



Renewables Support Mechanisms Across Europe

A Comparative Study

April 2013

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Introduction

I am delighted to present this latest update to the Comparative Study of Renewable Energy Support Mechanisms in Europe. Renewable energy remains a key sector for both Europe and CMS. As a leading legal advisor to the sector, with expertise right across Europe, we are ideally placed to guide our clients through the volatile and changing landscape for developers, investors, financiers, supply-chain providers and policy-makers.

Renewable energy has fired the imagination of industry to develop new technologies and approaches in order to meet our aspirations for a decarbonised electricity sector. It is a sector that depends heavily on a compact with government built on trust and stability. Its challenge is to address the triumvirate of issues that the modern industry must face: security of supply, affordability and environmental concerns. Based on our review of regimes across the region, we have reached the following conclusions that we would draw to the attention of policy makers in the renewable energy area:

- **Capitalise on the benefits of scale:** Projects are getting larger and more expensive. Governments expect to see cost reductions from scale benefits being passed back to customers and overall subsidy support requirements coming down. Meanwhile, investors and capital-constrained utilities are struggling to commit to larger equity contributions and to secure debt leverage. Subsidy regimes that add more risks to the sector are pushing up the cost of capital and equity and reducing the realisation of these benefits for consumers.
- **Implement change without creating an investment hiatus:** It is understandable that regimes need to change to ensure value for money for electricity consumers. However, governments are not sending out comforting signals to industry, leading to a “wait and see” attitude from investors, and an investment hiatus, as each cycle of change is initiated. “Grandfathering”, (maintaining pre-existing rules for pre-existing investments), transition management and allowing project owners a period to choose between the old and new regimes can help maintain investment continuity.
- **Avoid creating arbitrage between jurisdictions:** The variety of regimes, and the different basis on which they assess their respective levels of support, has led to arbitraging by investors between jurisdictions as they search for the most attractive return. At the European level, some convergence of approach would benefit the achievement of European-level ambitions for the sector.
- **Have a vision and avoid a reactive, constantly changing regime:** Quickly-implemented regimes have led to temporary investment hot-spots by over-rewarding projects. While these have been a small overall part of the sector, they have led to negative press for the industry as ‘hot money’ chases quick returns across the continent. They have also had a negative impact on investment in jurisdictions that have reneged on commitments. Governments need to communicate their vision clearly to the industry and provide long-term stability to allow industry to plan investments.

The renewable energy experts at CMS remain at the very heart of the discussions across Europe, guiding the industry and investors as they rise to the opportunities and challenges presented by this dynamic sector.



Cornelius Brandi
Executive Chairman, CMS

The Renewables Sector – Dealing With Constant Change

The electricity sectors in Europe appear to have come full circle, with liberalised competitive markets once more giving way to governments picking and choosing the projects and technologies that best meet their social and policy objectives. A decade ago, developers generally responded to ‘price signals’ from competitive markets in deciding whether to build new capacity. Now, developers are having to respond either to policy signals or, in some cases, respond more directly to tenders for government contracts.

The pace of change in each of the technologies means that it is no longer even helpful to approach renewable energy as a single cohesive sector. Wind and solar continue to dominate, but investors and developers further distinguish even these into subcategories of offshore wind (fixed and floating), onshore wind, ground-mounted solar PV, rooftop solar PV and solar thermal, each coming with its own jargon, economic drivers, rules, legal and technical requirements and government subsidy arrangements. Beyond that we have a range of technologies each vying for market position and often each having their own separate levels of support. These include advanced gasification, advanced pyrolysis, anaerobic digestion, biomass conversion, co-firing of biomass (enhanced and not enhanced), co-firing of biomass with combined heat and power (CHP), co-firing of energy crops, co-firing of energy crops with CHP, dedicated biomass, dedicated energy crops, dedicated biomass with CHP, dedicated energy crops with CHP, energy from waste with CHP, geothermal, geopressure, hydro-electric power, landfill gas, microgeneration, sewage gas, standard gasification and pyrolysis, tidal impoundment, tidal barrage, tidal lagoon, tidal stream, wave and renewable heat.

This dazzling array of technologies straddles a range from those that are in research & development and anticipate huge development potential through to those that are now in a highly commercialised phase. Alongside this maturing of the industries, the size of individual projects has also been steadily increasing: the next wave of European mega-projects lining up for consent have development costs in the tens of billions. As you would expect, the perception of risk heightens at those levels and what was considered a marginal risk for smaller projects can easily become a deal breaker for a mega project.

In this context, it should be noted that, with a few exceptions, renewable projects have very high front-loaded costs to build their infrastructure but lower operating costs (for example, no fuel costs). With political support for the sector

remaining volatile, the prospect of a government changing the law or tax regime once developers have spent significant sums on the upfront infrastructure can erode the value of operational projects. This remains a key concern for developers. If governments want the lowest cost of capital, i.e. the ‘cheapest money’, to come into new projects, they need to provide long-term certainty and stability of returns to investors. In particular, when establishing or amending legislative arrangements they must ensure that the arrangements provide for long term certainty to allow both domestic and foreign investors to view the renewables market as a long-term investment opportunity.

Of course, it is understandable that governments across Europe wish to learn from what has worked well, and less well, in the process to-date by updating their support frameworks for renewables. But the uncertainty that a change in regime creates is having a number of detrimental effects. It is allowing emerging renewables markets in places such as South America, Asia and the Middle East to draw precious capital away from European economies. It also means that the European supply chain (as evidenced in particular by the recent travails of key turbine suppliers) is finding it difficult to commit to investments in long term infrastructure – ports, vessels and manufacturing facilities – which will be the key to delivering on the sector’s ambitions.

There is a general awareness among the citizens of Europe of the rationales for the transition to a more renewable electricity sector. They also understand that they will bear some associated higher energy tariffs to fund the cost of building the necessary infrastructure in the short term. Nevertheless, affordability remains a key issue and managing the costs of the decarbonisation agenda is critical if public support is to be maintained.

At a broader level, the complexity of the energy markets and security of supply calls for a more joined-up European approach. Legislators should be careful to avoid a route for “legislation arbitrage”, creating temporary hot-spots with investors hopping from one temporarily attractive national renewables regime to the other. Instead, European jurisdictions should initiate measures to transform the continent into the most attractive location for profitable long-running investments in renewables.

This does not mean that each jurisdiction needs to take an identical approach. Indeed, governments across the various European jurisdictions have implemented a diverse set

of financial, non-financial and tax arrangements looking to ensure the desired conditions for promotion and development of their favoured renewable energy technologies. Financial incentives take the form of feed-in tariffs, green-bonuses, green certificates and contracts for differences, while non-financial support mechanisms include mandatory offtake arrangements, priority grid access and building codes. Each jurisdiction places differing emphasis on the types of renewable energy sources available based on its national priorities. For example, Albania is promoting hydropower while Spain and Italy have focused previously on solar energy. These differences, combined with the fact that the integration of renewable energy into the national energy mix in each jurisdiction is at a different stage, contribute to the range of incentives employed.

Partly, the levels of support are reflexive, responding to growth or contraction of investment, after a time lag in which policymakers catch up with developments. In countries such as Serbia and Poland, potential for growth is predicted whereas in Slovakia growth is determined by energy type. Support for wind and solar is declining while support for biomass used in the cogeneration of heat and electricity is increasing. In France, the level of feed-in tariffs available for solar energy has been reduced as a reflexive measure. Despite these examples, a stable regime does not necessarily guarantee investment. The level of support and the wider climate also need to be favourable. For example, in Croatia the feed-in tariff regime has been amended only once since its implementation in 2007 and yet uptake of the regime has been much slower than in other jurisdictions.

Change remains a constant in the sector. Many jurisdictions are in the midst of implementing changes to their incentive systems as governments seek to address the costs of subsidies while creating a framework that promotes the long-term, sustainable growth of renewable energy. Poland has a new regulatory framework in the pipeline that it is hoped, after a long period of waiting, will provide greater certainty for investors and promote the further development of renewable energy sources. In contrast, discussions about changes to the support framework in Germany are creating investor uncertainty over the long-term economic viability of renewable energy projects. The changes in the UK fall somewhere in between. The Energy Bill in the UK will replace the multi-faceted support under the renewables obligations with a stabilised revenue stream in the form of contracts for differences. Unlike feed-in tariffs, such as the feed-in premium subsidy scheme awarded through tendering introduced in the Netherlands, these contracts for differences would leave power price volatility risk with the investor. Whether this will promote investment or create an investment hiatus remains to be seen.

Conversely, in Italy the legal and regulatory framework for the implementation of renewable energy sources appears to have developed into a fairly stable and comprehensive system. While incentives for some forms of renewable

energy are decreasing, the development of new renewable energy sources is likely to continue. A similar pattern can be seen in Slovenia.

The increasing penetration of renewable energy has also required finding measures to deal with practical and technical impacts, particularly on transmission and distribution networks that need to be upgraded to cope with the amount and type of renewable energy sources exporting onto them. The response is very much specific to the jurisdiction and its issues. For example, in Poland grid operators will be obliged to complete grid upgrades necessary to connect renewable energy sources by specific dates, while Bulgaria has implemented a capacity system, whereby capacity for the connection of new renewable energy source facilities is announced each year and filled on a first-come first-served basis.

In the background to this highly dynamic landscape, of course, are the targets adopted by each jurisdiction to achieve a particular percentage of renewable energy by 2020 and beyond. Alongside this, governments are increasingly looking at the net cost of the arrangements they put in place. The so-called “levy control framework” proposed in the UK is one example of a financial upper limit to the amount of support that may be available. Switzerland’s budget for the feed-in remuneration scheme is nearing its limit due to the fast uptake of financial incentives, while discussions about incentive schemes in Germany have been prompted by cost concerns. The Czech Republic has also implemented a yearly target capacity system for each type of renewable energy source.

What is clear from our comparative study of support mechanisms across the continent is that renewable energy sources will continue to be vital in Europe’s long-term energy ambitions and that renewable energy will remain an exciting and dynamic environment in which to be involved.

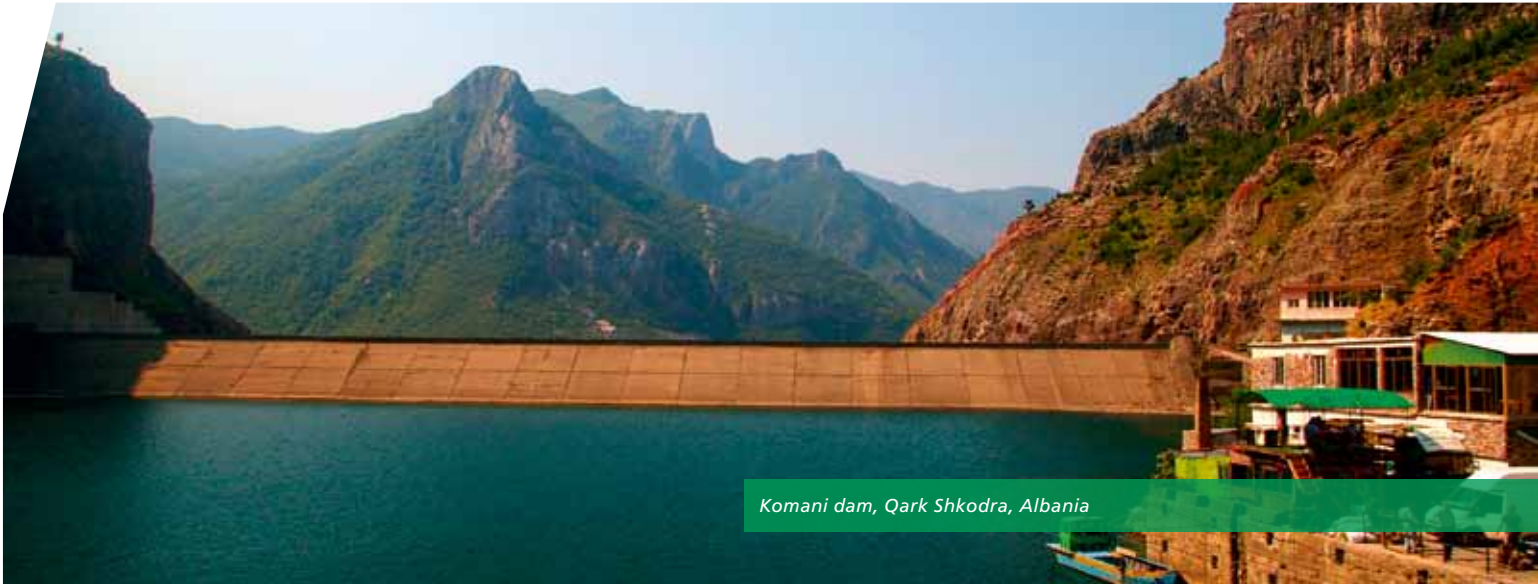


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Albania



Komani dam, Qark Shkodra, Albania

Background

Albanian Energy legislation is in the process of being reformed and harmonised with EU legislation in the context of the Stabilisation and Association Agreement, the European Union, the Athens Memorandum and the Kyoto Protocol, and strives to comply with targets, setting up a unified and sophisticated market foreign investors can rely upon.

