deliver 11TWh more generation annually from 2016/2017 compared to the previous bands and are estimated to cost the average household £6 less in 2013/2014 than previously estimated.

On 11 March 2013, Ofgem produced a revised guidance on the RO for licensed suppliers of electricity, which sets out the expected changes to be brought in on 1 April 2013. The expected changes include removing the cap on co-firing ROCs which an electricity supplier can utilise as a percentage of their obligation and introducing a cap on the percentage of their obligation that suppliers can present in respect of ROCs issued from combustion of bioliquids producing electricity.

To increase the proportion of heat produced from renewable sources, the UK Government launched the RHI in November 2011, which gives payments to entities that self-generate renewable heat and is the world's first long-term financial support programme for renewable heat<sup>63</sup>.

There is also a Renewable Heat Premium Payment (RHPP) voucher scheme in the UK that gives money to householders to help them buy renewable heating technologies. Phase 1 of the scheme comprising i) a grant scheme open to individual householders, and ii) a competition for social housing providers to part-fund projects to install renewable heating on behalf of social tenants ended in March 2012. Phase 2, which runs until 31 March 2013, has a new voucher scheme whereby homes not heated by mains gas can apply for grants for air-to-water-source and ground-or water-source heat pumps, biomass boilers and solar thermal.<sup>64</sup>

## STATISTICS

### 11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?

The official figures for total electricity generation from renewables in the UK during 2012 are yet to be released. However, up to the fourth quarter of 2012, there was an increase on 2011 volumes. The main contributors to this substantial increase were<sup>65</sup>:

- onshore wind (increased by 38.2%);
- offshore wind (increased by 54.2%);

<sup>62</sup> See <https://www.gov.uk/government/consultations/supporting-large-scale-renewable-electricity-generation>

<sup>63</sup> Section 100, Energy Act 2008 gives the Secretary of State authority to introduce the RHI. The Statutory Instrument to put them into practice is currently being finalized.

<sup>64</sup> As of 18 February 2013, 5,758 vouchers had been issued under the scheme with a total value of £4,051,250. Of these, according to the Energy Saving Trust<sup>64</sup>, 39% were for solar thermal, 35% for air source heat pumps, 14% for ground or water source heat pump and the remaining 12% for biomass boilers. 3,488 vouchers of the total number issued had been redeemed.

<sup>65</sup> See [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/65858/3946-energy-trends-section-6-renewables.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/65858/3946-energy-trends-section-6-renewables.pdf)

- biodegradable municipal solid waste combustion (increased by 67.8%); and
- anaerobic digestion (increased by 27.7%).

electricity generation from renewable sources, as a result of increased capacity having been installed and higher average speed of winds in the UK.

Following on from the previous year, wind was the leading technology in 2012 for

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# United States of America

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## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

The US is rich in many sources of renewable energy – both on-shore and off-shore wind; solar; geothermal; various types of hydropower including conventional, pumped storage, tidal and kinetic; biomass; and many developing forms, such as biofuels. In 2012, approximately 12% of the electricity generated by utilities in the US came from renewable resources, primarily hydropower and wind.

The US has multiple programs to promote the use of renewable power, but many are established by state governments or other governmental subdivisions of the states and therefore are geographically limited in their application. There are, however, some financial incentives available nationally through federal programs and one federal mandatory purchase program, as described below. Note that the information below is current only as of March 2013.

### 2. What is the definition and coverage of renewable energy under the relevant legislation?

The US Congress (the national legislative body) has at different times considered

implementing a federal renewable energy standard (“RES”) for electric power, but thus far has not done so. However, approximately 30 states, have implemented some type of an RES or renewable portfolio standard (“RPS”), also sometimes known as a certificate or quota program. Many states have implemented other types of incentive programs too. The types of resources that qualify for the state-run programs vary by state. Wind, solar and geothermal are generally included, but mature technologies, such as conventional hydroelectric, are generally excluded (although incremental output resulting from efficiency gains may qualify for some programs). The definition of “renewable” reflects the state’s policy priorities and, often, the types of resources available to the state, given its geography.

## REGULATION

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

As a preliminary matter, it is important to understand that the generation and transmission facilities in the US are owned and operated by a wide variety of entities. The majority of electric consumers are served by private-sector companies (including those with publicly traded shares), but assets are also owned and operated by a variety of federal, state and local governments and by companies that are organized as cooperatives (member-owned companies whose shareholders are also their customers). There is no national grid company. The applicable laws and regulations differ depending on the nature of the entity that owns or operates the generation and transmission facilities.

#### *Federal Power Act*

The Federal Power Act (“FPA”) grants the Federal Energy Regulatory Commission

(“FERC”) authority over the sale of power at wholesale and the transmission of electric power in interstate commerce by public utilities. But, FERC does not establish rates on its own initiative. Each public utility (as defined below) must file with FERC the rates at which it proposes to sell power in advance of making sales, and FERC has the authority to review the rates proposed and determine whether they are just and reasonable.

Although the FPA is the predominant law that shapes the wholesale power industry in the US, FERC does not regulate all sellers of power. FERC’s FPA jurisdiction is limited to states or parts of states that are interconnected to other states (even if the transaction is wholly within a single state, so long as the region is interconnected). Thus, FERC’s FPA jurisdiction does not extend to the States of Hawaii or Alaska, nor to parts of the State of Texas within the Electric Reliability Council of Texas (“ERCOT”), each of which does not (or is deemed to not) connect to other states. In these areas, all power transactions are instead regulated under state laws. Further, under the FPA, a “public utility” is defined to exclude federal and state governments or other political subdivisions as well as certain sellers of power that are organized as cooperatives and sell less than four million megawatthours of electricity per year or are subject to oversight by the US Rural Utilities Service as a result of government loans that have been extended to them. These types of organizations are either self-governing, or in the case of some cooperatives, subject to regulation under state law.

However, even taking into account those exclusions, FERC’s jurisdiction over public utilities reaches the organizations that deliver power to the vast majority of end-users in the US. It regulates, among others, large vertically integrated, private-sector utilities; small companies and partnerships that own only one or a few generators; and six of the seven

organized wholesale power markets (the seventh of which is in ERCOT and therefore outside of FERC’s jurisdiction). Even some exempt sellers come within FERC’s purview when they transact in markets that are regulated by FERC. Transmission that is owned or operated by public utilities (as defined above) is also subject to economic regulation pursuant to the FPA. The FPA applies without regard to the fuel source by which the power was produced.

