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Comparative study

on the main renewable energy support mechanisms in European jurisdictions

2008

The EU Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources has proven to be a milestone in advertising renewable energy in Europe (i.e. wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases). The next milestone is already on the horizon with the Commission's proposal for a Directive on the promotion of the use of renewable energy. The Directive is designed to help achieving the Commission's target for the production of 20 percent of Europe's energy from renewable sources by 2020.

Contents

Introduction

Businesses and organisations are beginning to see investment in renewable energy solutions not only as a way of broadening their portfolios and in terms of medium to long term profit, but also for key social and ethical reasons. The effects of climate change, combined with increasing prices of oil and gas and increasing media interest in alternative fuels have raised the profile of renewable energy dramatically. This is now reflected in the legislation, support mechanisms and incentives that have been put in place to complement this.

This document aims to highlight the main support mechanisms used in European jurisdictions in aligning their Renewable Energy policies with the Directive and also identifying the most popular mechanisms in use across the various jurisdictions.

The renewables support mechanisms summarised in this document are each embedded in complex national legal and regulatory frameworks and whether they are available in any particular instance will depend on a number of factors and contingencies. Our expert Renewables Lawyers are on hand to guide you through the detail.

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Austria

Mechanism 1 – Green Electricity Act ("Ökostromgesetz")

What is it?

The Austrian Green Electricity Act came into force on 1 January 2003 and established a system of nationwide tariff support for renewable ("green") energy and Combined Heat and Power ("CHP") installations. The main aims are as follows:

- to raise the proportion of electricity produced in installations from renewable energy sources to achieve the national target of 78.1% by 2010
- to promote renewable energy sources and achieve market maturity for new technologies
- to support existing combined heat and power ("CHP") plants for public district heating and to ensure the continued operation and modernisation of such plants
- to raise the proportion of electricity produced by specific small hydropower plants (maximum capacity of 10 MW) to at least 9%.

How does it work?

The Green Electricity Act obliges the so-called "Green Electricity Settlement Centre" ("Ökostromabwicklungsstelle") to purchase green electricity from eligible generators at a fixed feed-in tariff price ("Einspeisevergütung"). The Green Electricity Settlement Centre allocates the purchased electricity to the electricity traders, who are obliged by law to buy the allocated electricity at a fixed transfer price ("Verrechnungspreis"). The difference between the feed-in tariff for electricity and the fixed transfer price is raised by a metering fee expressed as a lump sum per metering point (which consumers have to pay per metering point - Zählpunktpauschale").

The amount of the fee depends on the grid level to which the consumer is connected but is independent of his actual consumption. The fee is fixed by law and amounts to 15,000 € per annum for connection to the high voltage net levels 1 to 4, 3,300 € to level 5,300 € to level 6 and 15 € to level 7.

This differentiation was introduced in order to arrive at a tenable distribution of the burden between households on the one side and industrial consumers on the other side. The levy is fixed at a level to allow about 38% of the overall financing to be covered by the levy.

Who gets the benefit?

Operators of renewable energy sources, save electricity from hydro power plants with a maximum capacity of more than 10 MW, animal meal, spent lye, sewage sludge and waste (with the exception of waste with a high biogenic share), operators of existing and modernised combined heat and power plants for public district heating supply and medium-sized hydro power plants.

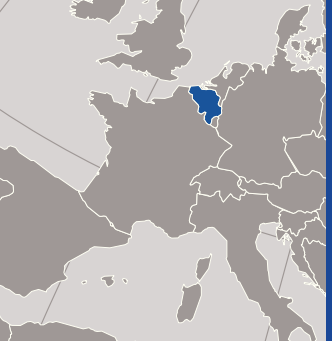
Mechanism 2 – Austrian Act on Emissions Allowance Trading (Emissionszertifikategesetz – EZG)

The Austrian Act on Emissions Allowance Trading (EZG) was introduced by the government in 2004, implementing Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC. The main goal of the Act is the establishment of a greenhouse gas emission-trading scheme to provide a cost-effective reduction of greenhouse gas emissions.

Mechanism 3 – Climate and Energy Fund ("Klima- und Energiefondsgesetz")

The climate and energy fund is endowed with 500 million € for the period of 2007 to 2010. It was established with the aim of contributing to the cost-efficient attainment of the energy goals of the Austrian government by supporting initiatives in the areas of climate protection and sustainable energy supply. The support will be concentrated in three main areas: research and development of sustainable environmental technologies and climate research; the promotion of projects in the area of public and commercial transport; and the promotion of sustainable energy technologies.

Many thanks to Robert Keisler for this contribution

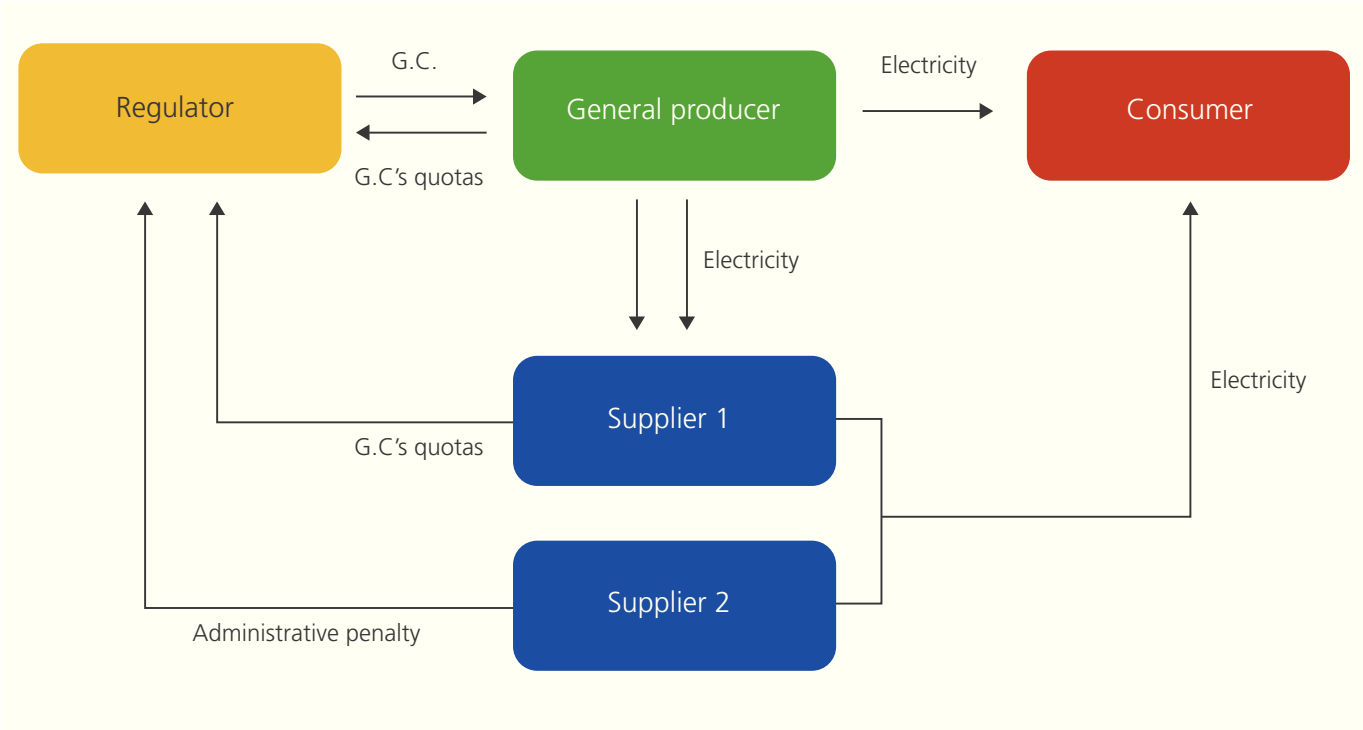


Belgium

Mechanism 1 – Tradable Green Certificates (TGC's)

Belgium is a Federal State, in which Regions (Flemish Region, Walloon Region and Brussels-Capital Region) are in charge of the protection of the environment. In response to the promotion of renewable energy sources, each Region and the Federal State has developed a Green Certificate Mechanism. This mechanism is built on the following principles:

- The regional or federal regulation authority issues a certain amount of TGC's to "green producers", based on the quantity of electricity produced from Renewable Energy Sources (RES). It is to be pointed out that, in Brussels and Wallonia, the issuing of TGC's is conditional on the saving of a certain quantity of CO_2 in comparison with the CO_2 emissions for conventional production in a modern benchmark facility.
- The regional legislations have fixed annual quotas applicable to suppliers (e.g. in Wallonia, 8% in 2008). This means that each supplier must send the Regulator the number of green certificates that corresponds to the number of MWh supplied to its end clients, multiplied by the quota. If the supplier does not adhere to the quota, it receives a penalty for each missing TGC. Suppliers have then to purchase enough TGC from green producers in order to avoid the penalty; this creates the market for green certificates. The market price of TGC is therefore less than that of the penalty.
- In order to sustain the security of investments, regional (and federal) legislations have provided that TSO and/or DSO's must purchase TGC's at a fixed price, generally depending on the energy source.
- The support mechanism (issuing of TGC and/or purchase obligation at a fixed price) is valid for a certain period of time, depending on the Region and on the renewable energy source.
- The price of TGC's is passed on the consumers. However, industrial consumers benefit from certain exemptions.



Mechanism 2 – Installation premiums

There are a large number of installation premiums provided in Belgium in order to promote the production of electricity from RES. Those premiums differ from one to another according to different criteria:

- the public authority who grants it (Region, commune);
- the renewable energy source (solar, wind); and
- the nature of the producer (firm or particular).