Government of Albania (GoA) policies are aimed at motivating foreign investors to further and better exploit the renewable energy market. In order to do so, the GoA is planning to establish a one-stop-shop agency for all authorisations and permits pertaining to the power sector, except for concessions which are granted through competitive tender procedures.

As a matter of fact, Albania has enormous hydropower potential. It is estimated that the annual combined water flow of the rivers is approximately 40 bln cubic metres resulting in 16 to 18 TWh/year of installed energy. So far, Albania has exploited just one third of its total potential.

Mechanism 1 – Green Certificate and Guarantee of Origin

Power Sector Law no. 9072/2003 (Power Sector Law) introduces important provisions regarding Green Certificates and the Guarantee of Origin.

On 10 May 2006, Italy and Albania signed an agreement setting forth the rules and methods for importing energy produced from renewable sources and therefore for issuing and reciprocally recognising Green Certificates. Presently, both countries are renegotiating the agreement due to

certain changes in the Italian Financial Law issued in 2008 and the Ministerial Decree dated 18 December 2008, which amended the system of Green Certificate issuance in Italy.

The Power Sector Law provides that a Green Certificate is an official document, with a limited time value, that can be materially transferred or sold separately from the certified energy produced under it. It acknowledges energy production generated from renewable sources or combined production methods. In addition to that, the certificate provides evidence of the date and place of production as well as of the production site and its ownership.

According to the agreement, parties can make reference to the exchange system of renewable energy produced in their respective countries. This system is based on the mechanism of mutual recognition of the guarantees of origin (a certificate disclosing the quantity of energy produced through renewable sources and the plant production capacity). This certificate is issued by the Gestore Servizi Energetici (GSE) in Italy and the Energy Regulatory Entity (ERE) in Albania at the producer's request, with a subsequent release of green certificates subject to the pre-certification of the plant as a renewable source.

In particular it is necessary that:

- a valid title is issued by ERE which states the fulfilment of the qualification procedures and the acknowledgement of plants as qualified generation ones;
- ERE issues the guarantee of origin; and
- a producer request is filed to GSE to have the plant certified as a renewable source, along with the guarantee of origin, a valid title, and the agreement

entered into with the local authority for the sale of the energy produced by the Albanian plant.

If the application is approved within 30 days from the submission date, the energy so produced in Albania can be sold within the country and GSE can release the green certificate. The application will be rejected if, within the above timeframe, GSE has not replied to the above mentioned request.

Mechanism 2 – Incentive to renewable energy production

Pursuant to section 39 of Power Sector Law, the GoA encourages the production of renewable energy through a system of incentives.

An independent producer (a non-public producer connected directly to the transmission system) with an installed capacity in excess of 50 MW which uses non-renewable sources is required to produce and/or inject into the transmission grid system a quantity of renewable energy at least equal to and not lower than 3% of the energy produced in the previous year from power plants using renewable sources and certified by ERE with Green Certificates.

The obligation to produce and/or inject into the transmission grid system a specific quantity of renewable energy is considered as fulfilled even when the independent producers of non-renewable energy purchase such a quantity from different producers of renewable energy, provided that ERE, and the corresponding foreign agencies where the renewable energy is imported, reciprocally recognise the certification of the energy produced from renewable sources.

Mechanism 3 – Feed-in tariff to hydropower producers of 10 MW

The GoA encourages the construction of renewable energy plants providing privileged treatment for hydropower producers with an installed capacity of up to 10 MW.

The Power Sector Law provides for ERE to indicate a unique price (the feed-in tariff) for the electricity produced by those hydropower plants with an installed capacity of up to 10 MW. In such a case, producers benefit from prioritised treatment by the Transmission System Operator when dispatching the generated electricity.

The Albanian Power Corporation (KESH) then enters into long term agreements with private power producers to purchase their entire power production, based on the tariffs suggested by ERE.

Currently, only a few hydropower plants meet the legal requirements (installed power of up to 10 MW) and therefore benefit from such privileged treatment, which specifically excludes hydropower plants with higher installed power capacity.

Mechanism 4 – Obligation to sell the energy to a public supplier

Pursuant to section 34/1 of the Power Sector Law, the GoA may impose on energy producers to sell their energy to public suppliers in order to meet internal energy demand.

In order to meet internal energy demand, the GoA, by means of concession contracts or decisions, grants the concessioner the right to construct a new power plant binding it to sell a certain amount of the energy so produced to public suppliers at ERE tariffs.

Mechanism 5 – Obligations of Transmission System Operator (TSO) and Distribution System Operator (DSO)

Legislation guarantees new energy producers the ability to access and interconnect to the national grid.

The TSO and DSO are respectively obliged to guarantee that new energy producers will have full access and interconnection to the national grid. New energy producers enter into interconnection agreements with the TSO and DSO to transmit and distribute the energy produced onto the national grid. The interconnection agreements set out the tariffs and profits of the parties involved.

Mechanism 6 – Concessions in the energy sector

The GoA encourages private investors to participate in hydropower PPP projects through transparent and fair concession procedures (Build-Operate-and-Transfer (BOT) or Rehabilitate-Operate-and-Transfer (ROT)).

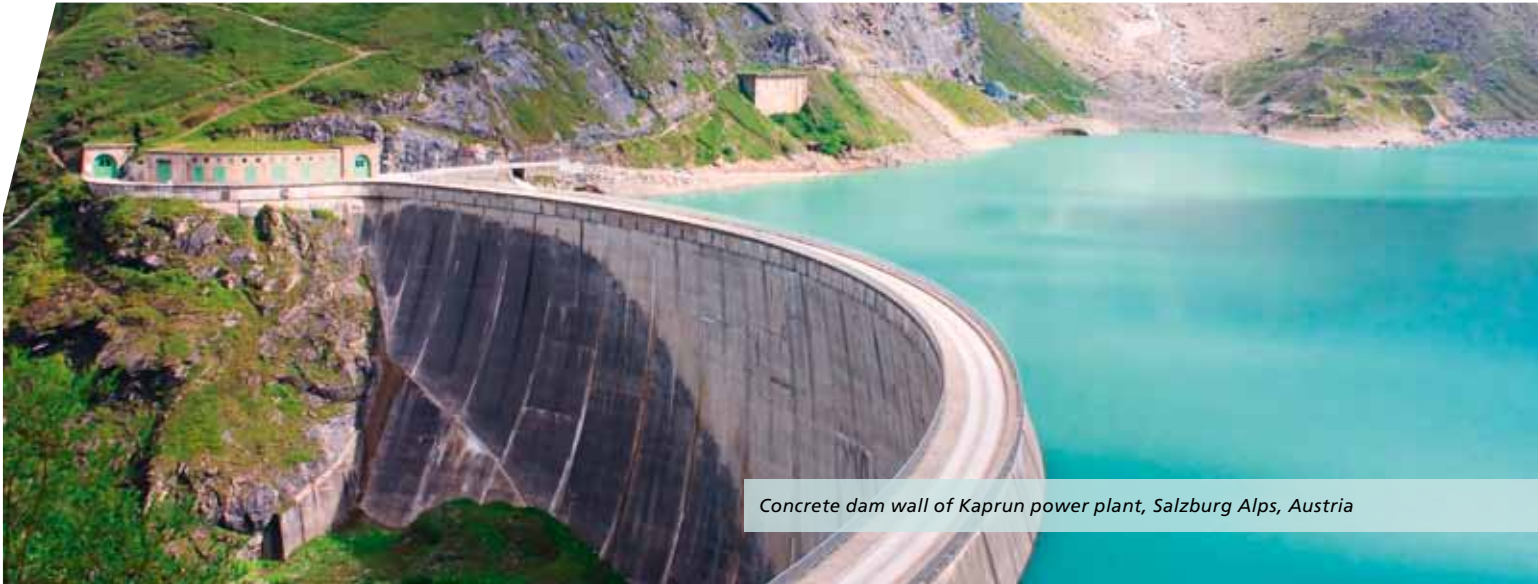
Concession Law no. 9663 defines the principles applicable to private investors. This law specifically includes the energy sector and provides for at least 35 years of concession rights. Concessionary rights to exploit and operate energy projects are subject to competitive tender procedures launched by the Ministry of Economy, Trade, and Energy. Such projects may result from either solicited or unsolicited proposals. Should the unsolicited proposal be approved, a bonus of up to 10% of the evaluation points will be awarded to the proponent.

Future opportunities – Vjosa hydropower project

The GoA expects shortly, to launch the tender for the construction and operation of hydropower plants along the Vjosa River. It is estimated that the Vjosa hydropower project will require the construction of 8 to 10 hydropower plants of approximately 400 MW overall.

The value of the project is expected to be approximately EUR 1 bln.

Austria



Concrete dam wall of Kaprun power plant, Salzburg Alps, Austria

Background

In Austria, renewable energy sources contributed to 29% of total energy consumption in 2008. According to Directive 2009/28/EC on the promotion of the use of energy from renewable sources, amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, this share should rise up to 34% by 2020. The main driver for the growing contribution of renewable energy is the enhanced use of biomass brought about by strong incentives, such as targets set out by regulations, a long-term focus on research and development policies, as well as subsidies.

Mechanism 1 – The Green Electricity Act (*Ökostromgesetz*)

What is it?

The Austrian Green Electricity Act (Green Electricity Act), which entered into force on 1 January 2003, was amended in 2009 and again in 2011. The Green Electricity Act established a nationwide tariff support for renewable (“green”) energy. Its main goals are:

- to contribute to the EU “20-20-20” target;
- to promote renewable energy sources and achieve market maturity for new technologies;
- to enhance the capacity of hydropower plants, windmills, photovoltaic and biomass energy plants
- to ensure investment protection for existing and future plants.

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 fixed feed-in tariff prices (*Einspeisevergütung*). The Green

Electricity Settlement Centre attributes the purchased electricity to electricity traders, who are obliged by law to buy the attributed 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, which is fixed by law, depends on the grid level to which the consumer is connected, but is independent of actual consumption:

- EUR 35,000 per annum for connection to high voltage levels 1 to 4;
- EUR 5,200 per annum for connection to high voltage level 5;
- EUR 320 per annum for connection to high voltage level 6; and
- EUR 11 per annum for connection to high voltage level 7.

The 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 plants producing energy from renewable energy sources, such as non-fossil energy sources (wind, sun, geothermal energy, tidal energy, hydro power, biomass, waste, landfill gas and biogas), including animal meal, spent lye or sewage sludge.