Other than those public utilities that are subject to PURPA (defined and described below), a public utility that wishes to sell power – regardless of whether it sells renewable power – must file the tariff pursuant to which it will make such sales with FERC at least 60 days prior to its first sale. Many, if not most, wholesale sales of power in the US are made pursuant to “market-based rates” which are negotiated bilaterally or determined through an organized market. If a seller wishes to sell at market-based rates, the terms on which it may do so must be set forth in the tariff that it files with FERC. FERC will authorize market-based sales by a seller only after evaluating market studies submitted by the seller to assure the seller cannot exercise market power. Once authorization is granted, and a market-based tariff is on file, sales may be made pursuant to the tariff without prior FERC approval. However, the seller will be required to report its transactions and must periodically demonstrate to FERC its continued inability to exercise market power.

Under the FPA, public utilities and certain other sellers that are not public utilities but who participate in US markets are also subject to market behaviour rules intended to protect consumers and the integrity of the market; and to reliability standards intended to assure the stability of the bulk electric power system. Owners and operators of renewable facilities are subject to these aspects of the FPA as well.

Transmission owners that are public utilities are required to offer “open access” transmission service, meaning that any person willing and able to meet the terms of their tariffs may receive service. Transmission capacity is awarded on a first-come, first-serve basis, but transmission owners are also responsible for expanding their systems to accommodate new users and are compensated for doing so. As noted above, there are some owners and operators of transmission that are not public utilities. FERC has no jurisdiction to order such transmission owners to provide open access; however, it has authorized public utilities to deny service to any person that is a transmission owner and does not provide reciprocal service. As a result, open access transmission is widely available throughout the continental US to renewable power projects as well as others. Some renewable power project owners also own substantial transmission facilities, since renewable resources may be located in areas that are remote from the interconnected grid. In such cases, the renewable power project owner may also be subject to regulation as a transmission provider under the FPA in some respects.

#### *Public Utility Regulatory Policies Act*

Some small renewable power generators are designated as “qualifying small power production facilities” or “QFs” under a federal law, the Public Utility Regulatory Policies Act (“PURPA”).<sup>1</sup> These QFs are entitled (but not obligated) to sell their power to the utility to which they interconnect at an “avoided cost” rate – that is, a rate that reflects the cost the utility avoids by taking the power from the QF rather than an alternative source. Avoided cost rates are set by the state, and utilities often

offer the avoided cost rate for small QFs by tariff. While in some cases, the rates a QF can negotiate for a bilateral market-based sale may be better than the avoided cost rate available under PURPA, the program remains popular because QFs, whether or not they sell power at the avoided cost rate, also benefit from certain other regulatory exemptions by maintaining QF status.

PURPA applies in all fifty states, the District of Columbia and Puerto Rico. To be eligible for this program, (1) at least 75% of energy input for the QF must come from renewable resources, geothermal resources, biomass (any organic material not derived from fossil fuels), waste (which is broadly defined as an input having little or no commercial value and which may include, among other things, used rubber tires, refinery off-gas, synthetic gas from coal, and various types of low-BTU coal waste as set forth in the regulations), or some combination of the foregoing; and (2) the use of oil, coal or natural gas (which may not exceed 25% of the total energy input) is limited to the minimum needed for ignition, start up, testing, flame stabilization, control uses and certain emergency needs. With limited exceptions, QFs cannot be more than 80 megawatts in size. Certain of the benefits of PURPA are restricted to a subset of smaller QFs.

PURPA was enacted in 1978. Its availability was narrowed by the Energy Policy Act of 2005, which established conditions pursuant to which utilities are excused from purchasing QF power at an avoided cost rate if the relevant market provides QFs with competitive options for sale of their power. Notwithstanding these new limitations, the program has been in continuous use for approximately three decades and remains important for some generators. In particular, sellers making sales from facilities that qualify as QFs under PURPA and are less than 20 megawatts are exempt from the obligation to have a tariff on file with FERC pursuant to the

<sup>1</sup> There are two types of qualifying facilities under PURPA: qualifying small power production facilities and qualifying cogeneration facilities. The discussion below addresses only the former, and as used herein, “QF” refers only to a qualifying small power production facility.

FPA, even if they choose to sell at market-based rates rather than an avoided cost rate. Further, all QFs that are 30 megawatts or less (plus geothermal and biomass QFs that are over 30 megawatts but less than 80 megawatts and certain other QFs, the construction of which began before 2000) are exempt from state laws respecting the rates and financial and organizational regulation of electric utilities. PURPA will remain in effect unless and until repealed by the US Congress; it has no expiration date.

#### *State Programs*

Some states have instituted incentive programs specifically for renewable power. The form of the state programs varies, and many states have several different programs in place. The number of such state programs makes summarization here impossible.

As noted above, approximately 30 states have implemented an RES or RPS program. These programs require the utilities serving load in the state to assure some portion of the energy delivered is generated by a renewable resource. Under such programs, a renewable energy certificate, or “REC,” is issued for each megawatthour of renewable energy generated, which the plant owner can then sell either with the associated energy or, separately from the energy, as a tradable-REC or “TREC.”

Utilities may build, own and operate renewable generation or purchase the output of renewable projects from third-parties to meet the RES requirements. Generally speaking, but subject to the specific state’s rules, utilities demonstrate achievement of their quota by acquiring the RECs associated with the renewable power they generate or purchase for resale, and if the utility has not generated or purchased sufficient renewable energy to meet its RES obligation, it must purchase TRECs equal to the shortfall (or make an alternative payment).

Investor-owned utilities in the State of California have one of the more stringent requirements, which is to acquire 33% of their electric power from renewables by 2020. Only a limited portion of that can be generated by out-of-state resources. Thus, California, which is a very large state and has multiple renewable resources available, including good sources of wind, solar, hydro and geothermal energy, has seen a significant growth in renewable power generation of all types. In some states, however, the standard is more of a policy objective, with no direct, adverse consequences to the state’s utilities if it is not achieved. For example, while the State of Utah established a renewable energy target of 20% of retail sales by 2025, utilities are obligated to procure renewable resources only to the extent they are cost-effective.

#### **4. What are the principal regulatory bodies in the renewable energy sector?**

*Rates.* As noted above, FERC is the economic regulator of the wholesale sale of power by public utilities, which covers many renewable power generators. In the States of Hawaii and Alaska, and in ERCOT, jurisdiction lies with the state public utility regulator (which goes by various names, depending on the state, but for simplicity, each state utility regulator will be referred to as a “public utility commission” or “PUC” for the remainder of this article). The rates at which a utility must purchase a QF’s power pursuant to the mandatory purchase obligation under PURPA (in cases in which it is applicable) are regulated by the state PUC (pursuant to federal law). Sales of power at retail rates, including to on-site users of a generator’s power, is also a matter of state law, although some states have loosened their regulations to promote distributed generation, including roof-top solar.

*Siting.* Siting for generation and transmission located on land or within 5.6 km of the ocean coast (or within 16.2 km of the coast of the

State of Texas or the western coast of the State of Florida) is generally a matter of state or local law. Thus, the process varies, but typically authorization is required from a local zoning authority and/or state agency. In some cases, states have made particular accommodations for renewable power; for example, some states have enacted laws to facilitate the installation of roof-top solar systems.