Mechanism 3 – Offshore wind

The Federal State has created a specific support mechanism for the production of electricity from off-shore wind farms: (i) within the mechanism of TGC's, the TSO has an obligation to purchase green certificates issued to the producer at the amount of 107 €/MWh for the first 216 MW generated and 90 €/MWh for the remainder of generated MW; this obligation applies for a duration of 20 years; (ii) for each concession, the cable connecting the wind farm to the transmission grid is financed by the TSO, to a maximum amount of 25 million € for the installation of a minimum of 216 MW; (iii) the legislation provides for a mechanism which guarantees that investments granted by the holder of the concession will be passed to the end consumer, even if the project is abandoned or interrupted (for a reason other than the fault or the gross negligence of the holder of the concession).

Mechanism 4 – Part exemption to the "Federal contribution"

A federal contribution is owed by the end consumers in order to finance the public service obligations and the costs related to the functioning of the Federal Regulation Authority. This contribution is paid to the supplier who returns it to the commission or regulation.

This contribution is in particular intended to finance (totally or partially): (i) the "denuclearization" of some nuclear sites; (ii) the functioning costs of the Federal Regulator; (iii) the guidance and the social aid for the supply of energy to the most deprived inhabitants; (iv) the federal policy for reduction of greenhouse gases, etc.

The proportion of electricity from RES supplied to consumers is exempted from the duty related to the costs of the denuclearization and for the federal policy for the reduction of greenhouse gases.

Mechanism 5 – Tax exemptions

The tax legislation provides for several exemptions for RES installations, e.g.:

- 6% VAT (instead of 21%) for the installation of PV Panels or windturbines;
- Tax reduction for all investments in energy savings or RES;
- Exemption to the "real estate prepayment" (précompte immobilier) on the installation of PV panels.

Many thanks to Pascal Boucquey for this contribution

Bulgaria

Background

Bulgaria has a national indicative target under the Treaty of Accession: Bulgaria has an obligation to achieve an 11% share of the electricity generated from renewable energy sources in gross electricity consumption by 2010.

Bulgaria recently adopted the Renewable and Alternative Energy Sources and Biofuels Act ("Renewables Act") (State Gazette 49, dated 19 June 2007) which implements the provisions of Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity from renewable energy sources in the internal electricity market.

Mechanisms of support for renewable energy sources under the Renewables Act include the following:

Mechanism 1 – Renewables Act mechanisms

The public utility wholesaler (the National Electricity Company EAD) and/or the public utility suppliers are obliged to off-take the entire installed capacity generated by renewable sources that is guaranteed by a certificate of origin.

The certificates for origin shall be issued by the State regulator (the State Energy and Water Regulation Commission, "SEWRC") to the producers of renewable energy in accordance with Article 5(2) of Directive 2001/77/EC. The SEWRC shall recognise certificates of origin issued by the competent bodies of other member states under the rule of mutuality.

The obligation to purchase the electricity comes under the Power Purchase Agreements ("PPAs"). For the existing producers, the term of these PPAs shall be 12 years from the date that the changes to the Bulgarian Energy Act came into force (State Gazette 74, dated 8 September 2006). For all new producers of electricity from renewable energy sources, the term of the PPAs shall be 12 years from the start of production of electricity but no later than 31 December 2010.

Mechanism 2 – Preference off-take Prices for Energy Generated by Renewable Sources

The SEWRC shall stipulate, not later than 31 March of each year, the preferential prices for the off-take of electricity produced by renewable sources, excluding energy produced by hydro power plants exceeding 10 MW.

The preferential price shall be based on 80% of the average end-sale price of the public wholesaler and the end-providers for the previous year and an additional payment (as defined by SEWRC) which depends on the type of the renewable source. The additional payment for each year shall not be less than 95% of the additional payment for the previous year.

There are pending hearings at the SEWRC concerning the preference off-take prices for electricity from renewable energy sources. The SEWRC is expected to set out the preference prices for 2008 in the next month.

Mechanism 3 – Priority Access to the Grid Systems for Electricity Produced by Renewable Sources

The obligation to connect the new plant/facility to the grid is imposed on the electricity distribution company or the transmission company located closest to the site. The electricity distribution company or the transmission company shall provide the scheme for interconnection to the electricity grid and undertake that the connection shall be at the closest possible point of the transmission and distribution network. The producer shall be given an initial estimate of the cost for the interconnection. The electricity distribution company or the transmission company is obliged to provide the producer with an option for interconnection to existing facilities of interconnected production plants and customers.

The Renewables Act provides for a conservative approach towards cost sharing. The costs for interconnection from the production facility to the border of the property shall be borne by the producer. The costs for the interconnection of the production facility from the border of the property to the grid shall be borne by the distribution company or transmission company. The producer shall be responsible for the direct costs of the connection. The expenses for the reconstruction and broadening of the transmission and distribution network shall be borne by the distribution or transmission company and shall not be included in the cost for interconnection.

Mechanism 4 – Implementation of a green certificates system is still pending.

The Minister of Economy and Energy is obliged by 31 December 2011 to prepare and present to the Bulgarian Government draft legislation providing a market mechanism and incentives to encourage the production of electricity from renewable sources.

Mechanism 5 – Investment Aid

Recent amendments in the Bulgarian investment promotion regime aim to support investments in specific and innovative industries, including renewable energy projects. Thresholds of minimum investment apply for a project to qualify as eligible for support. Eligible investors are certified by the Bulgarian Investment Agency. The support mechanisms include: state investment in associated infrastructure; sale of state property directly to eligible investors (following a specific procedure); and individual administrative assistance by the authorities.

Many thanks to Elitsa Ivanova for this contribution

Croatia

Mechanism 1 – The Renewables Obligation (RO)

Why has it been introduced?:

The Croatian Government has targeted the generation of 5.8% of electricity from renewable sources by 2010, and 20% of electricity from renewable sources by 2020.

What is it?:

The Croatian Government encourages production of renewable energy through system of incentives.

How does it work?:

Producers of renewable energy are given incentives for production of each Kwh of power from renewable energy sources starting at HRK 0.0089 (0.00122 €) /Kwh in 2008 to HRK 0.035 (0.0048€)/ Kwh in 2010. Incentives are collected by the market operator from suppliers of tariff and preferential customers and are paid to preferential producers of renewable energy. Incentives are paid by the consumer.

Who gets the benefit?:

Producers of renewable energy who were granted preferential status from the State.

Mechanism 2 – Climate Change Levy & Levy Exemption Certificates (LECs)

There are still no special environment taxes introduced in Croatia which are charged to the consumers for CO_2 emission. However, there are several contributions which need to be paid by, for instance, car owners (contribution for NOx, SO_2 emissions, nitrates, etc.)

Mechanism 3 – Carbon Capture

Croatia ratified the Kyoto Protocol in 2007 and became obliged to reduce greenhouse gas emissions to the levels specified therein. Becoming a member of the Kyoto Protocol was a big step in harmonizing Croatian regulations with the demands of global air protection and carbon capture requirements. Croatia has a demanding task to implement principles and mechanisms set out in the Kyoto Protocol, i.e. to reduce the carbon emissions. The Act on Air Protection issued in 2004 sets out the general framework of air protection but postpones some of its key provisions until EU accession (e.g. carbon trading). In addition there are several by-laws which regulate air quality and carbon capture: the By-law on Monitoring of Greenhouse Effect Gases Emission (part of the By-law will come into effect only after Croatia becomes a member of the EU), the By-law on Borderline Values of Air Pollution, the By-law on Critical Values of Air Pollution and the By-law on Ozone in Air, etc.

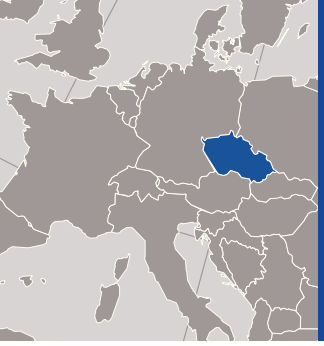
Mechanism 4 – Heat

Generation of heat from renewable sources has the same status as production of electricity from renewables.

Mechanism 5 – Various sources of funding

Sources of funding include funding from commercial banks as well as funding provided by the Croatian Bank for Reconstruction and Development (a special State owned bank incorporated for the purpose of providing funding for projects which are beneficial for the development of the Croatian economy).

Many thanks to Jasmina Crnalic for this contribution



Czech Republic

Mechanism 1 – Implementing Act No.180/2005

Act No. 180/2005 on the promotion of the production of electricity from renewable energy sources entered into force on 1 August 2005

The Czech Republic committed itself to produce 8% of the total gross national electricity consumption from renewable energy sources in 2010.

The share of electricity generation currently provided by renewable energy is 4.9% (as of 1 January 2007)

Mechanism 2 – Support Mechanisms under the Act

Access to the grid

The entitlement to connect energy production facilities from renewable energy sources to the electricity system

Reducing investment risk

The Act provides the following incentives:

The guaranteed return on each unit of electricity produced for a period of 15 years from the date it is brought into service.

The investor has a choice between the two following support systems: (i) minimum purchase price, under which all electricity produced can be sold to the operator of the relevant distribution system, or (ii) green bonuses (which supplements the market price for electricity), under which electricity produced from renewable sources can be placed on the single market for electricity.

The level of purchase prices for already operating facilities/installations is maintained for a period of 15 years.

A maximum 5% year-on-year reduction in purchase prices for new facilities/installations.

Tax incentives

The income from generation of electricity from renewable energy sources (e.g. small hydro-electric power plants with an output of up to 1 MW, wind-powered electricity generating stations, heat pumps, solar-powered facilities, plants for biogas and wood-gas production etc.) in the first calendar year of their operation and in the five years immediately following is tax-exempt

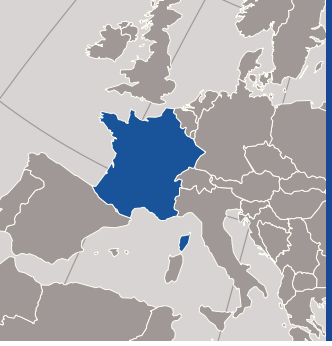
There are also real estate tax exemptions for renewable energy sources and the imposition of specific taxes for electricity from non-renewable sources

Others

The State Programme for the Promotion of Energy-Saving and the Use of Renewable Energy Sources.