Mechanism 2 – The Emissions Allowance Trading Act (Emissionszertifikatengesetz)

The Austrian Act on Emissions Allowance Trading (EZG) was introduced by the government in 2004, implementing Directive 2003/87/EC and establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC. The Act on EZG was recently amended in 2011. The main goal of the act is the establishment of a greenhouse gas emission trading scheme to provide a cost-effective reduction in greenhouse gas emissions. Companies that emit greenhouse gases receive a limited number of emissions allowances from the competent authority (in Austria the Federal Ministry of Agriculture, Forestry, Environment and Water Management). If a company emits more greenhouse gas emissions than its allocated allowances, it may purchase allowances from other companies. Allowances are traded via traders (e.g. banks), at an exchange or directly between companies.

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

The climate and energy fund was endowed with EUR 130 mln for the year 2012. 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.

Belgium



Wind farm, Zeebrugge, Belgium

Background

Belgium is a Federal State, in which the Flemish Region, the Walloon Region and the Brussels-Capital Region (Regions) are in charge of the protection of the environment and, accordingly, of the promotion of renewable energy sources. However, the Federal State has implemented its own scheme, due to the fact that it remains competent in respect of matters relating to the energy produced in – and from – the North Sea. Furthermore, the Federal State is still responsible for the main taxes in Belgium. Several Belgian North Sea concessions were awarded during 2012.

Mechanism 1 – Tradable Green Certificates (TGCs)

In response to the promotion of renewable energy sources, each Region and the Federal State has developed a Green Certificate Mechanism.

The regional or federal regulation authority issues a certain amount of TGCs 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 TGCs is conditional on the saving of a certain quantity of CO₂ in comparison with the CO₂ emissions from conventional production in a modern benchmark facility. Regional legislation has fixed annual quotas applicable to suppliers (in 2013 these are 19.4% in Wallonia and 3.5% in Brussels, whereas in Flanders it depends on the electricity production and consumption).

This means that each supplier must give the Regulator the number of TGCs 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 thus have to purchase enough TGCs from green producers in order to avoid the penalty; this creates a market for green certificates. The market price of TGCs is therefore less than that of the penalty. In order to sustain the security of investments, regional (and federal) legislation has provided that TSO and/or DSOs must purchase TGCs at a fixed price, generally depending on the energy source.

The support mechanism (issuing of TGCs and/or purchase obligation at a fixed price) is valid for a set period of time (depending on the Region and on the renewable energy source) and the price of TGCs is passed on to the consumers.

Mechanism 2 – Installation premiums

A large number of installation premiums are 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, municipality);
- the renewable energy source (solar, wind);
- the nature of the producer (a firm or an individual).

Mechanism 3 – Offshore wind

The Federal State established a specific support mechanism for the production of electricity from, amongst others, offshore wind farms:

- within the mechanism of TGCs, the TSO has an obligation to purchase green certificates issued to the producer at the amount of 107 EUR/MWh for the first 216 MW generated and 90 EUR/MWh for the remainder of generated MW (this obligation applies for a duration of 20 years);

- for each concession, one third of the cost of the cable connecting the wind farm to the transmission grid is financed by the grid operator, up to a maximum amount of EUR 25 mln for the installation of a minimum of 216 MW.

Mechanism 4 – Fiscal incentives

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

- tax reductions for some investments in energy savings or RES;
- potential reduction of the “real estate prepayment” (*précompte immobilier*) for new energy efficient homes.

Permitting

Generally speaking, RES projects need to obtain a building (and an environmental) permit, except for most rooftop photovoltaic projects. Installations above 25 MW need an individual production authorisation.

Bosnia and Herzegovina

Background

The complexity of the legal structure in Bosnia and Herzegovina (BiH) directly impacts its legislation as well as policies regarding renewable energy sources.

BiH consists of two separate and distinct administrative entities: the Federation of Bosnia and Herzegovina (FBiH) and the Republic of Srpska (RS), as well as the Brcko District which belongs to both of the above entities. The entities and the Brcko District have their own governmental structures as well as legislation, regulations and policies. This means that renewable energy sources (RES), as well as any other area, may be subject to legislative provisions at entity level i.e. FBiH or RS or Brcko District. In preparing this comparative study we have taken into account relevant legislation at all levels in order to provide a comprehensive overview of the situation in BiH.

Whilst BiH has undertaken numerous international legal obligations relating to the development, promotion and increased use of renewable energy sources and noticeable improvement has also been made vis-a-vis energy efficiency and RES in 2011. Furthermore, BiH continues its declared support for the use of RES through, for example, its decision to join the International Renewable Energy Agency (IRENA) in 2009.

The use of renewable energy sources in BiH and its potential

In BiH, most attention is given to wind and water as renewable energy sources. The share of RES in the production of electricity in BiH is approximately 40%, however, this percentage can change due to levels of precipitation. This is mostly due to the extensive use of hydroelectric (HE) power plants by the incumbent electricity operators. However, there is growing development in the area of small HE power plants, where there are planned investments by both private investors and the incumbent electricity operators. There are also plans for the construction of a number of wind farms, while several privately owned small photovoltaic power plants have already been constructed.

BiH's renewable energy potential is estimated at 6.8 GW in small and large hydroelectric power plants, 2 GW wind, 33 MW solar and 18 TWh per year from biomass. According to estimates, at about 40 GWh per year, BiH's geothermal potential is the second largest in the Energy Community, as defined by the EU Treaty establishing the Energy Community signed on 25 October 2005 (Energy Community Treaty).

The legislative backdrop to enabling exploitation of water power resources is concessions which grant a right to all natural and legal persons to use natural resources or other public goods for the purposes of improving the country's infrastructure. Even though demand for acquiring concessions has been constantly increasing, the extremely complicated and long-lasting bureaucratic procedure of having concessions approved is slowing down the process of utilising these sources of energy to their utmost extent.

Mechanism 1 – State level

In accordance with the Rulebook on Connecting to the Electricity Grid from 2008, the State Regulatory Commission for Electric Energy (DERK) encourages production of energy from RES by prescribing a 50% reduction in the fixed charge for the connection. However, this is minimised by the fact that energy production companies that utilise hydro-energy can only use this advantage if their installed energy power does not exceed 10 MW.

Moreover, BiH is a signatory to the Energy Community Treaty, which created a gas and electricity market without internal frontiers and which calls for implementation of a so-called *acquis communautaire* on energy, environment, competition and renewable electricity sources, showing a determination to focus on RES. The targets for use of renewable energy sources in Bosnia and Herzegovina have been set at 40% by 2020.

Mechanism 2 – Entity level

The main legislation relating to RES at entity level comprises:

- in FBiH, the Regulation on Utilisation of Renewable Energy Sources and Cogeneration (*Uredba o korištenju obnovljivih izvora energije i kogeneracije*, Official Gazette of FBiH no. 36/2010, 11/2011 and 88/11) which was adopted by the Government of FBiH in 2010 and became effective on 1 May 2011;
- in RS, the Regulation on the Production and Use of Energy from Renewable Sources and Cogeneration (*Uredba o proizvodnji i potrošnji energije iz obnovljivih izvora i kogeneracije*, Official Gazette of RS no. 28/11), which was adopted by the Government of RS and came into force on 30 March 2011, and the Rulebook on Incentives for Generation of Electricity from Renewable Sources and Efficient Cogeneration (*Pravilnik o podsticaju proizvodnje električne energije iz obnovljivih izvora i u efikasnoj kogeneraciji*, Official Gazette of RS no. 128/11 and 53/12), which was adopted by the Regulatory Commissions for Electric Energy of RS and came into force on 1 January 2012.

The aforementioned Regulations and Rulebook prescribe, amongst others, the types of incentives for the generation of electricity by using renewable energy sources and for efficient cogeneration as well as the criteria, terms and conditions and procedures for exercising rights to incentives.

The incentives for generation of electricity from renewable energy sources under the FBiH Regulation/RS Regulation and Rulebook currently include (i) benefits while connecting to the electric grid (RS), (ii) advantages in accessing the electricity grid (dispatching), (iii) the right to the compulsory redemption of electricity (FBiH: 12 years; RS: 15 years), (iv) the right to the feed-in-tariff and (v) the right to a premium for consumption for own needs or sale on the market (RS).

According to the FBiH Regulation, the right to the abovementioned incentives may be exercised by a generator of electricity who has concluded a redemption agreement with the FBiH Operator for Renewable Energy Sources and Cogeneration, except for electricity generated in large hydro power plants with a capacity of over 10 MW and electricity generated by independent generators of electricity for open sale on the market. However, as the FBiH Operator for Renewable Energy Sources and Cogeneration has not yet been established, its responsibilities are performed by the relevant incumbent electricity companies and the Federal Regulatory Commission for Electricity (FERK). The guaranteed price is calculated by multiplying the yearly reference price by a coefficient which depends on the installed power and the type of power plant. The highest coefficient is for solar powered power plants and the lowest for hydroelectric plants. After the 12 year term has expired, producers of electricity from renewable sources lose only the right to the guaranteed price, while keeping all other rights.

Under the RS Rulebook, the right to the abovementioned incentives may be exercised by a generator of electricity if:

- (i) it generates electricity (by using renewable energy sources in a cost-effective way and in compliance with the protection of the environment) in generation facilities falling within the following categories:
 - (a) hydro power plant with a capacity of 10 MW inclusive
 - (b) facility using solid biomass with a capacity of 10 MW inclusive
 - (c) facility using agricultural biogas with a capacity of 1 MW inclusive
 - (d) wind plant
 - (e) solar plant with photo-voltaic cells
- (ii) it generates electricity in an efficient cogeneration facility with a capacity of 30 MW inclusive; and
- (iii) the installed capacities, namely the generation of electricity in generation facilities which use renewable energy sources or efficient cogeneration which the right to the incentives is granted for, do not exceed the amounts for incentives as determined by the Regulation.

The amount of electricity eligible to receive incentives in RS is limited, with a yearly amount prescribed for every year until 2020. The guaranteed purchase price consists of the sum of the electricity reference price and an additional premium.

Furthermore, FBiH's Law on Electric Energy has among its goals the encouragement of domestic and foreign investments in RES, while RS' Law on Electric Energy ensures the production of electricity from RES. Both laws state that facilities that produce electricity from RES can be considered "qualified producers" in accordance with the regulations of the Regulatory Commissions for Electric Energy. Moreover, the Law on Electric Energy of RS stipulates incentives for companies producing energy from RES, including waste, which go towards the purpose of achieving the goal of energy production from RES in accordance with the measures for environmental protection and efficiency.

In FBiH, one of the mechanisms that was intended to improve the situation is the Law on the Fund for the Protection of the Environment, which determines that the activity of the Fund is to gather and distribute the financial assets for the protection of the environment on the territory of FBiH and that the Fund would particularly be used, inter alia, for financing preparations for the production, implementation and development of program documents and similar activities in the fields of conservation, sustainable use, protection and improvement of the environment and the use of RES. However, reports demonstrate that this Fund has not been extensively used in the area of promoting and increasing the use of RES in energy production.

Future prospects

Due to the absence of a strategy plan and program for the development of the energy sector of BiH, the Government of FBiH has established an expert group with the task of producing such a strategy plan for FBiH. The document, produced by the expert group ("Strategic Plan and Program for the Development of the Energy Sector of FBiH") foresees the activities to be undertaken for the next 30 years. It has made a number of recommendations to the Ministry of Energy, Mining and Industry relating to RES including, inter alia, the adoption of special legislation relating to RES and the development of a system of incentives and subsidies. Some of these recommendations have been implemented by the adoption of the abovementioned FBiH Regulation. The Government of RS also prepared a similar strategy, which became manifest in the abovementioned RS Regulation and Rulebook.

As far as PPP projects are concerned, the legislative framework has been introduced at different speeds. In FBiH, a draft PPP law was forwarded to the Government by the Federal Ministry of Transport and Communication. Although it has been in the legislative procedure for several years, it has not yet been adopted. In RS, on the other hand, the Law on PPP was adopted by Parliament on 11 June 2009 and became effective on 10 July 2009. The Law is fully in

compliance with the relevant EU Directives. The Law allows for a special form of long-term cooperation agreements whereby the public and private sectors can join resources, capital and professional knowledge in order to satisfy a public need.