Some larger, utility-scale renewable power facilities are located on lands owned by the federal government (in particular, the federal government owns large tracts of land in the western part of the US), often administered by the Department of Interior's Bureau of Land Management or the US Forest Service. New off-shore wind and experimental tidal or wave projects may also be located on the outer continental shelf beyond 16.2 km from the coast of the State of Texas or the west coast of the State of Florida or 5.6 km from any other state coast. To locate in these areas, the developer must secure approval from the federal agency with jurisdiction over the land and obtain rights to the site by lease. The US Department of Interior's Bureau of Land Management and Bureau of Ocean Energy Management have streamlined their processes as applied to certain lands and parts of the outer continental shelf under their jurisdiction that have been designated as particularly suitable for renewable power development.

Facilities that are placed in navigable rivers and streams must secure a license from FERC pursuant to Part I of the FPA.

In addition, during siting, construction and operation, the facility will need to comply with environmental laws administered by either a state agency or the US Environmental Protection Agency and may also be required to comply with laws administered by the US Army Corps of Engineers (for wetlands); the Federal Aviation Administration (for towers); the US Coast Guard; or the US Fish and Wildlife Service, among others.

*Other Regulations.* States generally have regulations governing many aspects of a utility's existence and operations, including its organization (including mergers and ownership structures), finances and certain safety issues. Many states have implemented broad exemptions for companies that do not sell power at retail or small distributed generation, but the rules vary by state. In addition, as noted above, QFs are exempt from rate, organizational and financial regulation by states as a matter of federal law.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

Yes.<sup>2</sup> Renewable energy projects may be eligible to receive either a production tax credit ("PTC") or an investment tax credit ("ITC"). The specific eligible projects are defined by statute.

The PTC is generally available to the owner of a qualified facility that sells electricity produced in the US to an unrelated person. Wind, geothermal facilities and biomass projects are among the types of projects that may qualify for the PTC. As the name suggests, the tax credit taken for any particular year is based on that year's production. The amount of the credit is 1.5 cents per kilowatthour of electricity, adjusted for inflation, for certain technologies, such as wind, geothermal and closed-loop biomass. With the inflation adjustment, the rate for these facilities was 2.2 cents per kilowatthour for 2012. For certain

<sup>2</sup> The following is a general description of the tax provisions applicable to renewable power. It is provided for your convenience and does not constitute legal advice. It is prepared for the general information of our clients and other interested persons. This information should not be acted upon in any specific situation without appropriate legal advice.

other technologies, including open-loop biomass and landfill gas, the credit is reduced by half, and thus the 2012 rate for these types of facilities was 1.1 cents per kilowatthour.

The PTC is available for electricity produced from a qualified facility over a 10-year period that begins on the date the facility is originally placed in service, provided the construction of the facility commenced before January 1, 2014. The Internal Revenue Service is currently developing guidance regarding what will constitute the commencement of construction of a qualified facility before January 1, 2014.

The ITC is available for investments in solar, geothermal and small wind energy facilities (that otherwise meet the applicable requirements) and certain other types of qualifying property. The ITC applies in the year in which the qualifying property is placed in service and is a credit equal to a percentage of the taxpayer's tax basis in certain qualifying investments. A 30% ITC is available for solar energy property, qualified fuel cell property, and qualified small wind energy property placed in service before January 1, 2017. A 10% ITC is available for solar energy property placed in service after December 31, 2016 and for geothermal energy property regardless of when placed in service.

A 30% ITC is also available for investments in most types of qualified facilities that are eligible for the PTC, as described above. The owners of such qualified facilities, described below, may elect to claim a 30% ITC with respect to such property in lieu of the PTC. Qualified facilities that are eligible for the 30% ITC in lieu of the PTC ("qualified investment credit facilities") are wind facilities, closed-loop and open-loop biomass facilities, geothermal facilities, municipal solid waste facilities (landfill facilities and trash facilities), qualified hydropower facilities, and marine and hydrokinetic energy facilities the construction of which commences before January 1, 2014.

The 30% ITC in lieu of the PTC is allowed with respect to investments in qualified investment credit facilities regardless of whether investments in such property otherwise would not be eligible for the ITC or would be eligible for only a 10% ITC. For example, investments in qualified small wind facilities, the construction of which commences before January 1, 2014, are eligible for the 30% ITC even if such facilities are not placed in service before January 1, 2017. Similarly, investments in qualified geothermal facilities, the construction of which commences before January 1, 2014, are eligible for the 30% ITC in lieu of the PTC even though investments in geothermal facilities normally are eligible for only a 10% ITC.

The US tax code depreciation rules include a Modified Accelerated Cost Recovery System ("MACRS"). Under MACRS, certain wind and solar projects have a favourable five-year statutory recovery period.

#### **6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

Except for the avoided cost rate available to certain QFs under PURPA, there is no federally mandated purchase applicable to renewable power.

Feed-in tariffs for the purchase of power at wholesale, which have been widely used in Europe, are available from some utilities. But, an entity that wishes to sell its power under a feed-in tariff still has to comply with the federal laws applicable to it. However, since the FPA is not applicable in the States of Alaska or Hawaii or within ERCOT, entities seeking to sell power in those areas, under a feed-in tariff or otherwise, are only obligated to comply with the state's laws. Hawaiian Electric Company, for example, offers a feed-in tariff for small generators using specified

technologies, including photovoltaic and on-shore wind (although availability varies based on size and location).

Utilities and large consumers of power often also conduct competitive solicitations for long-term supplies of renewable power. In some cases, the projects seeking to sell power compete only on price and commit to deliver on a fixed set of terms and conditions and, in other cases, have the ability to bid both the price and the terms and conditions. The projects that are selected through the solicitation enter into bilateral agreements with the purchaser that can become the basis for financing.

Many states have established net metering programs to encourage on-site generation, including roof-top solar installations for residential or commercial customers. In these arrangements, the renewable project is located on or near the property of the end-user and supplies the end-user with power. The project may be owned by the end-user or by a third party which sells the power, at retail, to the end-user. The end-user is also (generally) connected to the local utility and takes supplemental and back-up power from the utility when the project is unable to meet its entire load and delivers power to the utility during the hours in which the project's output exceeds its load. Under some programs, the utility provides a credit for the excess energy, subject to a periodic true-up payment, and in other cases, it purchases the excess energy. The end-user's benefit is primarily the difference between the retail price it would have paid to the utility and its cost for the on-site renewable energy.