The support from the structural funds of the European Union.

Many thanks to Jasmina Crnalic for this contribution



France

Pursuant to the European Directive on the promotion of electricity produced from renewable energy sources, the share of electricity produced from renewable energy sources should represent 21% of electricity consumption by 2010.

France has centred its renewable energy sources approach on feed-in tariffs on the one hand, and a tendering procedure on the other.

Mechanism 1 – Creation of wind power development areas

In order to aggregate wind farms and to avoid their dispersion, the creation of wind power development areas was decided in 2005 (Article 37 of Law n° 2005-781 of 13 July 2005). This new legal framework system enables wind farms to benefit from the power purchase obligation for the projects located in areas set up by local authorities. The municipalities submit a request for permission to create wind power development areas (Zones de développement aérien) to the concerned department "Préfet" (local State authority), who then consult the neighbouring municipalities prior to any decision. Their adoption is subject to three conditions: wind potential, grid connection possibilities and landscape protection (listing buildings and protected locations).

Mechanism 2 – Power Purchase Obligation and Feed-in Tariffs

The power purchase obligation is the main incentive element of the French government energy policy. "Electricité de France" and Non Nationalized Distributors (Article 23 of Law n°46-628 of 8 April 1946) are bound to buy the energy produced from renewable energy sources at a fixed price, provided production installations are connected to power grids and that the producers fulfill conditions.

Firstly, power production is limited to 12 MW per site (Decree n°2000-1196 of 6 December 2000), except for wind energy. In the latter case wind farms located in wind power development areas may not exceed or be lower than installed power defined by the local authorities.

Feed-in tariffs apply to renewable energy sources, and are calculated to improve private investments. Thus, total prices are equivalent to normal remuneration of funds invested by the producer. Furthermore each producer is assured that what is produced will be sold at a fixed price.

Feed-in tariffs are defined by a statutory order from the Minister of Economy, Industry and employment for each technology.

Currently, tariffs have been introduced for wind energy, small hydro, photovoltaic energy, biomass and biogas, and electricity from Combined Heat and Power (CHP) and waste incineration.

Mechanism 3 – Tax incentives

The French government also introduced tax incentive measures in favour of renewable energy, such as:

- Tax credits of 50%
- Reduction of 5.5% VAT for residential energy equipment using renewable energy sources
- Subsidies up to 40% granted for biomass heating plants.

Mechanism 4 – Pluriannual Investment Programme

The Minister in charge of energy policy shall establish every two years a forecast of needs for electricity generation capacity, called "Pluriannual Investment Programme" (PPI), in order to ensure the necessary matching of electricity supply and demand. This document takes into account the national target for Renewable Energy Sources determined by the European Directive.

The PPI's main target is to identify the best investments for electricity production, by considering energy supply security.

PPI lays down objectives for the development of production means in France for each energy source and production method.

PPI will be published as a governmental decree and transmitted to Parliament.

Mechanism 5 – Call for Tender

The French government may also launch calls for tender, which should then be organised by the Regulator (CRE: Energy Regulation Commission). This system has existed since 2000 and allows the Minister in charge of energy policy to react if the PPI's goals have not been achieved.

Many calls for tender have already been launched since 2003 as regards different energy sources (biomass, biogas, onshore and offshore wind turbines)

Mechanism 6 – National round tables (Grenelle Environnement, for instance)

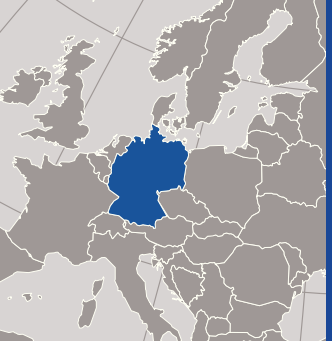
In October 2007, France's Environment Round Table was organised by the Minister of Ecology and Sustainable Planning and Development. For the first time, the Round Table brought all the civilian and public service representatives together around the discussion table, creating 5 colleges: State, Unions, employers, NGOs and local authorities.

Different objectives have been laid down during the Grenelle Environnement, such as:

Consumption of 30 to 50% renewable energy in the French overseas departments and Territories by 2020;

- Research into second-generation biofuels.
- R&D program relating to the geological capture and storage of CO_2.
- Plan for energy-efficient and low-input farming.
- Carbon balance assessments of all administrative departments and a 20% improvement in energy efficiency.
- Compulsory inclusion of environmental clauses in the public procurement French code.
- Study on the introduction of a climate energy tax.

Many thanks to Jean-Luc Tixier for this contribution



Germany

Mechanism 1 – Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz – EEG)

The backbone of the German renewable energy support mechanism is the Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz – EEG). The EEG supports the production of electricity from wind and water-power, solar radiation, biomass and sewage gas combustion and geothermic energy. The EEG guarantees each plant operator a fixed tariff for electricity generated from theses renewable energy sources. The tariff depends (among other things) on the type and capacity of the installation and the year of its commissioning.

Guaranteed Tariff

The locally responsible transmission system operator is under a legal obligation to pay to the plant operator the guaranteed tariff for a period of – in general – 20 calendar years (and for the year the plant was taken into operation). The fee depends on the tariff that is applicable in the year of commissioning and for most cases remains fixed during the 20 years that follow commissioning. The later a plant is put into operation the lower the fee that is paid to the operator (so-called "degression").

The EEG differentiates between different sources of renewable energy. Different tariffs and degression rates apply to each renewable energy source. For a plant that is commissioned in 2008, generally the following rates apply:

- Photovoltaic energy: 35.48 – 48.98 €cent/kWh
- Biomass energy: 7.91 – 16.83 €cent/kWh
- Geothermy: 7.16 – 15.00 €cent/kWh
- Sewage gas: 6.16 – 7.22 €cent/kWh
- Offshore wind energy: 8.92 €cent/kWh
- Onshore wind energy: 5.07 – 8.03 €cent/kWh
- Water energy: 3.54 – 9.67 €cent/kWh

Grid Connection

According to Section 4 EEG the transmission system operator who is located closest to a renewable energy plant is obliged to connect the plant to the system and to purchase all electricity produced by the plant and to pay the guaranteed tariff. The plant operator generally bears the costs related to the connection and has to pay – as the case may be – an annual fee for the operation of the connection facilities to the grid system operator.

Due to the high costs for connecting an offshore wind farm to the grid, an exemption applies for such wind farms. According to Section 17 para. 2a of the German Energy Industry Act (Energiewirtschaftsgesetz – EnWG), the locally responsible transmission system operator is obliged to build and operate the grid from the transformer station of the offshore wind farm to the technically and economically best connection point of the next transmission or distribution grid. As a consequence, the grid connection regime for offshore wind farms differs significantly from the regime for onshore wind and other renewable energy plants.

Changes for 2009

The current version of the EEG of 21 July 2004 is due to be changed as of 1 January 2009. The German Federal Government submitted a bill for a new EEG which will, among other things, amend the current tariffs. For example, the guaranteed tariff for electricity produced by photovoltaic installations commissioned later than 1 January 2009 will – according to the bill – decrease to 32.00 – 47.48 €cent/kWh with an elevated yearly degression of 8%.

As another example, the remuneration for electricity generated by offshore wind energy turbines is very likely to be increased considerably. For a period of 12 years starting from the date of commissioning the guaranteed tariff shall amount to 12 €cent/kWh and 14 €cent/kWh if the plants are commissioned no later than 31 December 2013. The period for which this tariff is guaranteed may be extended by 0.5 months for each full nautical mile beyond 12 nautical miles seawards and by 1.7 months for each full metre of water depth exceeding 20 metres. The tariff degression shall only commence as of 1 January 2015 and shall amount to 5% per year.

Mechanism 2 – Renewable Energy Heat Act (Erneuerbare-Energien-Wärmegesetz – EEWärmeG)

In addition to the EEG, the German Federal Government submitted a bill for a Renewable Energy Heat Act (Erneuerbare-Energien-Wärmegesetz – EEWärmeG) which is currently debated in Parliament. The draft supports the expansion of renewable energy in heat production with the main target that by 2020 14% of the total production of heating, hot water, cooling and process heat shall be generated from renewable energy, such as solar radiation, biomass, geothermic energy or waste heat.

Firstly, the bill introduces a general obligation for all owners of new buildings to cover a certain extent of their heat energy demand from renewable energy sources. Alternatively, it allows owners to take other measures to decrease their energy consumption, e.g. the installation of highly effective insulation. The federal states are entitled to extend the obligations to existing buildings.

Secondly, the Federal Government provides financial aid for the use of renewable energy sources technology. According to the bill, the Federal Government will allocate up to 500 Mio. Euro annually for the support of renewable energy sources in heat production.

Finally, the bill facilitates the development of district heating networks. Pursuant to the bill, local authorities are entitled to impose an obligation to use district heating in order to protect the climate and natural resources.

Many thanks to Dr. Niklas Ganssauge and Dr. Muna Yousif for this contribution

Hungary

General

Enhanced utilisation of renewable energy sources is one of the chief concerns of the governmental energy policy, as stated in the government's energy strategy and adjoining action paper. At present the electricity generated from renewable sources amounts to approximately 5% of total consumption, which already exceeds the 3.6% commitment made towards the EU to be fulfilled by 2010. Pursuant to the Directive of the EU, the longer term goal of Hungary is to achieve a 13% share target of renewable energy sources in the final energy demand by 2020.

As of 1 January 2008 a completely new electricity regulation is in force in Hungary, further liberalising the electricity sector and setting forth a novel regime for supporting renewable electricity generation.