Moreover, draft laws on the use of renewable energy and efficient cogeneration are currently in the legislative procedure in both FBiH and RS. However, it is not yet clear when the laws will be adopted and come into force.



*Hydroelectric power plant at Perucac Drina dam,
Bosnia and Herzegovina / Serbia*



Bulgaria

Background

Bulgaria's national target is for 16% of gross electricity consumed by 2020 to have been produced from renewable energy sources. According to the National Action Plan for Energy from Renewable Sources for the period 2010–2020, the actual targets are set forth as follows:

- hydroelectric power plants – 3288 MW;
- photovoltaic power plants – 330 MW;
- wind – 1440 MW;
- biomass – 158 MW.

The new Bulgarian Energy Strategy to 2020 (Energy Strategy) came into force on 1 June 2011. According to the Ministry of Economy, Energy and Tourism the renewable energy targets will be achievable largely through clean and low-emission energy derived from nuclear and renewable energy sources.

Mechanism 1 – The Renewables Act

The Renewable Energy Sources Act (Renewables Act), published in the State Gazette, issue 35, dated 3 May 2011, as amended, is the main legislative act setting out support mechanisms for renewable energy sources in Bulgaria. It revoked and significantly changed many of the provisions of the Renewable and Alternative Energy Sources and Biofuels Act, published in the State Gazette, issue 49, dated 19 June 2007. The Renewables Act implements the provisions of EU Directive 2009/28/EC, as well as the amendment and the revocation of EU Directives 2001/77/EC and 2003/30/EC.

The Renewables Act introduced certain obligations for renewable energy producers to fulfil to balance the connection obligation of grid operators (for example, an obligation on the investor to have the project completed within a certain timeframe or to invest in balancing power stations), as well as a restriction on the maximum capacity of renewables allowed to connect to the transmission and distribution grids, and a new cost sharing mechanism.

Mechanisms to promote renewables under the Renewables Act currently include a mandatory off-take at preferential prices of the electricity produced from renewable energy sources and a right to priority connection to the grid.

Mandatory off-take and feed-in tariff long-term power purchase agreements

The public utility wholesaler (National Electricity Company EAD or NEK) and the electricity distribution companies (EDCs) are obliged to off-take all electricity generated from

renewable sources that is guaranteed by a certificate of origin. The guarantees of origin are issued, transferred and cancelled by the Sustainable Energy Development Agency (SEDA). Previously these functions were performed by the State Energy and Waters Regulatory Commission (SEWRC). The guarantees of origin are issued to producers of green energy. The guarantee of origin is of a standard size of 1 MW and is valid for a period of 12 months after the production of the renewable energy for which it is issued. The issuance, transfer and cancellation of guarantees of origin are performed electronically. The Renewables Act also provides that guarantees of origin issued in other EU member states are generally acknowledged in Bulgaria.

The Renewables Act introduced some significant changes to the terms and conditions for applicable feed-in tariffs (FITs) provided for in the previous law. The principle of mandatory off-take of electricity produced from renewable sources on the basis of long-term power purchase agreements (PPAs) is maintained. The entities obliged to purchase the electricity are the public supplier (NEK) and the end suppliers of electricity.

A major change is that the FIT for new projects shall be fixed for the entire term of the PPA with the exception of biomass projects, where there is an indexation based on the expenses for energy sources, transportation and labour. The SEWRC determines the FIT levels annually. The new prices shall be applicable to new projects only. Once an off-take price is determined for a project on the basis of an effective FIT, this price shall be applicable to such a project for the entire mandatory off-take period.

The Renewables Act does not specify a formula for how the FIT shall be calculated. It only specifies the general criteria which should be considered by the Regulator when determining the FIT. The principles by which the revised draft FIT will be set are: the type of renewable source; the type of technology; the installed capacity; the investment expenses; the rate of return of the investment; the structure of the capital of the investment; the productivity of the installation with respect to the type of installation and the technology used; and the expenses related to environmental costs.

From 1 July 2012 a new FIT was introduced for all renewable projects. As a comparison to the previous FIT, the new one shows a significant decrease in the off-take price for all solar energy projects, while a preference is given to biomass energy. As of 1 September 2012 the SEWRC determined

a new FIT applicable for solar energy projects only, which additionally decreases the off-take price for solar energy.

On 14 September 2012 the SEWRC adopted Decision no. Л-33 (Decision 33) which sets temporary prices for access to the electricity transmission and distribution grids to be paid on a monthly basis by the renewable energy producers to which the FIT applies. The prices entered into effect on 18 September 2012. Their levels depend on when the producers of electricity from renewable energy sources using preferential tariffs were connected to their respective grids. The access prices were introduced as temporary. However, according to the draft amendments of the Energy Act these temporary prices can be stabilized. Many producers have appealed Decision 33 before the competent Bulgarian court and/or the European Commission. The outcome of these appeals is not yet clear.

FIT for projects in different development stages

For projects which were already generating when the Renewables Act came into force, the FIT is the one approved on 1 April 2011. The PPAs for these projects were not affected by the change in the law and the off-take term was not changed in accordance with the new law.

New projects, as well as those projects with final grid connection agreements and preliminary grid connection agreements, will have their FIT fixed at the level applicable when exploitation of the duly certified power plant starts. When constructing the project in stages, a flexible approach to determining the FIT is applicable.

Projects with preliminary grid connection agreements signed before the Renewables Act came into force had to comply with the following three conditions within one month of the announcement of the FIT:

- payment of the advance payment/guarantee;
- provision of evidence of real rights; and
- provision of a copy of the detailed zoning plan or design visa (grid connection facilities are excluded from this requirement).

If the above conditions for the preliminary agreements were not met within the term (which expired on 20 July 2011), the preliminary agreements were automatically terminated. The term of such preliminary agreements was no longer than one year from the date the Renewables Act came into force, and in any case no longer than the term provided for in the preliminary agreements themselves.

Projects which had obtained final grid connection agreements before the Renewables Act came into force followed the previous procedure if the producer had either paid the grid connection fee or had undertaken the obligation to construct the grid connection facilities himself.

The terms of the mandatory off-take of electricity to be produced from new projects or projects in development were decreased by the Renewables Act, as follows:

- from 25 to 20 years for solar, geothermal and energy produced from biomass;
- from 15 to 12 years for wind energy; and
- the off-take period for hydro and other renewable energy remains 15 years.

Producers of renewable energy who were operating and had effective PPAs at the date the Renewables Act came into force, maintained their terms (i.e. 25 years for solar power plants, 15 years for wind parks).

Priority access to the grid

Grid operators must provide for minimal grid connection at the closest possible point of the transmission or distribution network. The cost for interconnection from the production facility to the border of its property is borne by the producer. The cost for interconnection of the production facility from the border of the property to the grid is borne by the grid operator. The producer is only responsible for the direct cost of the connection. Any costs for the reconstruction and extension of the transmission and distribution network are borne by the grid operator and shall not be included in the cost for grid interconnection.

The unconditional obligation of grid operators (transmission system operators and distribution system operators) to connect renewable energy projects to the grid, is no longer applicable. The Renewables Act provides that the SEWRC shall announce annually, by 30 June, on the basis of information provided by grid operators, the maximum capacity of the existing grid for the connection of new facilities for the production of electricity from renewable sources for the next one-year period. The said information will be published on the website of the SEWRC. Before this, the grid connection companies have to summarise the available capacities by 28 February and provide this information to the SEWRC and the Ministry of Economy, Energy and Tourism by 30 April. This mechanism is effective as of 1 January 2012. For the regulatory period 1 July 2012–1 July 2013 the SEWRC has announced that there is no available capacity for the connection of new renewable energy projects.

Developers should file applications for connection to the grid to the respective grid operator within the one-year period. The grid operator is to evaluate the admissibility of the relevant applicant. In practice, this is done on a “first come, first served” basis, which means that the grid operator considers applications for new projects following their order of filing. Therefore, once the maximum available capacity is reached, any further applications exceeding the capacity for the respective year will be rejected.

A National Information System for the potential production and consumption of energy from renewable sources in the Republic of Bulgaria was established by the SEDA in May 2012. All renewable energy producers are obliged to provide information for produced electricity to the SEDA on a quarterly and an annual basis.

A fixed down payment for connection to the grid is also applicable, payable on the signing of the preliminary grid connection agreement.

The Renewables Act provides that the term of a preliminary grid connection agreement cannot be longer than one year and within this term the producer shall file an application for execution of the final grid connection agreement. The term of a final grid connection agreement shall not exceed the term for entering into exploitation of the power plant and cannot be longer than three years when the commissioning of the power plant is stipulated to be done in one stage. When the commissioning of the power plant is planned to be done in stages, the term for the first stage shall not exceed three years from the execution of the grid connection agreement.

Mechanism 2 – Investment support and PPP

The Bulgarian investment promotion regime aims to support investments in specific innovative industries, including renewable energy projects.

The support mechanisms include:

- the development of schemes to support production and consumption of: renewable energy; gas from renewable energy sources; biofuels; and renewable energy in transport, ranging from liquid fuels to biomass;
- the development of support schemes for the production and consumption of biomass;
- the development of joint support schemes with other EU members states;
- the financing of activities and projects for the generation of energy from renewable sources and for the use of renewable energy in final energy consumption from the Energy Efficiency and Renewable Energy Fund (EEREF), etc.; and
- contracts with guaranteed results under the Energy Efficiency Law relating to the use of renewable energy.

Public-Private Partnership (PPP) is also an available option in accordance with the newly adopted Public-Private Partnership Act, published in the State Gazette, issue 45, dated 15 June 2012, effective as of 1 January 2013. Prior to that, due to the lack of legislation, some municipalities had adopted local PPP Ordinances to provide support for renewable energy projects.

Mechanism 3 – Various sources of funding and grants; EU accession funds

Sources of funding include the EBRD's Energy Efficiency and Renewable Energy Credit Line extended to seven local banks for on-lending to private sector companies for industrial energy efficiency and small scale renewable energy projects, supported by the Kozloduy International Decommissioning and Support Fund.

Pursuant to the Bulgarian Energy Efficiency Act, the Bulgarian Energy Efficiency Fund shall finance the implementation of energy efficiency improvement activities and measures, with the exception of those financed from the state budget.

Funding is also available from EU energy funds such as "Intelligent Energy – Europe" and framework programmes for scientific research and presentations. EU accession funds are also available for mini-hydro power plants and small-scale projects.

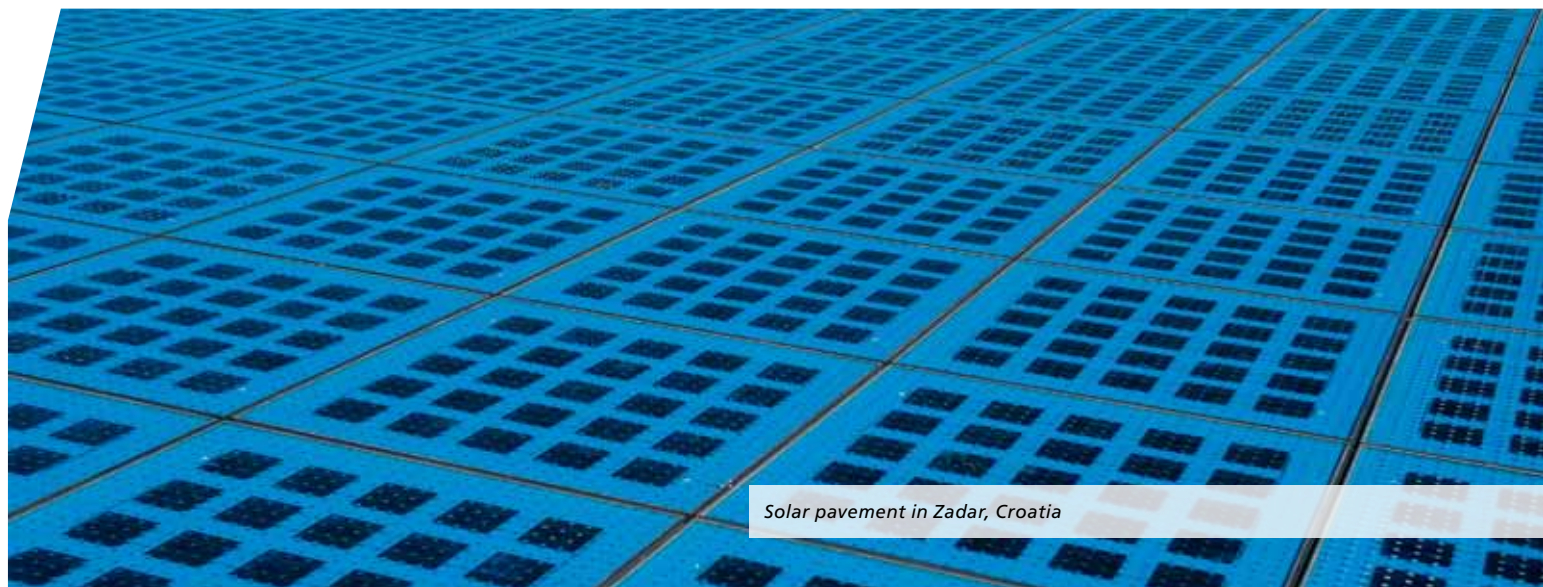
Kyoto mechanisms, especially Joint Implementation (JI), are also available. In recent years, Bulgaria completed JI projects with leading technology providers from Austria, Denmark, Japan and others.