The US also has vibrant short-term sales markets. There are seven organized regional markets in which power may be sold, day-ahead and/or real-time, through a central market at a market-set clearing price or through bilateral transactions (although there

are also large parts of the country which are not served by an organized market and where wholesale power sales are bilateral). Some of the organized regional markets also offer a market for capacity sales. Renewable generators may participate in these markets (subject to complying with applicable market rules) but practically speaking, renewable power projects do not rely on these short-term markets for the disposition of the majority of their energy and capacity. Short-term sales will not typically support financing for the project and a market-clearing price (the price paid for sales into the organized markets) will not reflect the premium that green power receives in bilateral deals.

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

As explained above, the only federal minimum price guarantee is the avoided cost rate available to QFs under PURPA, and that rate is determined by the applicable state PUC. States cannot "guarantee" a wholesale price because they lack the ability to set rates, but practically speaking, a feed-in tariff (which functions as an offer to purchase) establishes a minimum offer price in the areas in which one is available, for those projects that qualify to sell their power pursuant to such a tariff.

**8. Do the renewable energy based power plants have priority for connection to the grid?**

There is no federal priority. Like other generators seeking to connect to the interstate transmission grid, renewable power developers must apply for interconnection, and their request is handled in the same manner as other requests for interconnection, although some smaller facilities benefit from a streamlined process. However, many renewable generators connect at a distribution voltage, which may be

regulated under state law, and the rules governing distribution voltage interconnections are varied.

**9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

A number of states have programs to attract and support industries that are engaged in manufacturing the components of renewable power plants. Often, these are tax-based programs, but some states offer grants and other forms of support.

**10. What are the other incentives available to renewable energy generation companies?**

The US Department of Energy may provide loan guarantees pursuant to Section 1703 of the Energy Policy Act of 2005 for innovative technologies. It periodically opens solicitations for new applications, although as of the date of this writing, there are no open solicitations.

Section 1703 loan guarantees are available to projects that avoid, reduce or sequester air pollutants or anthropogenic emissions of greenhouse gases and employ new or significantly improved technologies as compared to commercial technologies in service in the US, including the following categories: biomass, hydrogen, solar, wind/hydropower, nuclear, advanced fossil

energy coal, carbon sequestration practices/technologies, electricity delivery and energy reliability, alternative fuel vehicles, industrial energy efficiency projects, and pollution control equipment. The project must be located in the US, although foreign sponsors are eligible to apply.

A guarantee may not be issued for a loan whose principal exceeds 80% of the estimated project cost, and the maximum tenor of the underlying loan is 30 years.

## STATISTICS

**11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

Data from the US Energy Information Administration (*Electric Power Monthly*, March 2013) for net electric generation from all sources shows that for 2012, 12% of the electric generation in the US came from renewable resources, including hydroelectric (compared to 38% for coal, 30% for natural gas, 19% for nuclear, and 1% for petroleum and other resources). Of the 12% generated by renewable resources, the majority, 56%, was from hydropower and 28% from wind. The other resources are biomass wood, 8%; other biomass, 4%; geothermal, 3%; and solar, 1%.

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# Uruguay

Gonzalo Secco

FERRERE

## GENERAL

### 1. What is the nature and importance of the renewable energy in your country?

#### *Introduction*

Renewable energy has been acquiring an increasingly important role in Uruguay since 2006. Over the past few years, and mainly due to economic, environmental and technological reasons, the energy matrix's diversification through the incorporation of non-traditional power generation has been defined as a state policy.<sup>1</sup>

In this sense, Uruguay's energy planning is taking a strong commitment to the incorporation of autochthonous renewable sources, such as wind power, biomass and solar energy. On 2008, the Executive Branch passed the 'National Energy Policy' – which was endorsed by the Parliament's Multi-Party Committee on 2010–. As per the Executive Branch' estimations, by 2015 the total electricity consumption shall be composed of (i) 65% of hydraulic energy, (ii) 25% of wind power, (iii) 6% of biomass and (iv) 4% of thermal plants.

Dependence on non-autochthonous oil and gas sources and impossibility of great-scale hydroelectric expansion has placed Uruguay in the necessity of seeking alternative sustainable power generation sources.

<sup>1</sup> From *Energía Eólica*. <http://www.icex.es/icex/cma/contentTypes/common/records/mostrarDocumento/?doc=4396805>.

#### *Uruguay's Energy Outline*

The main sources of energy generation in the country derive from petroleum and hydraulic power.

Uruguay is equipped with four hydraulic power stations (with a total installed capacity of 1,538 MW) and four thermal power stations (with a total installed capacity of 875 MW). In addition, 43.45 MW of wind generation (20 from a state-owned wind farm and 23.45 from three private farms) and 236 MW of biomass from private generators have been installed by 2012 (187 MW of which is available for its sale in the electricity market).

Although hydraulic installed capacity is high, during dry seasons, the generation of hydraulic power substantially diminishes and resorting to thermal power stations operating with fossil fuel becomes necessary, which involves significant generation costs.

Moreover, the country's hydroelectric potential is almost completely exploited, being the remainder suitable only for small-sized projects.

There are no hydrocarbon deposits certified in the country to date (not exploited) and there are very few coal reserves, which have low heating value and high ash content. Notwithstanding this, on-shore and off-shore exploration activities are being carried out since 2011, with the result of ten blocks awarded to seven private companies within the framework of Production Sharing Agreements. A significant commitment of more than 1.5 billion US Dollars has been made by the multinational companies awarded with these Production Sharing Agreements: BG Group, BP, Total and Tullow. But the exploration phase will last at least for three to six years more.

Although the installed hydroelectric generation capacity represents a high percentage of the total maximum simultaneous demand of the system, the random variability of the water flow determines the necessity of having abundant thermal back-ups.

During occasional dry periods, where the water flow is significantly reduced, sometimes even nil, thermal generators are operated at full, and during periods of peak demand, the country is forced to import energy from neighbouring countries (such as Argentina and Brazil), which is acquired at very high costs. For instance, electric power importation from Brazil and Argentina was necessary to cover the country's energy demand for almost every day during the first nine months of 2012.<sup>2</sup>

For the aforementioned reasons, the Executive Branch has repeatedly expressed its interest in exploiting non-traditional renewable energies and has articulated its strategic guidelines to be energetically independent within regional integration, developing economically, environmentally and socially sustainable policies.

### Uruguay's main renewable sources

#### (a) Hydroelectric

As mentioned above, Uruguay's hydroelectric potential has been almost completely exploited. The remaining capacity is only suitable for small sized projects. Although technical, legal and tax facilities have been granted for private generation, there are no mini-hydroelectric power plants connected to the grid to date.

There are four hydroelectric power plants, with a total installed capacity of 1,538 MW. According to a study carried out by the Ministry of Energy, Energy and Mining

(MIEM) together with the United Nations Industrial Development Organization (UNIDO) on 2010, the remaining potential for the installation of mini-hydroelectric power plants below 10 MW (considering the best 50 sites) is of 101 MW; and the remaining potential for the installation of mini-hydroelectric power plants below 15 MW (considering the best 50 sites) is of 176 MW.<sup>3</sup>

#### (b) Wind Power

Uruguay has a wind potential favourable for the generation of electricity via wind power. Wind measurements have been taken throughout national territory and the results are available on a wind map prepared by governmental authorities and the University of the Republic in 2009. Since then, the measurements obtained from sites all over the country, managed by UTE, have confirmed the good potential of winds in Uruguay.