Mechanism 1 – Mandatory off-take vs. Green Certificates

The new electricity regulation has introduced the regime of mandatory off-take to support investment in the field of renewable electricity generation. Pursuant to the regime, a substantial part of the electricity generated by renewable sources must be taken off by the Hungarian state-owned TSO (Mavir) at state-set prices, which, whilst being calculable, are generally also more favourable than market-determined prices. Traders, including universal service providers, power generating companies and electricity importers must purchase from the TSO electricity generated by renewable energy sources according to a fixed percentage of their total electricity turnover/consumption. The take-off prices are defined according to the type of renewable source and whether the licence permitting the sale of electricity under the mandatory off-take regime was issued before or after the effective date of the new regulation and the time of generation (i.e. peak, off-peak and deep valley periods). These are amended each year in accordance with the CPI as measured by the Hungarian Statistical Office. The renewable sources currently subject to the regime are wind and solar energy, and electricity generated by cogeneration or from biomass, although these latter two are subject to severe restrictions.

Even though off-take prices are stipulated by law, the actual entitlement for a plant to sell electricity in the mandatory off-take regime is awarded by the Hungarian Electricity Office (HEO), a body supervised by the Minister of Economy and Transportation. In such a licence the HEO defines the annual amount of the generated electricity and the time period under which it is subject to mandatory off-take. Pursuant to the applicable law, the HEO mainly takes into account at its decision the business plan of the generator and the return on investment, therefore, any state-aid or other subsidy (including surplus of emissions allowances generated by the project, if relevant), shall be notified to the HEO, which shall adjust the amount and timeframe accordingly.

Pursuant to the new legislation, the regime of mandatory off-take is not set in stone. Under the electricity Act the government is entitled in the future to implement a so-called green and cogenerated certificate system instead of the current mandatory off-take regime. Under the green certificate system, renewable electricity would be sold at market prices, but in order to finance the additional costs of renewables and to ensure that the desired amount is indeed generated, all consumers (or producers) would be obliged to purchase a certain number of green certificates according to their overall consumption (production). Thus, these would be market-based instruments, similar to emission allowances under the EU-ETS.

Mechanism 2 – Wind energy

According to non-confirmed expert opinions and industry experts, Hungary has a potential of over 1,000 MW of wind energy, nevertheless only 330MW have been licenced so far by the HEO, and of those only about 65MW have been implemented to-date. The remaining licensed capacity is under various phases of development. Wind energy is also subject to the above described mandatory off-take scheme.

The main reason of this rather low amount is that the HEO and the TSO believed that this is the highest wind generation capacity that will not disturb the capacity of the Hungarian grid. Presumably, further licences will only be awarded by the HEO once some technical constraints are overcome, e.g. new balancing power stations are put into operation.

According to the currently applicable law, further licences will be offered to developers based on open tendering, the rules of which shall be defined in the future. Although not much is known as yet about such rules, calls for tender will be publicised on a European level.

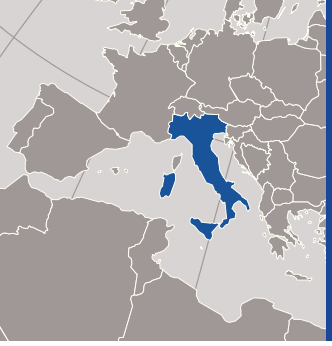
Biomass and geothermal energy

Hungary has a great potential both for biomass and geothermal energy, although these sources are not yet exploited to the utmost possible level.

The energy produced from biomass plants represents the largest share of electricity produced from renewable energy sources, in 2004 it accounted for over 60% of all renewable energy production, showing an annual 116% growth rate between 1997 and 2004. Biomass power plants may be subject to the mandatory off-take regime, provided they meet with certain efficiency indicators.

Geothermal energy has unfortunately been used very rarely so far, although Hungary is rich in easily accessible thermal waters. In some areas it is used for district heating.

Many thanks to Dr Péter Simon for this contribution



Italy

Mechanism 1 – The Green Certificates (GCs)

Why has it been introduced?

The EU directive 2001-77-EC on the promotion of electricity produced from renewable energy sources (RES) has set the target for Italy to generate 22% of electricity from renewable sources by 2010.

What is it?

In order to encourage the development of renewable energy, electricity suppliers and electricity importers shall supply or import a percentage equal to 2% (increased every year by 0.35%) of the supplied or imported energy that is to be produced from renewable energy sources. Each Green Certificate proves that as much as 1MWh has been produced from a renewable source. The Green Certificate shall then be bought by the GSE (Gestore Servizi Elettrici), a State company set up for the purpose of providing incentives to suppliers producing renewable energy.

How does it work?

Until 31 December 2007 every plant producing renewable energy was entitled to be granted a GC for every MWH produced for as long as 8 years. Due to the unsatisfactory objectives achieved, since 1 January 2008 suppliers of renewable energy will be granted the GCs for as many as 15 years. The GCs shall then be sold to the GSE, which will buy them back at a price set every year by the GSE itself according to the relevant Government guidelines (in 2007 it was equal to 13,749 € /MWh).

Mechanism 2 – The Energy Account

Why has it been introduced?

An alternative way of providing incentives is available to producers of photovoltaic renewable energy only. The reason for the peculiar rules applying to photovoltaic energy is, of course, the geographic position of Italy, which makes this particular legislation appropriate.

What is it?

Originally introduced in 2005, the so-called 'Energy Account' has been significantly amended every year until 2007. Decree 283/2003 and the relevant implementing rules provide for a mechanism through which the producers of a photovoltaic plant can rely on two different and cumulative incentives. On the one hand the energy produced from a photovoltaic plant can be sold to the GSE and to third parties (i.e. electricity grid local administrators), additionally, the GSE pays to the producers of photovoltaic electricity a price called "Incentive Fare" (Tariffa Incentivante) for as many as 20 years. It has been calculated that the average price for building a photovoltaic plant is likely to be paid off by the combined effect of the energy sold and the Incentive Fare in as long as 10 years in the North regions and in 7 years in the South.

Limitation?

According to the current legislation, the incentives shall no longer be available when the overall national production of photovoltaic energy has reached the amount of 1,200 MW. However those who have been granted the Incentive Fare before such threshold has been reached will continue to benefit from it for 20 years from the day it was granted.

Many thanks to Matteo Ciminelli for this contribution

Netherlands

Background

In September 2007 the Dutch government issued a new policy document, entitled the Clean and Efficient programme: New Energy for Climate Policy. The ambitious new climate and energy targets for 2020 are:

1 to reach a share of renewable energy of 20% by 2020

2 to reduce greenhouse gas emissions by 30% compared to 1990 levels

3 to achieve a rate of energy efficiency improvement of 2% per year.

The Dutch government has formulated a set of measures that will enable the Netherlands to reach these climate and energy targets. The Clean and Efficient Programme contains a set of measures for each economic sector and for Dutch citizens, such as market incentives, standards, temporary financial incentives and innovation.

Mechanism 1 – Incentives under the New Energy for Climate Policy

For the energy sector the following measures have been highlighted:

1 As of April 2008 a new subsidy scheme will come into force for renewable energy: the Promotion of Sustainable Energy Production Decree (Besluit stimulering duurzame energieproductie). The government has earmarked funds for this scheme to stimulate the production and innovation of renewable energy.

2 To achieve the target for the reduction of greenhouse gas emission (- 30% in 2020), the Dutch government wants to expand the system of emissions trading. The European Emissions Trading Scheme is the main mechanism for determining the contribution of the energy sector.

3 Coal can be used in a climate-neutral way with carbon capture and storage. Therefore "clean fossil fuel" can be used as a transitional technology on the way to renewable energy production. The government is preparing agreements with operators of new coal-fired power stations concerning reduced CO_2 emissions. New coal-fired power stations will be constructed in such a way that they will be able to capture CO_2 and store it underground. From 2015 onwards large reductions will have to be achieved in these new power stations.

4 Attempts are made to realise one or two large demonstration projects for Carbon Capture and Storage (CCS). As soon as the technology for CCS has been sufficiently developed, it needs to be made mandatory on a European level for all new power stations.

Mechanism 2 – The Promotion of Sustainable Energy Production Decree (Besluit stimulering duurzame energieproductie)

The SDE provides grants to investors for projects involving renewable electricity, renewable (green) gas and combined heat and power (CHP). This subsidy scheme provides for a closed, manageable system in which a maximum budget is set each year for the issuing of new grants. On a yearly basis the subsidy-eligible categories will be decided on. These categories are selected on three criteria: cost effectiveness, future prospects and innovative capacity.

The subsidy-eligible categories for 2008 are:

- Land-based-wind power, small-scale solar photo voltaic installations, biogas production, waste incineration, small-scale biomass with the exception of liquid biomass.

The discussion on sustainability plays an important role regarding the biomass options. Liquid biomass is not included because at the moment no sufficiently developed certification system exists. The category on CHP is not yet regulated. The financial resources available for the SDE are going to increase from 10 million € in 2008 to approximately 336 million € structurally in 2014. As a result the budget for this period will be almost 1.4 billion €.

Land-based wind power is seen as the most cost-effective option. Therefore new wind power equivalent of 500 MW is to be made eligible for subsidy in 2008. This amounts to at least 200 to 300 new wind turbines.

Solar photovoltaic power and offshore wind farms score high on two of criteria mentioned before: future prospects and innovative capacity.

In 2009 the offshore wind farms will be added to the subsidy-eligible categories of the SDE.

Mechanism 3 – CO_2 capture and storage (CCS)

The CATO programme can be regarded as the Dutch national research programme on CO_2 capture and storage and it is implemented by a consortium of Dutch companies, research institutions, universities and environmental organisations.