As of 1 September 2012 a new FIT is applicable for photovoltaic power plants, when the investment for the construction of the power plant is supported by national or EU energy funds; the higher the percentage of gratuitous funding, the larger the decrease in the applicable FIT.

Photovoltaic power station near Kazanlak, Bulgaria



Croatia



Solar pavement in Zadar, Croatia

Introduction

In order to incentivize production of green electricity, in 2007 Croatia introduced the feed-in tariff (FIT) system for the first time. Since its introduction, the FIT has been amended only once, in June 2012.

Although, ever since the FIT system was introduced, there has been great interest in the development of renewable energy source (RES) projects, especially in the area of wind and solar, the result is not as significant as one might have expected, i.e. electricity from RES amounts only to 2% of total consumed electricity in Croatia. This may well be due to the time consuming procedures, including not only regulatory licensing, but also general construction processes.

There are, however, positive trends in the new FIT regulations, such as:

- simplified licensing procedures generally and especially for integrated PV plants;
- the quota for PV being substantially increased;
- grid connection rules for wind plants taking more into account the stage of development and the commitment to completion of a project; and
- FIT being guaranteed for 14 years (compared to 12 years according to the old FIT).

Mechanism 1 – Feed-in tariff and mandatory off-take

The basic principle for incentivising renewable energy is that a producer of renewable energy may obtain so called “*Preferential Status*” and thus become eligible to receive the FIT. The FIT in general depends on the type of facility and its output and consists of (i) a fixed part determined

by the tariff system; and (ii) a variable part which may amount to up to 15% of the fixed part, depending on the local content requirement.

What does Preferential Status bring to an investor?

- generated electricity is sold to the market operator (HROTE) via a mandatory off-take;
- HROTE pays the tariff for the purchased electricity, while the tariff is fixed (subject only to indexation); and
- the FIT system applies for a period of 14 years.

The table on the next page gives an overview of the tariff system in force, calculated in EUR (note, however, that the FIT is expressed and paid in Croatian kuna and is not linked to EUR). The figures from the table may be increased by up to 15%, the so called variable part of the tariff, depending on the cost of the goods and services of local origin used in the project.

Projects for which an Off-take Agreement was executed prior to the new tariff being introduced, have the FIT calculated according to the “old” tariff system.

Output up to and including 1 MW		Output higher than 1 MW	
Type	Tariff [EUR/MWh]*	Type	Tariff [EUR/MWh]*
Building-intergrated photovoltaics (BIPV)	≤ 10 kW – 350.50	BIPV	70.60
	≤ 30 kW – 297.50		
	≤ 1 MW – 219.90		
Hybrid BIPV	≤ 10 kW – 420.60	Hybrid BIPV	70.60
	≤ 30 kW – 327.30		
	≤ 1 MW – 226.40		
Other PV systems	146.60 to 266.80	Other PV systems	70.60
Hydro power plant	up to 160,42**	Hydro power plant	up to 133,69**
Wind power plant	96,26	Wind power plant	94,92
Biomass power plant	up to 173,80**	Biomass power plant	up to 160,43**
Geothermal power plant	160,43	Geothermal power plant	160,43
Biogas power plant	up to 189,84**	Biogas power plant	up to 160,43**
Biofuel power plant	70,85	Biofuel power plant	70,85
Landfill gas power plant	70,85	Landfill gas power plant	70,85
Power plant using animal fat as a fuel	N/A	Power plant using animal fat as a fuel	220,59
Other	70,85	Other	70,85

* According to the exchange rate EUR 1 = HRK 7,4797.

** There is an additional classification available depending on the output of the relevant plant.

Mechanism 2 – Sources of financing

There is currently a program of the Croatian Bank for Reconstruction and Development (HBOR) for the financing of RES projects either directly or, which happens more often, through banks which have cooperation with HBOR. The financing term is up to 14 years, the required equity 25% and the interest rate 4%.

Additionally, financing is available from international institutions such as EBRD and IFC. EBRD is currently implementing the EU/EBRD Western Balkans Private Sector Support Facility (SEFF). The SEFF will be dedicated to improving the supply of long term finance for investments in energy efficiency and renewable energy for private sector enterprises of all sizes. Projects can already be submitted to the Project Consultant through the online application form.

Croatia is also a target region for financing through the Green for Growth Fund, which provides direct financing and financing through business.

Czech Republic



Upper reservoir of the Dlouhé Stráně hydroelectric power plant, Czech Republic

Background

The Czech Republic has committed itself to meet the national indicative target set out by Directive 2009/28/EC on Renewable Energy and, by 2020, to produce at least 13% of the electricity consumed from renewable energy sources. In 2012 the share of electricity produced from renewable energy sources was already over 10%.

New legislation

On 1 January 2013 a new Act on Supported Sources of Energy (Act) came into effect. This Act introduced a new system for the support of electricity produced from “supported sources of energy”. The Act in particular regulates support for the production of electricity from renewable energy sources, production of heat from renewable sources, combined production of heat and electricity, production of bio-methane and decentralised electricity production.

The support of renewables is linked to the National Renewable Energy Action Plan (NREAP). The NREAP is prepared on the basis of Directive 2009/28/EC on Renewable Energy and is approved by the Czech government.

It is expected that the NREAP will be updated every two years and is one of the tools which will allow the government to regulate the renewable energy sector. In particular, the NREAP shall stipulate targets of installed capacity for each type of supported source of energy for a specific year. In the event that a target is met for a relevant supported source of energy, new projects generating energy from such sources would not be entitled to any support.

The Act provides two key principles of support for renewable energy:

- renewable electricity producers will have the right to preferential connection to national transmission and regional distribution systems (Grid); and
- renewable electricity producers will be able to choose between two promotion pricing schemes.

Access to the grid

The Grid operator is obliged, within the area stipulated in its licence, to connect a renewable electricity plant to the Grid preferentially for the purpose of transmitting or distributing electricity from renewable sources, providing the producer requests the connection and the technical conditions for connection and electricity transport are satisfied. There are three main distribution system operators (CEZ Distribuce a.s., E.ON Distribuce a.s. and PRE distribuce a.s.) and one transmission system operator (CEPS a.s.) in the Czech Republic.

Promotion pricing schemes

The Act introduced two alternative promotion pricing schemes: Feed-in Tariffs and Green Bonuses which are the economic instruments supporting the development of renewable power plants.

Renewable electricity producers can choose between the two promotion pricing schemes:

- to offer electricity from renewable sources for purchase by the obligatory purchaser who is obliged to buy all the produced electricity at set minimal prices and conditions (Feed-in Tariff); or

- (ii) to sell electricity from renewable sources on the electricity market, in which case they will be entitled to a 'green bonus' (a fixed amount paid on top of the market price) from the market operator (Green Bonus).

For projects put into operation after 1 January 2013 a subsidy in the form of a feed-in tariff can only be granted to producers of electricity from a renewable energy source where the installed capacity is no more than 100 kW (or 10 MW in case of water power plants). Larger projects can only qualify for the Green Bonus.

Each year the Energy Regulatory Office (ERO), the sector regulator, sets out in advance the Feed-in Tariff and also the

level of Green Bonuses for electricity from different types of renewable resources. In principle the amount of Feed-in Tariff and Green Bonus should ensure a 15-year return on the investment into the renewable plant provided that certain technical and economic parameters are complied with. Such parameters are set out in the implementing legislation and include the costs of an installed unit of capacity, efficient use and period of use of primary energy contents in the renewable source. Further details are specified in the appropriate implementing regulation.

An indication of the level of the Green Bonus for renewable plants put into operation in 2013 can be found in the following table:

Type of the power plant	Amount of Green Bonus (for one-tariff mode)
Small water power plant	1,499 CZK/MWh (approx 60 EUR/MWh)
Small water power plant in new locations	2,230 CZK/MWh (approx 89 EUR/MWh)
Biomass power plant	1,000–2,670 CZK/MWh (approx 40–106 EUR/MWh)
Biogas power plant up to 550 kW	2,490 CZK/MWh (approx 99 EUR/MWh)
Wind power plant	1,570 CZK/MWh (approx 62 EUR/MWh)
Solar power plant up to 5 kW	2,440 CZK/MWh (approx 97 EUR/MWh)
Solar power plant from 5 kW up to 30 kW	1,880 CZK/MWh (approx 75 EUR/MWh)
Geothermal power plant	2,290 CZK/MWh (approx 91 EUR/MWh)

France



Farm of wind turbines, France

Background

Pursuant to Article 2 of the Programme Law dated 3 August 2009 (Programme Law no. 2009-967 of 3 August 2009) (Grenelle 1), the share of electricity produced from renewable energy sources should represent 23% of electricity consumption by 2020.

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

Mechanism 1 – Renewable Wind Energy 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 no. 2005-781 of 13 July 2005). This new legal framework enables wind farms to benefit from the power purchase obligation for projects located in areas set up by local authorities. The municipalities submit a request form for permission to create wind power development areas (*Zones de développement éolien*) to the relevant department (*Préfet*, i.e. the local State authority), which then consults the neighbouring municipalities prior to any decision. The adoption of a project is subject to three conditions: wind potential, grid connection possibilities and landscape protection (listed buildings and protected locations).

However, according to a bill approved by the two chambers of the Parliament in February 2013, the renewable wind energy areas will be abolished.

Mechanism 2 – Power purchase obligation and feed-in tariffs

The power purchase obligation is the main incentive of the French government regarding energy policy. Electricité de France and the non-nationalised distributors are required to buy energy produced from renewable energy sources at a fixed price, provided production installations are connected to the power grids and producers fulfil various conditions (Article 23 of Law no. 46-628 of 8 April 1946).

Firstly, power production is limited to 12 MW per site (Decree no. 2000-1196 of 6 December 2000, modified on 4 September 2007; and Decree no. 2001-410 of 10 May 2001, modified on 27 February 2009, 4 March 2009, and 4 March 2011), except for wind energy located in the wind power development areas. However, this exception would be abolished with the enactment of the aforementioned bill, in which case wind farms located in wind power development areas would not be able to exceed or be lower than the installed power capacity set 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 the 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 (orders dated 17 November 2008 and 23 December 2008), small hydro (order dated 1 March 2007), biomass (order dated 27 January 2011), biogas (order dated 19 May 2011), electricity from Combined Heat and Power (CHP), waste incineration (order dated 17 October 2001) and photovoltaic (PV) energy.