At present Uruguay has four medium-scale wind farms operating within national territory, totaling an installed capacity of 43.45 MW.

Three of the existing wind farms are private ventures, summing a total installed capacity of 23.45 MW: (i) a 13 MW farm property of Nuevo Manantial S.A.; (ii) a 10 MW farm property of Kentilux S.A.; and (iii) a 450 kW farm property of Agroland S.A. The electricity generated therein is sold to the Public Electric Utility (UTE) within the framework of Power Purchase Agreements (PPA or PPAs) entered into by UTE with the abovementioned private generators.

The remaining 20 MW are property of UTE and were installed in two stages: the first stage was enabled on November 2008 and the second stage on June 2010.

<sup>2</sup> From *Electric Market Administration*: <http://www.adme.com.uy/mmee/infmensualDetalle.php?anio=2012>.

<sup>3</sup> From *MIEM*: <http://www.miem.gub.uy/gxpsites/hgxpp001?5,6,539,O,S,0,MNU;E;94;2;95;7;MNU>.

There are also a few small-size wind projects for industrial self-supply.

In addition to the aforementioned operating farms, other projects are under development, with PPAs signed with UTE for a total of approximately 1 GW. Some of these projects are expected to enter into service on late 2013 and the remaining are expected for 2014 or 2015.

These PPAs were awarded through public competitive bid procedures called by UTE in line with the master plan designed by MIEM and the Executive Branch.

The first three PPAs for a total capacity of 150 MW were awarded in 2011 at a price of approximately 90 US Dollars/MWh. All the rest were awarded at a price of approximately 63 US Dollars/MWh.

These prices are updated periodically following a formula based on local inflation and the United States' Producer Price Index.

UTE itself announced last year a plan to develop up to 200 MW in the form of an unusual "leasing" business model with one or more private suppliers/manufacturers. This plan seems to have been postponed. However, UTE is making progress in another plan to develop wind parks of its own. UTE has closed turbine supply and maintenance agreements with one manufacturer for a 70MW project and has announced plans to join venture with Brazilian Eletrobras to develop other projects for up to 200 MW. UTE expects to have these projects in place by third quarter 2014 onwards.

On April 2012, MIEM passed a regulation instructing UTE to foster the execution of PPAs with industrial consumers that may install their own wind turbine for their own consumption but with a PPA with UTE to sell any excess at a preagreed price. UTE is entitled

to purchase up to 200 MW from private generators under this particular scheme. It is expected that UTE will organize a competitive procedure to define the award of these PPAs during the second half of 2013.

This installed capacity –if confirmed– will make it possible to supply up to 25% of the total electricity demand from wind source.

A detail of existing and projected wind ventures can be found at: <http://www.adme.com.uy/agentes/generadores.php>.

Additional information about the Uruguayan wind program can be found at: [www.energiaeolica.gub.uy](http://www.energiaeolica.gub.uy).

#### (c) Biomass

Biomass is a natural resource which is being gradually incorporated into Uruguay's energy matrix. According to an official report developed by the MIEM together with the UNIDO, Uruguay has a biomass-source related generating potential of:

- over 200 MW from sawmills' waste by 2013;
- over 100 MW from fields' waste related to agro-industrial endeavours by 2012;
- over 260 MW from black-liquor of pulp mills.<sup>4</sup>

To date there is an installed generation capacity of 236 MW.

By the end of 2010, national authorities issued Decree Nr. 367/010 establishing the general conditions for contracts to be entered into with private generators of electric energy from

<sup>4</sup> From MIEM: <http://www.miem.gub.uy/gxpsites/hgxpp001?5,6,295,O,S,0,MNU;E;94;2;95;1;MNU>.

biomass for plants of up to 20 MW each. A similar scheme was organized for projects with an installed capacity between 20 and 60MW.

These special regimes provided for different prices for available energy and energy effectively summoned, and an obligation of UTE to purchase all the authorized generated energy for a period of up to 20 years, among other preferential conditions.

Within this framework, the government's announced an objective of incorporating 200 MW of biomass for the year 2015. However, the results of the public tender bid launched were below the expectations and a few projects are on the pipeline today.

A detail of existing and projected wind ventures can be found at: <http://www.adme.com.uy/agentes/generador.es.php>.

#### *(d) Solar*

There are still no significant solar-based generation projects, either thermal or photovoltaic, except for some specific experiences. However, authorities have been actively trying to promote its use ever since 2009.

Law No. 18,585 endorses the generation of thermal solar energy. This law stipulates that construction permits for health centres, hotels and sports clubs whose hot water consumption exceeds 20% of its total energy consumption, must foresee facilities for future incorporation of solar equipment for heating water.

By 2011, the only permits granted for such constructions were those including solar equipment covering 50% of heated water use. And, in 2012, new or old pools to be heated must have solar equipment for this purpose.

On May 2011, the government launched the bidding conditions for a tender with the purpose of constructing an experimental photovoltaic solar plant of 480 kW<sub>p</sub>, with funds provided by the Japanese government. This project was actually built in the Northwest and was inaugurated on March 2013.

On March 2012, the Executive Branch launched a solar plan aimed at the residential sector, which represents 21% of the total energy consumption and 40% of electricity consumption, to promote the use of solar thermal energy.<sup>5</sup> The MIEM estimates that families implementing the solar system related to the solar plan will be able to save from 60 to 70% of their consumption related to water heating.

The solar plan is intended to bring down the existing barriers to the incorporation of residential solar systems: *(i)* high initial investments and *(ii)* disbelief regarding its actual benefits. In relation to the first barrier, the government has arranged financing from the national Mortgage Bank ('BHU') of up to 60 installments (five years) for the purchase of necessary equipment, and will also be granting 'efficiency bonds' to families who subscribe to the plan, which will be deducted from monthly electricity bills. In regard to the second barrier, the government will be promoting the use of solar energy by means of a media campaign.

On May 2013 MIEM launched new regulations to promote photovoltaic power generation. The plan is, again, to have UTE offering long term PPAs with a fixed price to purchase energy from private producers in the country. UTE may contract providers who offer energy from photovoltaic source between 500 kW and 50 MW.

<sup>5</sup> From MIEM: <http://www.miem.gub.uy/gxpsites/hgxpp001?5,6,486,0,S,0,MNU;E;94;2;95;5;MNU>.

There will be three bands: (a) plants between 500 kW and 1 MW, (b) plants between 1 MW and 5 MW, and (c) plants between 5 MW and 50 MW, for a total maximum of 200 MW.