The aim of CATO is to identify whether and how CCS can contribute to a sustainable energy system in the Netherlands, from an economical, technical, social and ecological point of view under which conditions this option could be implemented in the energy system.

The Dutch government supports CATO with 12.7 million €, which is half of the costs. The programme runs from 2004 until the end of 2008, but there will be a follow up. In April on the Third Dutch CCS conference more information on the CATO-2 initiative was announced.

In the forthcoming years, the Dutch government will make a decision about major demonstration projects for CCS. The Dutch government wants to locate two of the 12 major demonstration projects desired by the EU for an electricity power station with CCS by 2015 or as early as possible. The authorities and market parties are working together to realise the two demonstration projects within the framework of the EU programme. The government will make financial resources available for the further development of CCS and other pre-conditions will be adapted in order to remove obstacles to CCS.

Mechanism 4 – Heat

Almost a third of Dutch energy consumption involves heat. The majority involves low temperature heat which can be supplied by renewable sources, like environmental heat or geothermal heat, and residual heat. The Dutch government will develop an active heat policy that provides the necessary incentives. The possibility of a stimulation programme will be explored.

Mechanism 5 – Tax deduction for investments in energy-saving equipment and renewable energy

As of 1997 the Energy Investment Allowance tax relief programme (EIA) gives a direct financial advantage to Dutch companies that invest in energy efficient equipment and renewable energy sources. In 2008 companies can deduct 44% of the annual investment costs for energy-saving equipment, such as purchase costs and production costs, from their fiscal profit up to a maximum of 111 million € per year. An 'Energy List' determines which type of equipment qualifies for this programme.

Many thanks to Wendy Meijer for this contribution

Poland

Background

Since 1 October 2005, the Polish 1997 Energy Law contains mechanisms supporting renewable energy generators, introduced in the implementation of the RES Directive.

Mechanism 1 – Obligation to purchase renewable energy

Suppliers of last resort ("LRS"), (i.e. companies delivering electricity to household customers who do not exercise their third party access rights) are obliged to purchase all electricity generated in renewable energy sources connected to the electricity grid within the area of operations of the relevant LRS. The purchase is effected at the statutory price equal to the average price of electricity prevailing in Poland in the preceding calendar year, announced annually by the Regulator (the price applicable for 2008 amounts to PLN 128.80/MWh (approx. 33 €/MWh).

All entities trading in heat are obliged to purchase the thermal energy offered to them and generated in a renewable source located in Poland, up to a maximum volume corresponding to the total demand of the relevant entity's customers who are connected to the same heat transmission system as the renewable energy source in question.

Mechanism 2 – Certificates of origin

The Polish Energy Law also obliges all suppliers of electricity to end customers to annually redeem documents certifying generation of electricity from a renewable source (so called "green certificates") in respect of a volume of electricity representing a prescribed portion of the aggregate annual sales to the end customers of the relevant supplier. The volumes of electricity to be covered by green certificates in each calendar year are set out in secondary legislation to the Energy Law. Currently there is no secondary legislation in force concerning the aforementioned matter, however, according to the draft Ordinance on obligation to purchase electric energy from unconventional and renewable sources dated 11 February 2008 and published on the website of the Polish Ministry of the Economy, the volumes of electricity to be covered by green certificates will increase from 7% of the aggregate volume of electricity sold by the relevant supplier to its end customers in 2008 to 12.9% of such volume in 2017. Suppliers may also meet their obligation by paying a "substitution fee" for the volume of electricity not covered by green certificates (PLN 240/MWh (approx. 70 €/MWh), indexed by Polish inflation annually, from 2008 onwards). Consequently, the legislation (indirectly) sets the maximum price (cap) of green certificates. No minimum price is guaranteed by the law. For as long as the LRS are required to apply regulated tariffs, pricing of green certificates is also influenced by the Regulator, who determines the maximum price acceptable as a "justified cost" in tariffs of LRS – such price amounted to PLN 220 (65€) per certificate in 2007 tariffs.

Mechanism 3 – Connection to the grid

Electricity grid operators have a statutory obligation to connect all applicants to their grids, subject only to such connection being economically and technically viable. The fee charged for such interconnection is normally determined on the basis of the actual interconnection expenditures. However, in case of renewable energy sources the fee amounts to half of such expenditures. From 31 December 2010 this "discount" will be applicable only to installed electric capacity below 5 MW.

Mechanism 4 – Excise exemption

Electricity generated in renewable sources is exempt from excise tax (unlike electricity generated from other sources – in Poland excise is payable by generators, not by customers).

Other renewable energy support mechanisms

- Within the area of its operations, an electricity grid operator is obliged to give priority to transmission of energy produced from renewable sources, subject only to maintaining the reliability and security of the national power system.
- Entities generating electric energy from renewable sources of a total capacity not exceeding 5 MW are exempt from: (i) fees relating to entries in the register of certificates of origin, (ii) stamp duty for the issuance of certificates of origin, (iii) stamp duty for the issuance of a licence to generate electric energy from the relevant source.
- Operators of renewable sources of electricity of a total capacity not exceeding 5MW are exempt from the otherwise applicable annual licence fees.
- Costs of co-financing of investments relating to the development of renewable sources of energy are defined by the law as a category of "justified costs" subject to pass through in gaseous fuels, electricity and heat tariffs.

- Electricity generated by wind-powered sources is subject to specific balancing principles (balancing an hourly rather than daily basis).
- Operators of renewable energy sources who have developed such sources on their own agricultural land may deduct 25% of the incurred investment costs from their agricultural property tax.

Additional financing sources

Development of renewable energy sources may be funded on favourable terms using preferential loans and grants from institutions such as the National Fund for Environmental Protection and Water Management, Ekofund, Bank Ochrony Ârodowiska ("Environment Protection Bank") and from European Union dedicated funds.

Many thanks to Karolina Siedlik for this contribution

Romania

Mechanism 1 – Qualification for priority electricity production

Under Law 13/2007 (the "Energy Law"), the take-up of electricity produced from renewable energy sources ("Renewable Energy") has priority, as long as the safe operation of the electricity network is not endangered. A Renewable Energy capacity may qualify for priority production further to a written application submitted to ANRE ("Romanian Regulatory Authority on Energy"), accompanied by further information including:

(i) the location and description of the configuration for the relevant equipment to generate the Renewable Energy

(ii) an annual prognosis for the production of the Renewable Energy

(iii) the person(s) responsible for generation

(iv) the equipment for measuring the Renewable Energy produced, etc.

A qualification certificate is usually issued annually, covering the capacity's entire Renewable Energy production and for the entire generating capacity, giving the generator certain preferential rights, such as:

(A) for any Renewable Energy not sold under bilateral contracts freely negotiated between the parties, to make offers for trading on the Day Ahead Market ("DAM");

The DAM is organized and operated by SC OPCOM SA ("OPCOM"). Participation in the DAM is permitted only to registered participants and transactions are concluded each trading day for the day ahead. Offers are subsequently validated based on the market closing price determined under specific rules.

(B) to benefit from special promotion systems for Renewable Energy (e.g. accelerated depreciation of investments in renewable energy sources), etc.

A qualification certificate is issued by ANRE within 30 (thirty) days of the submission of the required documents.

Mechanism 2 – Compulsory quotas and green certificates

Pursuant to Government Decision 1892/2003 ("GD 1892"), Romania has adopted a compulsory quota system with trading of green certificates for the promotion of Renewable Energy.

Compulsory quotas

Government Decision 958/2005 (amending GD 1892) established the following percentages (compulsory quotas) of Romania's gross national consumption of electricity to be constituted by Renewable Energy as follows:

2008	5.26%
2009	6.78%
2010	8.3%
2011	8.3%
2012	8.3%

Each electricity supplier is obliged to acquire, every year, a number of green certificates equal to the value of the compulsory quota mentioned above multiplied by the quantity of electricity supplied in that year to its final consumers, expressed in MWh. In the event of non-compliance, a supplier must pay to Transelectrica (the operator of the national transmission system) the maximum value of the remaining (not acquired) certificates, namely 42 € per green certificate, multiplied by two. These amounts are collected by Transelectrica and used for acquisition of green certificates from producers of Renewable Energy in the event the offer on the market is higher that the demand. It may also be distributed among the producers of Renewable Energy under specific regulations issued by ANRE.

Green certificates

The legal framework for the issuance of green certificates, the trading system, the parties involved and their responsibilities are established by a regulation issued by ANRE in October 2006 (the "GC Regulation"). For each MWh of Renewable Energy fed in the national system, the producer receives one green certificate.

Green certificates are issued by Transelectrica according to a procedure approved by ANRE. Producers can apply for green

certificates after obtaining the qualification certificate for electricity priority production. The certificates may be traded on a bilateral contracts market, or on a centralised green certificates market operated by OPCOM. The minimum and maximum price levels for green certificates are established by law. Until 2012, the minimum value per certificate is 24 € and the maximum 42€.

Mechanism 3 – Regulated tariffs

ANRE's order no. 44/2007 ("Order 44"), regarding the setting up of the rules for trading Renewable Energy generated by capacities qualified for priority production, entered into force on 1 November 2007. Order 44 adds to the compulsory quota and green certificates a new promotion tool consisting of regulated tariffs. According to Order 44:

(a) power producers operating water plants with an installed capacity of no more than 10MW, which qualify for controllable/uncontrollable priority production, but which do not benefit from the green certificates support system, can sell their energy at the following tariffs:

- 140.24 lei (0.00387420 €)/MWh for night hours (between 10 p.m. and 7 a.m.); and
- 229.87 lei (0.00634737 €)/MWh for day hours (between 7 a.m. and 10. p.m); and

(b) power producers operating capacities which qualify for controllable/uncontrollable priority production, and which do benefit from the green certificates support system, can sell their energy at the regulated tariff of 132 lei (37 €)/MWh.