Feed-in tariffs for PV energy have been modified by the Ministerial Order dated 31 August 2010 setting the feed-in tariffs for electricity produced by solar installations. According to this Ministerial Order, state-regulated feed-in tariffs for PV projects have decreased by 12%. This decrease applied to all categories of PV electricity producers, except for small residential producers. However, Decree no. 2010-1510 dated 9 December 2010 suspended the purchase of electricity produced by installations using solar energy and imposed a three month moratorium on new solar projects that qualify for current power purchase feed-in tariffs. Two Ministerial Orders dated 4 March 2011 introduced a new tariff framework for PV energy. One of these Ministerial Orders supersedes the previous Ministerial Order dated 31 August 2010 while the other organises the purchase obligation. Feed-in tariffs are now more than 20% lower than those prevailing before the moratorium of 9 December 2010 and apply only to projects in which power is less than 100 kWp. The order dated 4 March 2011 was amended by an order dated 7 January 2013. Pursuant to this order, three different feed-in tariffs exist depending on the power of the installation and the type of installation (building or solar plant). For example, state-regulated feed-in tariffs for solar plants have decreased by 20%, while feed-in tariffs have increased by 10% for those projects using modules manufactured in the European Economic Area.

According to the bill which went through Parliament in February 2013, the power purchase obligation will not be linked to the implementation of wind farms in renewable wind energy areas. In addition, the bill would modify the condition relating to the number of wind turbines to benefit from the power purchase obligation. As a result, this obligation could benefit wind farms with a minimum of three wind turbines, instead of five.

Mechanism 3 – Tax incentives

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

- tax credits of up to 40%;
- 5.5% VAT rate for residential energy equipment using renewable energy sources.

Mechanism 4 – Pluriannual Generation Investment Programme

The Minister in charge of Energy has the obligation to make available, every two years, an assessment of the national requirements for new electricity generation capacities, called the Pluriannual Investment Programme (PPI), in order to ensure that electricity supply will at any time match the demand. The last PPI takes into account the national target

for Renewable Energy Sources determined by Directive no 2009/28/EC. The PPI's main target is not only to set the overall capacity, but also to identify the best energy mix, and therefore the right investments in electricity production, from the energy supply, security and environmental standpoints. Therefore, the PPI dated 15 December 2009 lays down specific objectives for the development of each energy source and production method, until the year 2020.

The order of 7 March 2003 has been superseded by the order of 7 July 2006 which determines development objectives for renewable energy until 2015.

Mechanism 5 – Tender process

The French government may also launch calls for tender, which should then be organised by the regulator (i.e. the Energy Regulation Commission or CRE). 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).

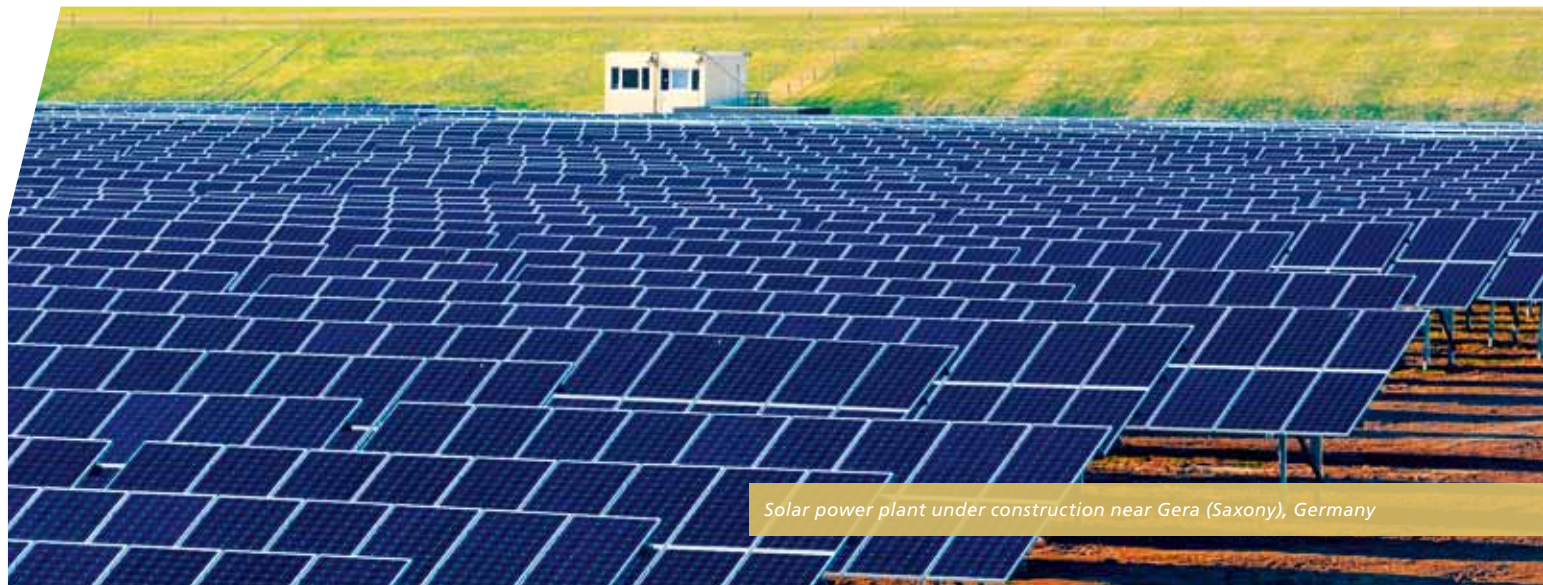
PV plants above 100 kW of installed capacity do not benefit from feed-in tariffs any more. Such projects are funded through regular tender processes, within capped global quantities. One call for tender was published in July 2011 for seven bid rounds (the sixth of which will end on 31 March 2013) for installations with an installed load between 100 and 250 kWp. One call for tender was published in 2012 for installations with an installed load exceeding 250 kWp.

The French government recently announced that, in March 2013, it will launch a second tender for offshore wind farms with a total capacity of 1,000 MW, stretching along the French coast.

Mechanism 6 – Transposition of the RED

France has implemented Directive 2009/28/EC of the European Parliament and of the Council dated 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC by the order dated 14 September 2011.

Germany



Solar power plant under construction near Gera (Saxony), Germany

The Renewable Energy Sources Act (*Erneuerbare-Energien-Gesetz*) (EEG)

The backbone of the German renewable energy support mechanism is the EEG. The EEG supports the production of electricity from wind and water power, solar radiation, biomass and sewage gas combustion, as well as geothermal energy. The EEG guarantees each plant operator a fixed feed-in tariff for electricity generated from these renewable energy sources. The feed-in tariff depends (among other things) on the type and capacity of the installation and the date of its commissioning. Owing to the EEG, which was enacted in 2000, electricity produced from renewable energy sources will contribute approx. 25% to the electricity consumption in Germany in 2013. The EEG is normally revised every three to four years. The current version of the EEG entered into force in August 2012. However, due to the rising cost of the EEG system and with federal elections looming on the horizon in September 2013, political discussions about significant changes to the EEG have already started.

Guaranteed feed-in tariff

The locally responsible transmission system operator (TSO) is under a legal obligation to pay to the plant operator a guaranteed feed-in tariff for a period of, in general, 20 calendar years (and for the year the plant was put into operation). The fee depends on the feed-in tariff that is applicable in the year of commissioning and, in 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 feed-in tariffs and degression rates apply

to each renewable energy source. Since May 2012 monthly degression applies for photovoltaic energy while for all other types of renewable energy the tariffs change only with the start of a new calendar year. The EEG provided in January 2013 for the following feed-in tariffs:

- photovoltaic energy: 11.78–17.02 EUR cent/kWh (further reductions of current feed-in tariff depending on volume of PV installations)
- biomass energy: 5.88–14.01 EUR cent/kWh (plus different bonuses)
- geothermal energy: 25.00–30.00 EUR cent/kWh
- landfill gas: 5.80–8.47 EUR cent/kWh
- offshore wind energy: 3.50–19.00 EUR cent/kWh
- onshore wind energy: 4.80–9.27 EUR cent/kWh (plus 0.49 EUR cent/kWh for repowering)
- water energy: 3.37–12.57 EUR cent/kWh

The remuneration for electricity generated by offshore wind energy turbines amounts to 15 EUR cent/kWh for the first twelve years after commissioning or, for each turbine that is commissioned before 1 January 2018, at the operator’s option, 19 EUR cent/kWh for a period of eight years starting from the date of commissioning. Both periods are 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 feed-in tariff during such extension time is in any case 15 EUR cent/kWh.

The latest EEG changes of 2012 affected mainly the promotion of solar energy by decreasing the feed-in tariffs. New tariff classes for rooftop installations have been introduced and the feed-in tariffs for ground mounted

photovoltaic plants, as well as for rooftop installations, apply to a maximum capacity of 10 MWp per plant. Due to the new degression system in Section 20a and Section 20b EEG, the feed-in tariffs are basically lowered monthly by a percentage of 1%. This degression rate is not fixed, but varies depending on the amount of newly installed capacity.

Grid connection

According to Sections 5, 8 and 16 EEG, generally the TSO who is located closest to a renewable energy plant is obliged to connect the plant to the grid, purchase all electricity produced by the plant and pay the guaranteed feed-in 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 TSO.

Grid connection for offshore wind

Due to the high costs of connecting an offshore wind farm to the grid, an exception applies to such wind farms. According to Section 17 para 2a of the German Energy Industry Act (*Energiewirtschaftsgesetz*) (EnWG), which was in force until 27 December 2012, the responsible TSO was obliged to build and operate the cable from the transformer station of the offshore wind farm to the best connection point of the next transmission or distribution grid. Substantial delays in the realisation of grid connections lead to a hesitation to invest in offshore wind farms. In particular the TSO responsible for the North Sea, TenneT, complained about the increasing cost and blamed costs, risks and a lack of manpower as the main reasons for delayed connections. Both TSOs and operators identified the lack of clear provisions regarding the liability for delayed connections as a major obstacle to further development. As a consequence, parliament revised the relevant provisions of the EnWG (Section 17a et seq. EnWG, currently in force), changed the system to obtain a grid connection from one based on individual connections to an offshore grid connection plan and introduced a liability regime in case of delayed or interrupted grid connections. Already within a few weeks of coming into force the new system has raised a number of questions and it remains to be seen if it has the intended effect of increasing certainty for investment in offshore wind projects.

Models of direct marketing

A recent trend in the German market for renewable energy is an increase in the focus on direct marketing. In order to integrate renewable energies into the market, the direct marketing scheme in the EEG was revised and incentives for direct marketing (*Direktvermarktung*) of electricity outside the guaranteed feed-in tariffs have been introduced. Under the market premium model (*Marktprämienmodell*), the plant operator receives, in addition to the price for the electricity sold to a third party, compensation from the TSO, which is the difference between the monthly average electricity price on the electricity exchange in Leipzig and the remuneration according to the EEG, plus a so-called

management premium. Section 39 EEG provides for a second model, the so called green electricity privilege (*Grünstromprivileg*), which reduces the EEG apportionment (*EEG-Umlage*) to be paid on all electricity sold to end users by 2 EUR cent/kWh. In addition, the reduction of feed-in tariffs, especially for new photovoltaic plants, has caused operators to develop different models of direct marketing to customers aimed at avoiding grid fees, electricity tax and, if possible, also the EEG apportionment.

Reliability of the system and the way forward

The increasing energy costs for consumers, partially due to increases in the EEG apportionment as a means to finance the feed-in tariffs, cause on-going discussions about the EEG regulations, including suggestions for a total change in the system. Currently the compensation scheme of the EEG is being discussed among the political parties, in particular including proposals for further reductions in the feed-in-tariff for renewable energy plants. However, so far there are no draft bills reflecting these ideas.

Hungary



Wind turbines, Mosonmagyaróvár, Hungary

Background

In 2011 electricity generated from renewable energy sources (RES) represented 7.95% of gross electricity generation in Hungary, out of which biomass accounted for 4.23%, wind for 1.74% and hydro for 0.62%, whilst the share of all other renewable sources (including solar) was negligible.¹ The longer term goal for Hungary, as laid down in the National Action Plan for the Utilisation of Renewable Energy (NAP) prepared by the Government pursuant to the Renewable Energy Directive of the EU (RED), is to reach a 14.65% share of RES in the primary energy consumption by 2020. Such a target is slightly more ambitious than the commitment made by Hungary towards the EU (13%) on the basis of the RED.