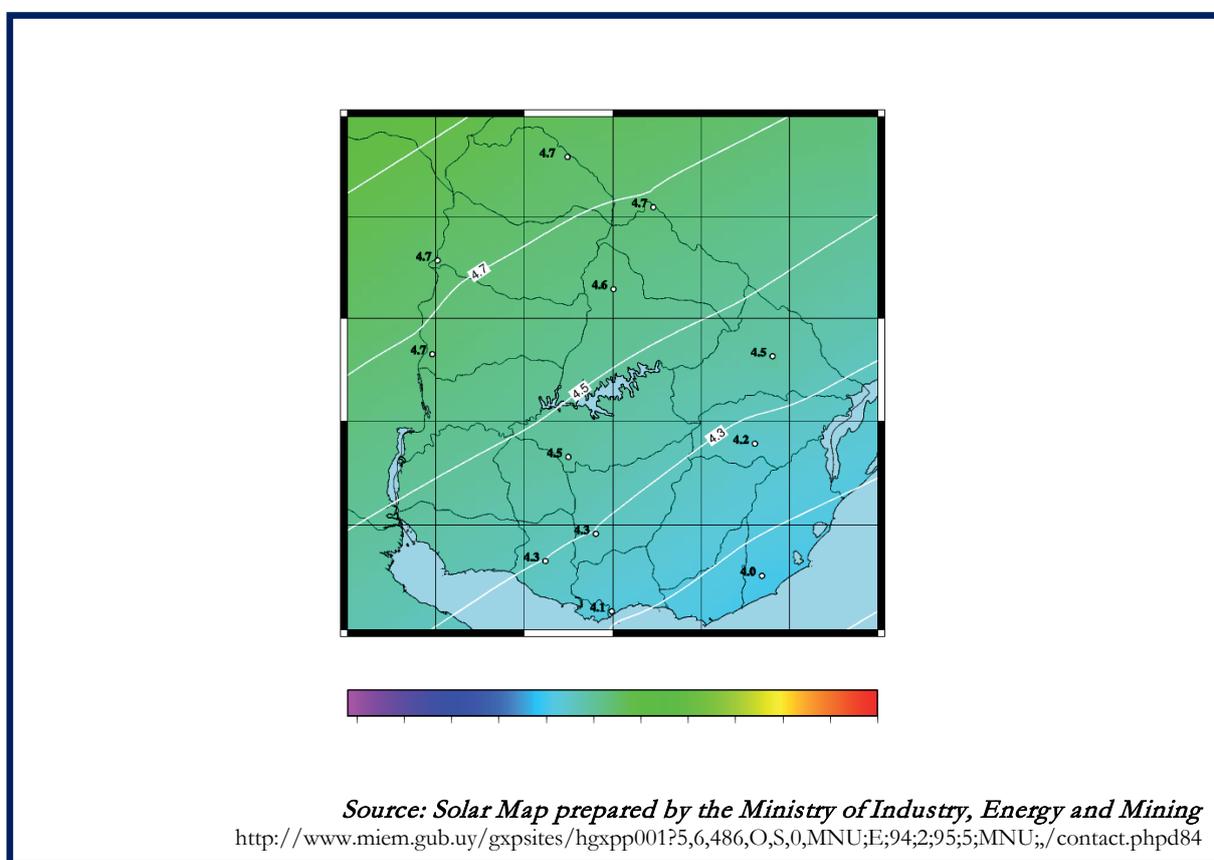
For bands (a) and (b) there will be a competitive process, an incentive will be paid in case of early operation and the PPA term will be 25 years.

In band (b) UTE will buy energy only if the unit price is at least 20% lower than the price in band (a).

In band (c) a maximum price of 91.5 US Dollars/MWh shall be paid for plants available before June 2014, gradually decreasing to 86.6 US Dollars/MWh for plants available until June 2015. The contract term in this case will be between 20 and 30 years.

Additional information about the Uruguayan solar program can be found at: [www.energiasolar.gub.uy](http://www.energiasolar.gub.uy).

A survey of the solar resource is shown below.



## 2. What is the definition and coverage of renewable energy under the relevant legislation?

Uruguay has constructed a legal framework for renewable energies encouraging and providing

benefits for the generation from renewable sources.

National regulations do not provide a general definition for renewable energy. However, for the purposes of Law 18,587 (*Energy Efficiency*)

Law' or 'EE Law') 'non-traditional renewable sources' have been defined as "[...] *autochthonous renewable sources, such as wind power, thermal solar, photovoltaic, geothermal and tidal energy, and that deriving from the use of different sources of biomass*".

The purpose of Law 18,587 is laying the regulatory foundations for the promotion of the efficient use of energy. In the context of this law, renewable energies play a key role since the 'efficient use of energy' is understood as "*all changes resulting in an economically feasible decline of the amount of energy required to produce a product unit or to meet energy requirements of the services used by people [...] It is likewise considered an efficient use of energy the substitution of traditional energy sources for unconventional renewable energy sources which enable the diversification of the energy matrix and the reduction of greenhouse gas emissions, by end users*".

In order to achieve the objectives set out in the EE Law, the MIEM was entrusted with the task of outlining the 'National Energy Efficiency Plan', which is to be revised every 5 years and shall provide guidelines for the materialization of renewable energies' use.

## REGULATIONS

### 3. How is the renewable energy sector regulated? What are the principal laws and regulations?

#### *Electricity Regulatory Framework*

Uruguay's electricity regulatory framework has been outlined by the following rules: Law No. 14,694 (*National Electricity Law - 1977*), Law No. 15,031 (*UTE's Organic Law - 1980*), Law No. 16,211 (*Public Enterprises Law - 1991*), and Law No. 16,832 (*Electricity's Regulatory Framework Law - 1997*).

The aforementioned regulations divide the electricity industry into two regimes: (a) electric public services; and (b) electric private activities.

#### (a) Electric public services:

The activities of transmission, transformation and distribution are considered public services as long as they are totally or partially provided to third parties on a regular and permanent basis. Private parties may provide these services only if granted a concession by UTE. In the absence of such concession, these activities will be directly performed by UTE.

#### (b) Electric private activities:

Generation is considered a free activity (which does not require concession) provided it is executed for: (i) the generator's use (self-supply); or (ii) for sale to UTE, big consumers, and to the public in general if sold through the National Load Dispatching Office.

Issuance of Law No. 16,832 brought the creation of a Wholesale Electric Energy Market ('MMEE') and the establishment of the principles of *free access* and *no discrimination* of agents to the capacity of the electricity transmission systems.

Under the above, private generators may:

- Enter into PPAs with the distributor (currently only UTE) and big consumers;
- Sell energy in the spot market. This market has been defined by article 7 of Decree No. 276/002 as: "*the sphere where short-term energy transactions are arranged, in order to reconcile surplus and shortages as a result of the dispatch and the transaction, contractual commitments and actual consumption.*"; and
- Export electricity.