Order 44 also provides for an obligation upon suppliers to captive consumers to buy Renewable Energy at the regulated tariffs in (a) above (i.e. 140.24 (0.00387420 €) lei or 229.87 lei (0.00634737 €) at the request of the Renewable Energy producers owners of capacities qualified for controllable/uncontrollable priority production.

Other mechanisms

Guarantees of origin

Renewable Energy is certified by guarantees of origin issued by ANRE, all electricity generators being under an obligation to request their issuance. These guarantees:

(i) specify the sources from which the Renewable Energy was generated, indicating the date, location and installed capacity of the generation unit; and

(ii) allow generators to prove that the electricity they sell was generated by renewable sources of energy.

Guarantees are generally issued for a period of six months, for the entire quantity of Renewable Energy generated by a producer and delivered into the network during that period.

Many thanks to Loredana Mihailescu for this contribution

Russia

Mechanism 1 – The Renewables Obligation (RO)

On 4 November 2004 Russia ratified the Kyoto protocol to the UN Framework Convention on climate change. According to Article 6 of that Convention, for the purposes of fulfilling its obligations under Article 3 any Party may transfer to or acquire from any other Party emission reduction units awarded for the implementation of projects aimed at reducing anthropogenic emissions or at increasing absorption of greenhouse gases in any sector of economy, subject to the following conditions:

Under Russian law, joint implementation of projects within the framework of the Kyoto protocol allows Russian companies (owning sources of greenhouse gases) to obtain additional financing for the ecological results of investment projects. The main participants in such joint projects are the owner of the source of emission and the investor. However, the implementation of such projects is associated with a variety of risks (technical/technological, political, commercial).

A list of the projects to be fulfilled under this Article is submitted by the Ministry for economic development and commerce of the Russian Federation for the approval of the Government of the Russian Federation. The Ministry for economic development and trade of the Russian Federation acts as a coordination centre in preparing the projects for approval. Federal executive authorities review the project documentation within the scope of their respective competencies and monitor the implementation of such projects in accordance with Ordinance No. 332 dated 28 May 2007.

Mechanism 2 – Climate Change Levy & Levy Exemption Certificates (LECs)

According to Article 16 of the Federal Law on Environmental Protection, a negative impact on the environment must be paid for. The forms of such negative environmental impact are determined by the federal legislation.

Negative impacts on the environment include:

- emission of polluting and other substances into the atmosphere
- dumping of polluting and other substances and micro-organisms into surface water reservoirs, underground water reservoirs and onto catchment areas
- pollution of the underground and soil
- disposal of production and consumption waste
- pollution of the environment with noise, heat, electromagnetic, ionizing and other types of physical influences
- other kinds of negative environmental impacts.

The Tax Code of the Russian Federation does not include charges for environmental pollution, waste disposal and other harmful impacts (climate change levies) in the list of federal taxes and duties. Climate change levies are not regarded as taxes.

The correctness and timely payment of such levies is controlled only by the Russian technical supervision agency (Rostechnadzor).

The adoption of the Federal Law on environmental protection was not followed by the development of a system of laws and regulations required for the practical implementation of that law. The procedures for developing such a system envisaged by the law have not been introduced. No Federal Law has been adopted on charges for environmental pollution. There is no system of tax or other benefits for the companies employing advanced environmental technologies and implementing ecological measures. There are no procedures for limiting, suspending or terminating the operations of companies that cause harm to the environment. The government of the Russian Federation has not adopted any regulations in respect of state ecological control and assessment. There are no regulations allowing municipalities and public organizations to exercise ecological control.

Mechanism 3 – Offshore wind

In 2002 the first joint international project in the field of wind power generation was implemented and was supported by RAO UES of Russia, the administration of the Kaliningrad region, the Ministry of energy of the Russian Federation and the Ministry of economy and energy of Denmark. The construction of this wind power generation station became possible due to SEAS Energi Service A.S., a Danish company, which was assisted in its efforts by the Danish energy agency.

The park of wind power generators consisting of 21 wind power units is located on an area of approximately 20 hectares. Its total capacity is 5.1 MW.

The State Duma (the lower house of the Russian Parliament) is now working on a draft federal law to determine the state policy in the field of application of non-traditional renewable energy sources, including wind energy. The implementation of this project was temporarily discontinued pending the introduction of a legal and regulatory system and of technological conditions required for generating ecologically pure power.

Mechanism 4 – Carbon Capture (Carbon dioxide capture and storage)

According to a report prepared by the Ministry of natural resources of the Russian Federation ("On the state and the protection of the environment in the Russian Federation in 2005"), the CO_2 capture technologies in fuel burning chemical cycles with the subsequent burying of CO_2 are now at the stage of their theoretical elaboration and laboratory testing. An analytical review of CO_2 removal operations has been prepared. The review covers various methods of CO_2 removal as applied by different facilities fuelled with fossil fuels. The report contains a detailed analysis of various CO_2 removal and burying methods that can be utilised in Russia. An experimental plant has already been designed and assembled.

Since 2005 the Ministry of natural resources of the Russian Federation has never raised the topic of ëé2 capture and storage.

Mechanism 5 – Heat

The use of renewable energy sources, including biomass, is not widely spread in Russia. There are only a few installations designed for such purposes. For example, with assistance from IC-Tula, a limited liability company, an agricultural farm in the Tula region has assembled a gas generator system HERLT HSV 800. There are now plans to organise the mass production of gas generator heating systems in Russia

Mechanism 6 – Various sources of funding

Financing is provided by the government of the Russian Federation and by investors.

Many thanks to Olena Garasymiv for this contribution

Slovakia

Mechanism 1 – General

Why has it been introduced?

By virtue of Directive 2001/77/ES on the promotion of electricity from renewable energy sources, all member countries are obliged to increase their share of electricity from renewable sources, so that in 2010 they achieve their national indicative targets. The indicative target for Slovakia has been set at 31%, however a 19% target is realistic. The Slovak government adopted the Strategy of increased use of renewable energy sources, the Safe Energy Strategy and Energy Efficiency Policy of the Slovak Republic.

The targets set for 2010 and 2015 and the realisation of measures adopted in the above papers should contribute to an increase of the current 4% share of renewable energy sources in total energy production from 12% to 14% in 2020. The Office for Regulation of Utility Networks issues certificates of production of electricity from renewable sources and also regulates electricity prices.

The aim of the above document is to increase the share of energy from renewable sources used in the production of electricity and heat to offer appropriate supplementary energy sources necessary to cover household consumption.

How does it work?: -

Based on the Energy Efficiency Policy of the Slovak Republic, an action plan for energy efficiency was adopted for 2008-2010.

The measures due to be implemented and the received outputs of the 1st national action plan for 2008 – 2010 will serve as basis for the 2nd national action plan for 2011 to 2013, which is to be discussed and approved by the Slovak government by 30 June 2010. A similar procedure will be applied for the 3rd action plan for 2014 to 2017, which is due to be approved by the Slovak government by 30 June 2013.

Having regard to the estimated increase in the price of fossil fuels, renewable energy sources may gain more support and by 2020 a 14% share in total consumption is expected. It is estimated that by 2010, renewable energy sources will hold a share of 6.4%, by 2015 a 9.3% share and 2030 could see a 24% share.

A decisive aspect of market stability is the obligation to purchase electricity produced from renewable sources. In Slovakia, there is no statutory obligation to purchase energy from renewable sources. The only legislation providing for such an obligation is Slovak Government Resolution no. 317/2007 Coll. on electricity market rules, which says that electricity distributors are obliged to purchase electricity from renewable sources (similarly as from combined provenience and household coal) to offset losses in the system. The missing statutory obligation to purchase electricity from renewable resources and its binding character is regarded as a major obstacle to further development. Potential investors and banks are rather reluctant when its comes to entering this business due to the lack of certainty that the electricity produced from renewable resources will find its buyer despite its higher price. Based on the Energy Act, a producer of electricity from renewable sources has the right of preference in terms of electricity transmission, distribution and supply.

Mechanism 2 – Geothermal energy

Thanks to its natural conditions, Slovakia has great potential when it comes to geothermal energy, which has been estimated based on previous surveys at 5,538 MWt. Geothermal energy sources account mostly for geothermal water which are captured by hydrogeologic collectors situated (outside the spring area) in depths of 200 – 5,000 m. Geothermal energy is currently exploited in 36 locations in Slovakia, producing a thermal output of 131 MWt.

Mechanism 3 – Offshore wind

Slovakia has the potential for the development of wind power generation. The use of such a source of energy is currently very small (at 5 MW) mainly because the potential for wind-energy has not yet been consistently mapped. The measures realised so far have only local character. The appropriate location for the installation of wind plants is situated in mountains and lowlands. The construction of wind turbines is not possible in national parks, which considerably reduces the potential for construction.

Mechanism 4 – Heat

The energy efficiency of biomass is very high and could in theory account for as much as 15% of annual Slovak energy consumption, which is 800 PJ. Using this potential could increase the share of energy from renewable sources in Slovakia. It is estimated that by 2020 the potential of exploiting forest biomass will increase by 714 – 914 thousand tons per year, that means the overall potential of energy sources could account for 2,524 – 2,724 thousand tons yearly.

Mechanism 5 – Hydroelectricity

The energy source with the highest exploitation is hydro energy, covering more than 98% of electricity from renewable sources. The use potential of hydroelectricity is approximately 57%. Technical potential for the production of electricity from water is 6,600 GWh (24 PJ) and has 55% efficiency. This is attributable mainly to the construction of large conventional hydroelectric plants with summary installed output at 1,531 MW. Despite that, the use potential of small hydroelectric plants is no more than 25%. Having regard to the appropriateness of connecting all hydroelectric plants into the electric system, it is clear that such plants should be favoured in order to achieve maximum potential. In case of large industrial hydroelectric plants, it is worth considering state participation in terms of development or an investor's commitment to hand back a plant to the state after a certain period.