Mechanism 1 – Mandatory off-take and regulated feed-in tariffs

In the mandatory off-take regime currently in force in Hungary, a certain part of electricity generated during a certain period of time by renewable sources must be taken off, at regulated prices, by MAVIR, the Hungarian state-owned electricity transmission system operator (TSO). The yearly amount of generated electricity to be off-taken from the plant under the regime and the timeframe for mandatory off-take is determined by the Hungarian Energy Office (HEO) in the individual licences. Pursuant to the applicable law, the HEO mainly takes into account the business plan of the generator and the return on investment. Therefore any other subsidy (state or EU funds, surplus of

emissions allowances generated by the project, if relevant, discount from connection fee, etc.) must be notified to the HEO, which shall adjust the amount and timeframe accordingly. Entitlement for participation in the mandatory off-take regime in the case of newly established wind energy projects is somewhat different.

The calculation methodology for the feed-in tariffs is determined by law and the actual feed-in tariff prices are promulgated by the HEO periodically, taking into account a certain indexation mechanism. Electricity 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 mandatory feed-in tariffs are defined according to the type of renewable source, whether the licence entitling 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).

According to data published by the HEO, the feed-in tariffs applicable in the mandatory off-take regime as of 1 January 2013 (in HUF/kWh without VAT) are as set out in the table in the next page (EUR 1 is approx HUF 300):

¹ Statistical Data of the Hungarian Power System, 2011 – Hungarian Energy Office & MAVIR

		Peak	Off-peak	Deep valley
Electricity generated pursuant to the license of the HEO issued (or applied for) before 1 January 2008 (except for hydroelectric plants above 5 MW)	Wind and photovoltaic	33.76	33.76	33.76
	Not wind and photovoltaic	37.72	33.76	13.78
Electricity generated pursuant to the license of the HEO issued after 1 January 2008 (except for hydroelectric plants above 5 MW or any other plant above 50 MW)	Photovoltaic plant with a maximum capacity of 20 MW	32.18	32.18	32.18
	Power plant with a maximum capacity of 20 MW (except photovoltaic plants)	35.96	32.18	13.13
	Power plant with a capacity between 20 MW and 50 MW (except for wind parks after 30 November 2008)	28.76	25.75	10.50
	Wind parks with a capacity between 20 MW and 50 MW after 30 November 2008	35.96	32.18	13.13
	Power plant encompassing used equipment	22.36	14.31	14.31
Electricity generated by hydroelectric plants with a capacity above 5 MW or any power plant with a capacity above 50 MW		22.36	14.31	14.31

The above mandatory off-take regime and mandatory off-take prices are not applicable to household-sized power plants with a connection capacity below 50 kVA. The electricity generated by such household-sized power plants must be off-taken by the electricity trader servicing the given connection point and principally be set off against the electricity consumed by the household end-user.

Mechanism 2 – Grid connection fee discount

From a technical point of view, RES projects are not favoured over any other type of electricity generation methods. Nevertheless, financial regulations are more favourable towards RES projects. If the used renewable energy source in an electricity generating unit reaches at least 70% of the total volume of the used fuel, then the otherwise payable grid connection is decreased by 30%, whilst in cases where the proportion of renewables is over 90%, the payable sum is only 50% of the otherwise applicable connection fee. However, this discount qualifies as aid and shall be notified to the HEO, as it might influence the mandatory off-take period specified by the HEO.

Mechanism 3 – Development subsidies

RES projects are generally eligible for subsidies from the various funds of the EU, in compliance with the Hungarian operative programmes implementing the rules of such subsidies and co-ordinated by the National Development

Agency. For some projects, such development subsidies form a considerable part of the total costs of the projects.

In compliance with its obligations, Hungary has also implemented Directives 87/2003 and 101/2004 on EU emission trading. Pursuant to these Directives, Joint Implementation (JI) of renewable energy projects is possible under the Hungarian legal framework and some projects have already taken advantage of emission reduction within the JI framework.

Mechanism 4 – Tax credit

A corporate income tax credit, amounting to a maximum of 80% of the tax payable, may be utilised with respect to investments of certain kinds and magnitude. The credit may be utilised from the year that the investment is put into operation (or from the following year), and during the following 9 years, but at the latest until the 14th tax year following the notification.

The actual eligibility for the tax credit as well as the maximum aid intensity depends on a number of conditions, among which the size and the place of the investment play a crucial role. Various kinds of investments may or may not be subject to the requirement of job creation.

Prospective regulatory changes

The planned METÁR system

In September 2011 the Ministry of National Development published a policy paper for a planned new mandatory off-take regime of heat and electricity generated from renewable and alternative resources, the so-called METÁR (*Megújuló energia támogatási rendszer*), which is due to replace the current system described above. Once passed as a binding regulation, the METÁR will likely grant a new impetus for biomass, biogas, wind and solar energy generation.

Although the policy paper has not yet been set out in legislative form, the main principles of the new system appear quite clear. The most important development is likely to be that, in order to incentivise useful heat generation, METÁR will create a regime which provides support based on four principles. These are:

- a green-heat bonus in addition to the electricity off-take base price for cogeneration technologies to incentivise useful heat generation;
- electricity off-take base prices differentiated based on applied technology and size;
- providing supplementary bonuses in addition to the base price if certain conditions are met (such as extraordinary efficiency, innovative technology, etc.)
- introducing a so-called “brown tariff” for cleared investments, where market price would not cover operational costs.

Support would be provided for a uniform 15-year term to all market players. Following the expiry of this uniform support period, technologies which could not be operated in a profitable way under market conditions would be supported through the “brown tariffs”.

In order to make the new support system more transparent, different quotas would be introduced for the various technologies and the allocation of quotas among the applicants would be regulated in laws.

The entering into force of the METÁR is not anticipated before 2014.

Green certificates

The regime of mandatory off-take is not carved into stone. Under the Electricity Act, the Government is entitled to implement a so-called “green and cogenerated certificate system” in the future, instead of the current mandatory off-take regime (and/or the possible future METÁR 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 (or production). Thus, these would be more market-based instruments.

At the moment no information is available about if and when the Government wishes to introduce a green certificate system.

Wind energy

It is to be noted that the licensing and the authorisation to participate in the mandatory off-take regime of new wind generation facilities are somewhat different from other RES projects.

Due to dispatchability constraints on the Hungarian grid the implementation of further wind generation facilities in addition to the already licensed ones is no longer a liberalised activity. Instead investors must win the entitlement on an open tender procedure. Balancing capabilities and the requested feed-in tariff will form a crucial part of the assessment of the tender application. Although in 2009 such an open tender was indeed published for the establishment of wind energy facilities with an aggregate foreseen capacity of 410 MW, the tender was later cancelled in its very advanced phase. The publication of a new tender is much awaited in the Hungarian wind industry, nevertheless no date has yet been revealed, and it seems fairly unlikely that a new tender invitation would be published before the general review of the mandatory off-take system, as mentioned above, occurs.

High voltage pylon, Hungary





Pipes of a geothermal power plant, Larderello, Italy

Mechanism 1 – Feed-in scheme for photovoltaic plants

Also known as *Conto Energia* (CE), the feed-in scheme for photovoltaic plants has now reached its fifth edition, regulated by Ministerial Decree 5 July 2012.

Like other schemes for the support of renewable energy sources (RES), the 5th *Conto Energia* is run by Gestore Servizi Energetici S.p.A. (GSE), a state-owned company, wholly owned by the Ministry of Economy and Finance, which promotes and supports RES in Italy and manages the various support schemes for RES.

Eligible plants

PV plants eligible for incentives include all grid-connected PV plants exceeding 1 kWp, divided into three main categories:

- ordinary PV plants, including both roof-top and ground-mounted plants (but excluding PV plants built on agricultural land);
- roof-top PV plants with innovative features;
- concentrated PV (CPV) plants.

Incentives

Incentives available for PV plants comprise:

- for PV plants up to 1 MWp, a so called “all-inclusive feed-in tariff” (or simply feed-in tariff) (*tariffa omnicomprensiva*) paid by the GSE for all electricity generated by the plant and fed into the grid. The feed-in tariff includes both the remuneration for sale of the electricity fed into the grid and the actual incentive and varies depending on the type of plant and its capacity;
- for PV plants exceeding 1 MWp, an incentive equal to the difference, if positive, between the relevant

all-inclusive feed-in tariff less the so called hourly zone price (i.e. the average market price of electricity in a given area at a given hour of the day). In this case the incentive does not include the price for the electricity generated and fed into the grid which remains the property of the producer, who may therefore sell it on the electricity market or via bilateral agreements.

If the electricity generated by the PV plant is consumed on site, a premium tariff (*tariffa premio*) applies (also based on the size of the plant) which is lower than the corresponding feed-in tariff as it does not include the price for sale of the electricity.

The feed-in tariff and the premium tariff may be increased in specific circumstances (e.g. roof-top installation with replacement of asbestos roofing).

The feed-in tariff or the premium tariff is granted for a period of 20 years from the commencement of operation of the plant (connection to the grid) and is not subject to indexation.

Access to incentives

Procedures for access to incentives depend on the type and nominal capacity of the PV plant:

- **direct access:** smaller PV plants, plants for which reduced incentives are sought, roof-top PV plants with innovative features, subject to the availability of the initial budget, CPV plants and plants built by public entities may have direct access to incentives by submitting an application to the GSE;

- **Registries:** PV plants not eligible for direct access (or if the budget initially allocated to a specific category of PV plants has been used), must apply to the GSE to be included in *ad hoc* Registries, each having a dedicated budget. In this case access to the feed-in tariff or premium tariff depends on the ranking of the plant in the Registry and the availability of the budget for the relevant registry. If a plant does not get access to the relevant feed-in-tariff or premium tariff due to a lack of budget, a new application must be filed for registration in a later Registry.

Limitations

The 5th *Conto Energia* will cease to be available 30 calendar days after the “indicative annual aggregate costs” for incentives to PV plants (calculated taking into account planned annual expenditures for all schemes for promotion of PV plants) has reached EUR 6.7 bln.

Based on the latest data published by the GSE, indicative annual aggregate costs for PV schemes had reached approximately EUR 6.58 bln at the end of January 2013. Incentives are therefore unlikely to continue to be available for new PV plants after the first half of 2013 (or even earlier).

Mechanism 2 – Feed-in scheme for solar thermodynamic plants

Introduced by Ministerial Decree 11 April 2008 and subsequently amended by Ministerial Decree 6 July 2012, this provides for incentives for grid-connected solar thermodynamic (ST) plants, including hybrid plants.

Eligible plants

In order to be eligible for incentives under the scheme ST plants must be grid connected (or connected to small isolated grids) and, if the capturing surface exceeds 10,000 sqm, must be equipped with thermal storage systems meeting the minimum requirements set by the Ministerial Decree of 6 July 2012.

Incentives

Incentives available for ST plants take the form of a feed-in premium, paid on top of the price for the electricity generated by the plant and fed into the grid, which may be sold by the producer not only on the electricity market or via bilateral agreements but also via dedicated, simplified off-take arrangements operated by the GSE (*ritiro dedicato*).

The value of the feed-in premium varies according to the size of the ST plant (with a threshold set at 2,500 sqm of capturing surface area) and the so called integration ratio, i.e. the ratio between electricity generated from solar and non-solar sources every year.

The feed-in premium is granted for a period of 25 years from the commencement of operation of the plant.

Unlike incentives available for other RES plants, the feed-in premium may be cumulated with other incentives and benefits (e.g. tax incentives).

Access to incentives

Access to incentives requires the submission of an application to the GSE within 60 days of the commencement of operation of the plant.