#### *Renewable-source private generation*

Decree No. 77/006, issued on March 2006, was the first specific rule issued in the country for the effective incorporation of private generation

of electricity from renewable sources. Through this decree, the Executive Branch instructed UTE to foster the execution of PPAs with suppliers to be established in Uruguayan territory producing energy by means of wind, biomass sources, or small hydraulic power plants.

This decree was issued with the purpose of:

- diversifying the national energy matrix, diminishing dependence on traditional energy sources;
- employing autochthonous resources, reducing the need of foreign sources;
- promoting the development of local manufacturing;
- contributing to the preservation of the environment through emission reduction;
- taking specific actions for the incorporation of wind energy, biomass and mini hydro sources, as integral part of the National Energy Policy launched by the Executive Branch; and
- supporting the installation of small independent generators by mean of long-term PPA's with UTE.

Along the same lines, Decree No. 173/010, issued on June 2010, implied a great progress in the field of micro generation.

The objective of this decree is to diversify power generation, both in primary sources and supplier agents by allowing the interconnection of 'micro generators' to the low voltage distribution network.

In this sense, this regulation allows consumers of the distribution network to use electric generators of renewable energy (wind, solar, biomass or mini hydraulic) and inject the

remainder of the energy not used by them to the low voltage network. Under this regime, micro generators shall enter into interconnection agreements with UTE which will allow the bidirectional transfer of electricity between them for a period of 10 years.<sup>6</sup>

#### *Main laws and regulations on renewable energy*

Decree No. 389/005, issued on October 2005. Instructs UTE to foster the execution of PPAs with private generators having an installed capacity of up to 5MW each, and for a total capacity of up to 50MW.

Decree No. 77/006, issued on March 2006. Instructs UTE to foster the execution of PPAs to purchase up to 60 MW of electricity deriving from wind power, biomass and mini-hydro sources. This decree was later complemented by Decrees No. 397/997, 296/008 and 299/008.

Law No. 18,046, passed on October 2006. Allows UTE to purchase electricity from generators by means of direct agreements.

Law No. 18,195, passed on October 2006. Regulates the production, commercialization and use of agro fuels.

Law No. 18,362, passed on October 2008. Creates easements favouring wind-source electricity generators.

Law No. 18,585, passed on September 2009. Regulates and declares as of national interest the research, development and formation in the use of solar thermal energy.

Decree No. 258/009, issued on June 2009. Instruments the Eolic Map, providing wind velocity measurements within national territory.

<sup>6</sup> From *Miem*. <http://www.miem.gub.uy/gxpsites/hgxpp001?5,6,554,O,S,0,MNU;E;94;2;95;8;MNU>.

Decree No. 354/009, issued on August 2009. Introduces tax exemptions for the generation of renewable power of up to 90% in some cases.

Decree No. 403/009, issued on September 2009. Instructs UTE to foster the execution of PPAs to purchase up to 150 MW of electricity deriving from wind power. This regulation was complemented by Decree No. 41/010, issued on February 2010.

Law No. 18,597, passed on September 2009. Declares the production of renewable energy as of national interest. This law entrusts the MIEM with the drafting of a national plan for the efficient use of power. It also introduces mechanisms to provide finance for those who use power in an efficient manner and grants '*certificates of efficiency*' to certain projects that act in accordance with the purpose of the law.

Decree No. 173/010, issued on June 2010. Authorizes subscribers connected to the low voltage network to install renewable generation from wind, solar, biomass or mini hydraulic and use this energy for their own needs or sell it to UTE.

Decree No. 367/010, issued on December 2010. Instructs UTE to execute (PPAs) with electricity suppliers producing in national territory from biomass source.

Decree No. 159/011, issued on May 2011. Complements Decree No. 403/009, calling for a new round of incorporation of wind power energy (additional 150MW to complete 300 MW together with PPAs coming out of Decree 403/009), through the execution of PPAs with private generators.

Decree No. 424/011, issued on December 2011. Instructs UTE to promote the execution of direct agreements with non-awarded bidders within the framework of Decree No. 159/011. Bidding rounds organized under Decrees 403/009, 159/011 and 424/011 resulted in the

execution of PPAs between UITE and private generators for a total capacity of approximately 1 GW.

Decree No. 451/011, issued on December 2011. Establishes the regulatory framework for thermal solar equipment.

Decree No. 50/012, issued on February 2012. Instructs UTE to coordinate the implementation of the 'Solar Plan', intended to promote residential use of thermal solar energy.

Decree No. 158/012, issued on May 2012. Instructs UTE to foster the execution of PPAs with industrial consumers producing electricity through wind power. As per this regulation, UTE will purchase the remainders of the electricity not consumed by industrial self-suppliers.

Decree dated May 2<sup>nd</sup>, 2013. Instructs UTE to foster the execution of PPAs to purchase up to 200 MW of electricity deriving from solar photovoltaic wind power through competitive tender procedures.

#### **4. What are the principal regulatory bodies in the renewable energy sector?**

MIEM (Ministry of Industry, Energy and Mining) and DNE (National Energy Directorate). This Ministry is part of the Executive Branch. Through the DNE, MIEM's main role is to design, conduct and evaluate the policies on electric power issues. It is also in charge of the regulation and coordination of the activities of the other relevant participants.

National energy companies. *ANCAP* (Fuel, Alcohol and Portland National Administration) and *UTE* (Power Stations and Electric Transmissions National Administration). These companies are relevant instruments in the execution of energy policies established by the Executive Branch.

However, only UTE is a relevant agency in the renewable energy sector. ANCAP is the company in charge of exploiting and administrating the monopoly of alcohol and national fuel, and of importing, refining and commercializing oil and oil products and manufacturing Portland and cement.

*URSEA* (Energy and Water Services Regulatory Agency). This is the energy services' regulator, created by Law No. 17,598. It has been created with the purpose of protecting consumers' rights, controlling compliance with applicable regulations and assuring that the regulated services have an adequate level of quality and security at a reasonable price. As an independent regulator, it is its responsibility to promote competition in industry areas where it is authorized by law and to regulate monopolies, setting out minimum quality levels and proposing prices based on efficient costs.

*ADME* (Electricity Market National Administration). This body operates the National Load Dispatching Office (DNC). Its main role is to administrate the electric energy wholesale market.

## INCENTIVES

### 5. Are tax advantages available to renewable energy generation companies?

The Investment Protection and Promotion Act, number 16,906, provides an incentive framework for investments in the country. Investment projects must be submitted before a Commission of the Ministry of Economy and Finance.

This general rule provides tax exemption for income tax, net worth tax, import taxes and duties for certain goods, among others.