Mechanism 6 – Use of solar energy for electricity production

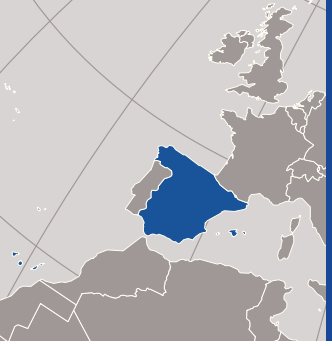
According to the energy policy adopted by Slovakia, the useful potential of electricity production accounts for 1,540 GWh, however the current level of use is no more than 0.1 GWh. The main advantage of photovoltaic energy is the decentralised electricity supplies. Still, there are drawbacks such as high investment costs. Commercial use of solar energy is rather new and compared to other technologies employing renewable sources; it is more demanding in terms of investments.

Mechanism 7 – Various sources of funding

Households could receive funding of as much as 25% of acquisition cost in light of the Scheme of higher biomass and solar energy use; all other sectors may use structural funds. The Environmental Fund providing an annual subsidy of 30 million SKK (930,093 €) is also regarded as support of renewable resources.

Among financial measures earmarked for financing of projects using renewable sources there are also EU structural funds for the program period 2007-2013.

Many thanks to Jana Tögelová for this contribution



Spain

Renewable energy regulation

The renewable energy sector in Spain is supported by a stable regulatory framework that has been strengthened over the years. In 1994, the Spanish government passed Royal Decree 2366/1994 which provided renewable energy producers with premiums, regulated the requirements and procedures to qualify for the Special Regime and regulated the conditions for the delivery of energy. In 1997, the Spanish government passed the Electricity Sector Act, which established a target that 12% of electricity comes from renewable energy sources by 2010.

Mechanism 1 – Purchase tariffs for energy from renewable sources

Fixed tariff

The price is set at 73.2 € per MWh for wind during the first 20 years plus complements. The tariff and complements are annually updated by the CPI less 0.25% until 2012 and by the CPI less 0.50% thereafter.

Market price plus premium

Under the market price plus premium compensation scheme, Special Regime generators may choose to sell energy at the price determined by the pool price of the market where the energy is sold or at the price established by contract, in both cases with an additional premium, if applicable.

The price is also set at the pool/bilateral contract price, plus a premium, plus complements. The premium that a generator receives is based on a reference premium defined in Royal Decree 661/2007 that is fixed by the government and is limited by a cap and floor which is also fixed by the government and which varies depending on the technology. The CPI updates the reference premium and complements annually and until 2012 0.25% will be deducted, following which time 0.50% will be deducted.

The premium received by a generator varies depending upon the pool/bilateral price, the floor and the cap:

- Price + Reference Premium < Floor. Generator will receive as a premium the difference between the floor and the pool/bilateral price.
- Floor < Price + Reference Premium < Cap. Generator will receive the entire reference premium as a premium.
- Cap—Reference Premium < Price < Cap. Generator will receive as a premium the difference between the cap and the pool/bilateral price.
- Price > Cap. Generator will receive the pool/bilateral price and no premium.

The amount of the additional premium varies based on the price of the energy on the market in such a way that the facilities are never compensated at a level below the established lower limit or above the established upper limit. The owner of the facility will always receive the full market price, so if the market price is above the upper limit that is established then a premium is not received (but there is no obligation to return any portion of the market price received; that is, there are no "negative premiums").

Updating of tariffs, feed-in-tariffs and complements

Royal Decree 661/2007 contemplates the annual updating of tariffs, premiums and complements based on certain references. For most facilities (including, among others, solar, wind and hydro) the references are updated annually and are increased by the CPI less 0.25% until December 31, 2012 and by the CPI less 0.50% thereafter.

Revision of tariffs, premiums, caps, floor and complements

It is expected that during 2010 there will be a revision of the tariffs, premiums, caps, floor and complements established in Royal Decree 661/2007 in light of the results of reports tracking the degree of fulfilment of the Renewable Energy Plan and the Spanish Energy Savings and Efficiency Strategy, as well as the new objectives included in the Renewable Energy Plan for the 2011-2020 period. The revisions will be based on the costs associated with each technology, the degree of participation of the Special Regime in covering demand and the effect on the technical and economic management of the system, always ensuring reasonable rates of return.

Mechanism 2 – Tax measures

The fuel tax exemption currently in place is applied specifically to biofuels.

There is a reduction on corporate income tax for renewable energy investments.

A Legislative and fiscal framework of local laws has been established to govern the promotion of renewable energies.

Mechanism 3 – Heat

RES-H is supported through the new Technical Buildings Code which this applies to all new buildings and renovations and includes an obligation to use solar thermal energy to meet 30-70% of domestic hot water demand. The assumed volume of hot water demand and the geographical location of the building determines the exact percentage that applies. Investments in RES-H are eligible for investment subsidies of 36.4% of the total cost.

Mechanism 4 – Subsidies

Different Administrations grant subsidies to promote renewable installations.

Many thanks to Roberto Sanchez for this contribution

Switzerland

Mechanism 1 – The Swiss Federal Energy Act and the Swiss Federal Energy Ordinance

Why has it been introduced?

Switzerland intends to increase the share of electricity from renewable sources by 10% of its current energy consumption by 2030. Today, Switzerland already generates 58% of its electricity from renewable sources, with hydropower plants contributing 97% of that renewable energy.

What is it?

The Swiss Federal Energy Act and the Swiss Federal Energy Ordinance are Switzerland's main mechanisms for encouraging the development of renewable energy. The most important element set out in these regulations is a compensatory feed-in remuneration for electricity generated from renewable energies (hydro energy up to 10 megawatts, photovoltaic energy, wind energy, geothermal energy, biomass energy).

How does it work?

From 1 January 2009 an annual charge of up to 0.6 centimes (~ 0.378 € cent) per kilowatt hour will be levied on high-voltage grid transmission costs, resulting in a distributable amount of about 320 million Swiss Francs (~ € 299 million) per year. The Swiss Federal Energy Ordinance sets forth the principles governing the compensatory feed-in remuneration as well as the remuneration rates (centimes per kilowatt hour) for various types of facilities.

- Hydro energy:
  7.5 – 36 centimes (~ 4.725 – 22.68 € cent) per kWh
- Photovoltaic energy:
  49 – 90 centimes (~ 30.87 – 56.70 € cent) per kWh
- Wind energy:
  17 – 20 centimes (~ 10.71 – 12.60 € cent) per kWh
- Geothermal energy:
  17 – 30 centimes (~ 10.71 – 18.90 € cent) per kWh
- Biomass (waste combustion):
  10 – 12.5 centimes (~ 6.31 – 7.875 € cent) per kWh
- Biomass (sewage gas):
  max. 24 centimes (~ max. 15.12 € cent) per kWh
- Biomass (other):
  15 – 39 centimes (€ 9.45 – 24.57 € cent) per kWh

In general, these remuneration rates will be applicable for a period of 20 to 25 years, depending on the respective technology (e.g. hydro energy 25 years, wind energy 20 years). Some rates (e.g. photovoltaic energy) may be gradually reduced over that period of time in view of the anticipated technological progress. These reductions will only apply to newly registered production facilities, which will then receive their remuneration based on a constant rate throughout the entire period of remuneration.

The rates listed above will enter into effect on 1 January 2009. New or upgraded facilities can register with the national grid company "swissgrid" starting from 1 May 2008.

Producers of electricity from renewable energies who opt out of the new feed-in remuneration can continue to sell their green energy on the free market.

The network operator has to accept all electricity produced by the renewable energy plant. The plant operator, however, generally bears the costs of the connection to the network.

Mechanism 2 – The Swiss Federal CO_2 Act

Why has it been introduced?

Switzerland has ratified the Kyoto Protocol and committed itself to reduce greenhouse gas emissions between 2008-2012 by 8% from 1990 levels. After it became obvious that this goal would not be met by voluntary measures alone a CO_2 fee was introduced based on the Swiss Federal CO_2 Act.

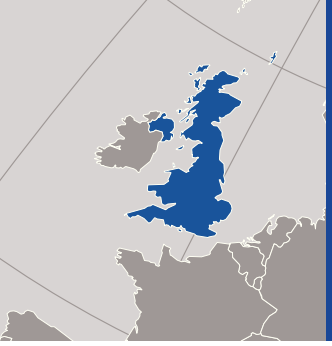
What is it?

The Swiss Federal CO_2 Act focuses on the reduction of fossil-based energy consumption (by 2010, CO_2 emissions from these sources are to be reduced by 10% from 1990 levels).

How does it work?

Since 1 January 2008 a fee of 12 Swiss Francs (~ 7.56 €) per tonne of CO_2 emissions is to be collected on fossil combustibles (heating oil, gas) based on the Swiss Federal CO_2 Act. Companies will be exempt from the CO_2-fee if they agree with the federal government on a reduction of their CO_2 emissions to a certain level (and subsequently meet that target). Negotiating such reduction targets and thus gaining exemption from the CO_2-fee are key priorities for energy-intensive sectors such as the cement, paper, glass and ceramics industries.

Many thanks to Dr. Clemens von Zedtwitz for this contribution.



UK

Mechanism 1 – The Renewables Obligation (RO)

Why has it been introduced:

The UK Government has an aspirational target to generate 20% of electricity from renewable sources by 2020.

What is it?:

The Renewables Obligation is the UK Government's main mechanism for encouraging the development of renewable energy by requiring that electricity suppliers source a rising percentage of the electricity they supply from renewable sources.