In particular, certain activities related to renewable energies are especially promoted

with a supplementary regime embodied in Decree No. 354/009. This regime focuses on income tax exemption as follows:

- 90% of taxable net income between 7/1/09 and 12/31/17,
- 60% between 1/1/18 and el 12/31/20, and
- 40% between 1/1/21 and 12/31/23.

The following activities are exempt under Decree No. 354/009:

- The generation of electric energy from non-traditional renewable sources.
- The generation of electric energy through co-generation.
- The production of energy from renewable sources.
- The transformation of solar energy into thermal energy.

Additionally, Law No. 18.597 establishes that the Executive Branch will ensure that the tax structure will promote the sustainable and efficient use of energy resources.

### 6. Is there a purchase guarantee given by the relevant legislation for the electricity generated by renewable energy companies?

No. However, as mentioned above, UTE has executed agreements where a purchase guarantee is established. Decrees No. 77/006, 397/007, 403/009, 173/010, 367/010, 159/011 and 158/012 stated that UTE would buy all the energy produced the generator during the period of the agreement while no uptime is required.

Another issue to take into consideration is that the unitary cost of renewable energies is comparatively much lower than that of

hydrocarbon source. Since the spot market is organized following unitary costs of the offered energy at any given time, renewable energies must always be demanded with preference to the more expensive ones.

Regarding wind, biomass and solar photovoltaic generation, recent rules have established a unitary cost of zero for long term contracts with UTE, therefore confirming the above.

**7. Is there a minimum price guarantee given by the relevant legislation for the electricity generated by renewable energy companies?**

No. However, as mentioned above, UTE has executed agreements where a fix price in US dollars (annually adjusted) is established. Decrees No. 77/006, 397/007, 403/009, 173/010, 367/010, 159/011 and 158/012, as well as the Decree to foster solar photovoltaic projects dated May 2, 2013, state that UTE will pay the generator the amount offered, for the whole term of the agreement. As a consequence, a minimum price has been assured within those agreements.

These prices are higher than the price UTE sells to large consumers, but lower than the average price sold in the spot market at date.

**8. Do the renewable energy based power plants have priority for connection to the grid?**

There is no specific preference in terms of connection to the grid.

The capacity of transmission lines could be a limitation in certain points of the grid if more than one project were to compete with each other. However, said competition is likely to occur between two renewable-source projects, rather than a traditional versus a renewable source project.

It should be noted that all private projects have to borne the costs associated with the connection to the grid.

**9. Is there an incentive for domestic (local) manufacturing of equipment or materials used in the construction of renewable energy based power plants?**

Yes. Decree No. 354/009 expressly sets out tax benefits to national manufacturing of machinery and equipment for the generation of electric power from non-traditional renewable sources, the generation of electric energy through co-generation, the production of energy from renewable sources and the transformation of solar energy into thermal energy.

Along the same lines, Decree No. 451/011 provides that local manufacturers of the solar equipment required for the implementation of the Solar Plan shall be exempted from VAT.

There are also tax benefits for the conversion of equipment and/or incorporation of processes for the efficient use of energy and to services rendered by energy service companies.

Additionally, rules regulating tenders called by UTE for purchase of electric energy from generators located in national territory or a non-traditional renewable source, set out that investment components of national origin would be preferentially considered upon awarding the bids.

**10. What are the other incentives available to renewable energy generation companies?**

Uruguay is member of Kyoto's Protocol as a developing country. This means that when carrying out activities which reduce the emission of greenhouse gasses such as the production of renewable energies, Emission Reduction Certificates can be issued and then commercialized to industrialized countries.

The acquisition of Emission Reduction Certificates in the scope of the Clean Development Mechanism is another important incentive for the production of renewable energy.

According to the bidding conditions of UTE's tenders, the Generator must obtain Emission Reduction Certificates. Outcome of their commercialization shall totally benefit the Generator.

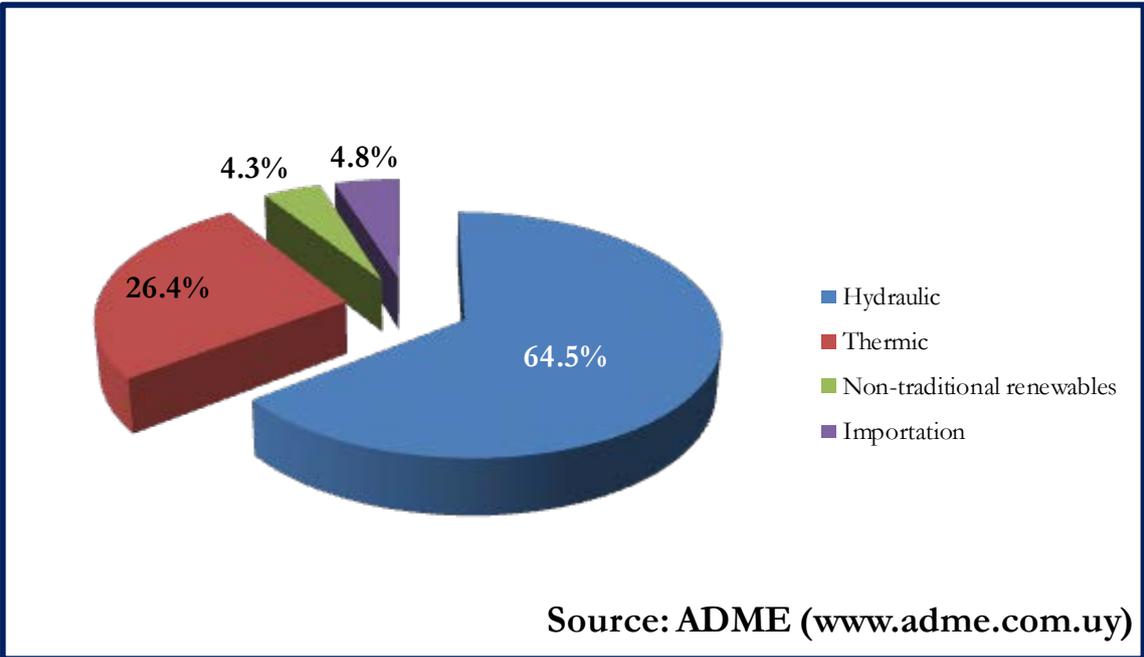
**STATISTICS**

**11. What is the percentage of electricity generated based on each type of renewable energy source in the total generation of electricity at country scale?**

During 2011 (last year with full statistics published), the demand was supplied through the following sources:

- Hydro: 64.6%
- Thermic: 26.4%
- Unconventional renewables: 4.3%
- Imports: 4.8%

These figures show a significant variation in the supply of the electricity demand in respect of the prior year mainly because of the incidence of a dryer year. In 2010 the generation from thermic plants was only 8.3% and the difference was covered by hydro generation. Renewables, in turn, show a slight increase that will become more significant in the coming years.



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