How does it work?:

Under the Renewables Obligation Order 2006 (applicable to England and Wales only), the level of the Obligation is fixed at 7.9% for 2007/08 and is currently intended to rise to a maximum level of 15.4% in 2015/16, after which it will remain at that level until the Obligation ceases in 2027. Suppliers can meet their obligation by presenting Renewables Obligation Certificates (ROCs - one ROC is awarded per MWh of electricity produced) or, alternatively, by making a fixed financial payment (known as the "buyout price" – fixed at £33.24 (41?)/MWh for 2006/07) which rises with inflation each year, or by combining these two methods.

Who gets the benefit?:

Originally renewable generators (other than excluded facilities such as certain large hydro plants) were granted 1 ROC per MWh of output. The Government now intends to "band" the RO going forward for the benefit of certain emerging technologies (such as offshore wind, solar energy and wave power) that will receive more ROCs/MWh. More established technologies will receive less than 1 ROC/MWh.

Mechanism 2 – Climate Change Levy & Levy Exemption Certificates (LECs)

The UK Government also introduced the "Climate Change Levy" (CCL) which is an environmental tax levied on the supply of electricity which is payable by commercial end-users of electricity. However, to encourage the generation of electricity from renewable sources, the Climate Change Levy Regulations introduced an exemption from the CCL for electricity supplied in the UK that is generated from renewable sources. For every MWh of electricity generated from renewable sources and which is to be consumed in the UK, Ofgem will issue a LEC to the relevant generator who can then sell them on to electricity suppliers. The ultimate consumers will then be exempted from the CCL to the extent that they consume electricity from renewable sources.

Mechanism 3 – Offshore wind

The UK Government has commenced a Strategic Environmental Assessment (SEA) in December 2007 to explore (and incentivise?) the possibility of a further 25GW of electricity generation from offshore wind farms by 2020 (currently, offshore wind farm projects of a total generation of 8GW are in the process of planning, being built, or are already in operation). The UK Government is expected to set out the results of the SEA in spring 2009.

Mechanism 4 – Carbon Capture

In its Energy Bill issued in January 2008, the UK Government set out a draft regulatory regime for Carbon Capture and Storage (CCS) projects to enable the carrying out of a first commercial-scale CCS project in the UK by 2014. The Government also set out in the same bills some draft provisions to modernise the decommissioning of offshore renewable energy installations. The UK Government is willing to fund up to 100% of the additional cost of CCS for a demonstration project.

Mechanism 5 – Heat

The UK Government is currently looking at initiatives (e.g. the UK Biomass Strategy 2007 and a recent paper entitled "Heat: Call for Evidence") to explore the possibility of promoting the generation of heat from renewable sources.

Mechanism 6 – Various sources of funding

Sources of funding include the Government's Technology Programme, the Carbon Trust's Applied Research Programme and Technology Acceleration Activities, and the EU's Framework Programme for Research and Technical Development. In addition, a large number of funding sources are available for community, agricultural and micro-generation renewable initiatives.

Many thanks to Nicholas Molho for this contribution

Ukraine

Mechanism 1 – The New Energy Strategy for Ukraine until 2030

The New Energy Strategy for Ukraine until 2030, which was approved by the Ukrainian Government in spring 2006, estimates that Ukraine will nearly quadruple its use of non-conventional energy sources, which under Ukrainian legislation include renewable and waste energy sources, from 10.9 Mtoe in 2005 to 40.4 Mtoe (Million Tonnes of Oil Equivalent) in 2030. This initiative would require investing some UAH 60.4 billion (€7.9 billion) in the energy sector. The highest growth is expected in the use of solar energy, wind farms and low-potential heat, although the growth will start from a very low base.

The strategy envisages the development of renewables in accordance with the fundamental principles of the "Green Book: European Strategy for Secure, Competitive and Sustainable Energy". International experience shows that targeted governmental policies can significantly reduce costs and increase the economic attractiveness of renewables. The Energy Strategy set forth a number of incentives to stimulate renewable energy production and use, but most of them have yet to be implemented into the legislation.

Mechanism 2 – "Green" Tariffs

The draft law on tariffs for electricity produced from non-conventional sources, i.e., green tariffs, was submitted to the Ukrainian parliament in late 2006 and successfully passed its first parliamentary hearing. It provides for advantageous tariffs to be established annually for generators for the first five years following the law's enactment and thereafter on a five-yearly basis. It also sets out a broad framework for calculating the green tariffs. The document foresees that the green tariffs will be two times higher than conventional electricity tariffs for non-residential consumers. Furthermore, the draft law provides that electricity from non-conventional sources may be sold under bilateral contracts between generators and consumers at the relevant green tariff rates. Under the draft law the state monopolist, wholesale buyer of electricity "Energorynok" is obliged to purchase any excess electricity which has not been sold under bilateral contracts from alternative sources.

This draft legislation has to pass two further readings before coming into force.

Mechanism 3 – Alternative Types of Liquid and Gaseous Fuels

The Law of Ukraine on Alternative Liquid and Gaseous Fuels, adopted in 2000, introduces the framework for financial mechanisms to stimulate biofuels and other alternative fuels. The state programme on ethanol was adopted in 2000, but has not been fully implemented so far. A Presidential Decree of September 2003 announced new measures to stimulate production of bioethanol, biodiesel and biogas. In 2005 the draft law on bioethanol passed its first reading in the Ukrainian Parliament. The draft law provides for a preferential excise duty on blended gasoline-ethanol motor fuels and eliminates the excise duty on bioethanol used to produce such fuels.

Similarly to the above draft law on green tariffs, the draft law on alternative fuels has not come into force yet.

Mechanism 4 – Hydropower and Bioenergy

Most of the country's renewable energy today is generated from hydropower and biomass-fired heating boilers. Biomass is probably the most promising renewable energy source in Ukraine. At present, the contribution of biomass to Ukraine's energy balance is about 0.5%. Only about 0.7 Mtoe are currently used - primarily firewood for domestic purposes as well as for fuel in forestry and wood processing enterprises. The biomass potential is 4.0 Mtoe, which includes livestock manure, straw and lumber mill waste. The government in 2006 adopted an action plan to boost biofuel production with the objective of reaching 623,000 tonnes annually by 2010 and increasing the rapeseed harvest at the same time to 7.5 million tonnes. The government has said Ukraine will build 23 bioethanol plants by 2010, which could cost about $1.4 billion (€0.88 billion), but does not plan to invest budget funds into these projects.

Hydropower is the most developed renewable energy source in Ukraine today and is the least expensive power source on the wholesale electricity market. Of the country's 4,600 MW of hydropower capacity, the majority is in large-scale hydro, which is a mature technology. Ukraine also has plans to build five additional hydro power plants with a total capacity of 8,143 MW. Environmental organisations in Ukraine predict that hydropower production may reach 15.1 TWh/year by 2030 and up to 25 TWh/year in 2050. Analyses show that Ukraine has realised only 10% of its small capacity hydro potential.

Mechanism 5 – Joint Implementation Mechanism of the Kyoto Protocol

Using renewable energy sources can help to reduce greenhouse gas emissions. Thus, the Ukrainian ratification of the Kyoto Protocol has increased the attractiveness of renewables and opened new opportunities to finance them. The Kyoto Protocol's joint implementation mechanism (JI) can potentially bring foreign investment into Ukraine's renewable energy sector. Ukraine has recently completed all the steps required to enable Joint Implementation projects in the country to obtain Emission Reduction Units and to enable the government to trade Assigned Amount Units under the Kyoto Protocol. It is expected that formal approval will be received in April 2008. The Kyoto protocol should be viewed as an important tool that can facilitate financing for renewable energy projects, given that Ukraine is considered one of the most attractive countries for JI Projects after Romania and Bulgaria, and the JI country with the second largest volumes of potentially marketable ERUs after Russia.

Mechanism 6 – Wind Energy

At the beginning of 2006, the government began supporting wind energy through a fixed budget allocation (about UAH 80 million or €10.5 million per year). At present, wind farms supply the most expensive electricity to the wholesale market. The estimated technical potential capacity of wind energy is 16 GW, which could generate up to 30 TWh/year. The Energy Strategy to 2030 projects that wind power will generate 2 TWh/year in 2030.

According to the Decree of the Cabinet of Ministers of Ukraine "On Further Development of Wind Energy in Ukraine", from April 2007 onward the National Space Agency of Ukraine will coordinate the Complex Wind Farms Construction Programme, which was adopted by the government in 1997. Under this programme the total capacity of wind power generation in Ukraine was supposed to reach 1990 MW by 2010, but this target is not likely to be reached in time.

Mechanism 7 – Cooperation, Research and Development

Several scientific organisations and institutes in Ukraine are pursuing renewable energy research, development and demonstration. In addition, some companies in the defence and aerospace industries have converted their production facilities towards manufacturing renewable energy systems or their components. There have been many attempts to use the existing research, technology and engineering base. However, very few have been successful, especially when it comes to marketing those technologies.

Ukrainian state agencies are cooperating and implementing energy saving projects and developing new and renewable sources of energy with foreign organisations such as NEFCO, ADEME, SIDA as well as with international organisations such as EBRD, the World Bank, IFC, USTDA, OPIC, etc.

Mechanism 8 – Various Sources of Funding

Ukraine has a program of state support for the development of non-traditional and renewable energy sources and small hydro power plants. The target set for renewables is 19% of generation by 2030. Current state budget financing is limited to wind energy only and is not enough to significantly boost the development of the sector. In accordance with the Energy Strategy for Ukraine until 2030, the total amount of investments in the development of renewable sources of energy will be around UAH 60 billion (€7.7 billion). Long-term project financing is increasingly available in Ukraine, though major deals are difficult to structure and will require more sophisticated approaches than seen in Ukraine before. International financial institutions are investing increasing amounts in Ukraine. IFC, the World Bank, and EBRD loaned over $2.7 billion (€1.7 billion) in 2006, and this amount is expected to increase every year.

Many thanks to Natalie Ball, Vitaliy Radchenko and Oleksandr Gudko for this contribution

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