Limitations

Incentives under this scheme will be available until the aggregate capturing surface area of incentivised plants reaches 2.5 mln sqm and for ST plants that commence operation within 24 months thereafter.

Mechanism 3 – Feed-in scheme for other (non-solar) RES plants

Regulated by Ministerial Decree 6 July 2012, this scheme provides for incentives for all RES plants not based on solar power. In particular, the scheme applies to grid-connected RES plants using the following sources:

- wind (onshore and offshore);
- hydro;
- tidal and waves;
- biomass (including landfill gas);
- geothermal;
- sustainable bio-fuels.

Incentives

Incentives under this scheme comprise:

- for plants with a capacity up to 1 MW, an all-inclusive feed-in tariff (*tariffa omnicomprensiva*) paid for all electricity generated and fed into the grid, which includes both the remuneration for the sale of electricity generated and the actual incentive;
- for plants whose capacity exceeds 1 MW or that do not use the above feed-in tariff, a premium tariff equal to the difference between the relevant feed-in tariff and the hourly zone price (i.e. the average market price of electricity in a given area at a given hour of the day). The premium tariff is paid for the electricity fed into the grid but does not remunerate the sale of such electricity, which remains the property of the producer who may sell it on the electricity market or via bilateral agreements.

Unlike with PV plants, incentives are not available for electricity generated but not fed into the grid (self-consumed).

The value of the feed-in tariff or premium tariff depends on the source type of plants and their capacity. Increased tariffs may be available in specific circumstances.

Feed-in tariffs or premium tariffs are granted for a pre-determined period based on the average life of the specific type of plant (ranging from 15 years for tidal and waves, up to 5 MW to 30 years for larger hydro plants). The average duration of the incentives is 20 years.

Access

The procedure for access to incentives under this scheme depends on the type of plant, its status and the nominal capacity of the PV plant:

- **direct access:** smaller plants, whose capacity does not exceed the specific threshold set for each source/type of plant, can have direct access by submitting an application to the GSE after the commencement of operation of the plant;
- **registries:** plants not eligible for direct access and not subject to competitive bidding processes (see below), must apply to the GSE to be included in *ad hoc* Registries, dedicated to specific sources with a dedicated budget;
- **competitive bidding:** larger plants (geothermal >20 MW, hydro >10 MW, other RES >5 MW) can have access to incentives only via competitive bidding processes (electronic auctions) run by the GSE.

Limitations

Incentives under this scheme will cease to be available once the “indicative annual aggregate costs” for incentives for (non-solar) RES plants (calculated by taking into account planned annual expenditures for all previous schemes) has reached EUR 5.8 bln per year.

Based on the latest data published by the GSE, indicative annual aggregate costs had reached approximately EUR 4.12 bln at the end of January 2013.

Mechanism 4 – Simplified off-take scheme (*ritiro dedicato*)

A simplified off-take scheme, operated by the GSE, is available to RES producers (as well as, under certain conditions, to producers of electricity from non-RES sources) for the sale of electricity generated by the plant and fed into the grid.

The scheme is an alternative to other off-take arrangements (i.e. direct sale on the electricity market or through bilateral off-take agreements) and from 2013 is no longer compatible with the feed-in scheme or other incentives for RES plants (except for solar thermodynamic plants).

Under this off-take scheme (known as *ritiro dedicato*) the GSE acts as an intermediary between the producer and the market. In that role the GSE, as consideration for a fee based on the value of electricity sold (capped at EUR 3,500 per year), collects the electricity generated, sells it on the electricity market, collects the proceeds of the sale, settles relevant fees due to the various parties involved in the distribution and sale process (e.g. transmission and dispatching fees) and pays the balance, after deduction of its own fees, to the producer.

The price paid to the producers is based on the so called “average zone hourly price” i.e. the average market price for the relevant hour of the day in the area where the plant is located. Smaller plants, whose capacity does not exceed 1 MW, benefit from a “guaranteed minimum price” (reviewed each year) for the first 2 mln kWh generated and fed into the grid.

Mechanism 5 – Net metering scheme (*scambio sul posto*)

The net metering scheme, also operated by the GSE, allows RES producers who are also electricity consumers to off-set the value of electricity fed into the grid with the value of electricity supplied to the producer/consumer (and therefore received from the grid).

Under this scheme, regulated by Resolution ARG/elt 74/08 of the Italian electricity and gas regulator (AEEG), the GSE acts as single interface for the producer/consumer (except in matters concerning the connection of the plant to the grid) and is responsible for calculating and paying to the producer the so called CCS (*Contributo Costo Scambio*), an amount determined on the basis of the electricity fed into the grid and received from the grid and the respective prices, plus service costs (i.e. dispatching and distribution fees relating to the electricity “exchanged” with the grid, which are partly reimbursed to the producer).

The net metering scheme is available only for RES plants with a capacity of up to 20 kW (200 kW if the plant entered into operation after 31 December 2007) and high-efficiency CHP (combined heat and power) plants with a power capacity of up to 200 kW.



The Netherlands

Background

The National Renewable Energy Action Plan of the Netherlands of June 2010 describes how the Netherlands intends to achieve its targets for 2020 pursuant to the Renewable Energy Directive (2009/28/EC).

For the Netherlands, the national targets are:

- to increase the share of renewable energy up to 16% by 2020;
- to reduce greenhouse gas emission by 20% compared to 1990 levels; and
- to achieve a rate of energy efficiency improvement of 2% per year.

Under the Renewable Energy Directive (2009/28/EC) the target for the Netherlands is to have a 14% share of renewable energy by 2020. However, in November 2012 the new Dutch government increased this target to 16%. In view of the fact that in 2011 the share of renewable energy only amounted to 4.3%, there is still a long way to go. It is expected that wind and biomass will provide the largest contribution to the target. The Dutch government aims to have 6,000 MW of onshore wind capacity and 6,000 MW of offshore wind capacity by 2020. In order to meet this target, the Provinces, in December 2012, submitted ambitious plans for the development of 6 GW of onshore wind energy capacity.

Mechanism 1 – Incentive scheme for sustainable energy production (*Stimulerende Duurzame Energieproductie* or SDE)

The current incentive scheme for sustainable energy is referred to as the SDE+ scheme. It took effect on 1 July 2011 and aims to make the production of renewable energy in the Netherlands more competitive than its predecessor, the SDE scheme.

The SDE+ scheme is a feed-in premium subsidy scheme that provides grants to investors for projects involving several categories of sustainable energy production. The specific categories that are eligible for SDE+ are determined by the Ministry of Economic Affairs on an annual basis. For 2013, these categories include certain types of (onshore) wind, solar, biomass, geothermal and hydropower projects. Depending on the relevant technology, the SDE+ subsidy is awarded for a period of 5, 12 or 15 years.

The SDE+ scheme will each year open for tender bids in several phases (for 2013 there are six phases). Within a phase each technology has its own subsidy. In each phase the maximum subsidy amount gradually increases, which encourages parties to submit, on a first-come-first-served basis, the lowest tender amount. In addition, there is a so-called 'free-category' that is open to technologies that are not covered by any of the specific categories. An example of a technology that falls within the free category is offshore wind energy. Since all technologies in this category compete with each other, it is highly unlikely that offshore wind projects will be granted SDE+ subsidies under the current incentive scheme.

As of this year, the SDE+ scheme provides for differentiation of (onshore) wind energy projects based on the number of full-load hours (the higher these hours, the lower the base subsidy amount).

The available SDE+ budget for 2013 is EUR 3 bln. The SDE+ scheme will be financed by means of a surcharge on energy bills. Subsidies that have already been awarded under the preceding subsidy schemes (such as the SDE scheme and the Environmental Quality of Electricity Generation scheme (the so-called MEP scheme) will continue to be funded from general resources.

Mechanism 2 – Green Deals

Since 2011 the Dutch government has entered into a large number of 'Green Deals' with society emphasising energy saving and local sustainable energy generation. The Green Deals do not intend to provide financial support to eligible projects but aim to remove obstacles for the development of initiatives, such as in the permitting process. Through comprehensive consultations, the Dutch government has so far identified approximately 150 suitable initiatives.

Mechanism 3 – Fiscal incentives

The Energy Investment Allowance, *Energieinvesteringsaftrek*, (EIA) gives a financial advantage to parties that invest in energy-efficient technologies and sustainable energy generation. An annual energy list determines which types of equipment qualify for this programme. Qualifying investments can be offset against corporate income tax liability. In 2013, companies may deduct 41.5% of their annual investment costs for energy-saving. The available budget for 2013 is EUR 151 mln.

In addition, the Environmental Investment Deduction scheme, *Milieu Investeringsaftrek* (MIA) offers a tax deduction of a share of the environmentally friendly investment costs and the Random Deductions for Environmental Investment schemes, *Willekeurige afschrijving milieu-investeringen* (Vamil) provides voluntary depreciation on environmentally friendly investments, which means that the investor can decide when to write-off the investment costs. These schemes provide an incentive to choose the least polluting alternative. Both schemes have separate annual budgets. For 2013, EUR 101 mln is available for the MIA scheme and EUR 24 mln is available for the Vamil scheme.

Mechanism 4 – Renewable energy in transport/ biofuels

According to the Renewable Energy Directive (2009/28/EC) (RED) in 2020 10% of all energy used in transport must be derived from renewable sources. Such promotion of renewable energy in transport must contribute to the reduction of greenhouse gas emissions and to the decrease in the dependency on oil import. In the Netherlands the liquid biomass and biofuels provisions of the RED were implemented with retroactive effect as of 1 January 2011. Dutch legislation provides for an annual target of 5% for 2013 and 5.5% for 2014. This means that, for 2013, 5% of the total sales (i.e. the total release of petrol, diesel and biofuels brought onto the Dutch market) should consist of biofuels.

Not only biofuels (including biogas) for road transport are eligible, but also electricity and hydrogen used for transport (but excluding electricity for rail transport) and biofuels used in mobile machines such as inland ships. As of 1 January 2013 also biokerosene for aviation, biofuels for inland shipping and untaxed red diesel for inland shipping may voluntarily opt-in. Small companies and traders may apply for an opt-out. For the first few years the Ministry of Infrastructure and Environment expects that the targets will mainly be reached with biofuels. In the long run, electricity and hydrogen may contribute. Ultimately, in 2014, the final targets to reach the 10%-target in 2020 (or more) will be discussed.

Renewable energy may only count towards the realisation of the targets if the sustainability criteria as set out in the RED are met. Therefore, the Netherlands Emissions Authority (NEA) is assigned the task of establishing an automated central register in relation to the biofuels obligations. The register is still under development but the NEA already operates a system of registration and declarations. This includes verification declarations to prove compliance with sustainability criteria, sustainability declarations for the transfer of consignments of biofuels and double counting declarations based on the Dutch Verification protocol on double counting of biofuels (published on NEA's website).

Mechanism 5 – Priority access to the grid

On 30 November 2010 the Dutch Senate passed the Act on 'priority access for renewable electricity' (*Wet voorrang voor duurzaam*). Pursuant to this Act, grid operators must give priority access to renewable electricity in cases where there is a shortage of transmission capacity. Under this Act the costs for congestion management are, as yet, borne by the end users. This is, however, still subject to discussion and may change in the future. The Act and underlying implementing rules have not yet entered into force.

Mechanism 6 – Crisis measures

The Crisis and Recovery Act (*Crisis- en Herstelwet*) came into force on 31 March 2010. The Act includes provisions for speeding up infrastructure projects, as well as projects concerning sustainability, energy, and innovation. The possibility of speeding up projects, by means of faster decision-making and reduced legal risks, is intended to ensure additional investment and employment, which will help to combat the economic crisis in the short term and to promote the long-term recovery of the country's economic structure. The Crisis and Recovery Act was meant to be a temporary measure. Recently, it was, however, decided to change this and to incorporate this Act permanently into Dutch law.

Mechanism 7 – Heat

Almost a third of Dutch energy consumption involves heat, including heat supplied by renewable sources. On 10 February 2009 the Dutch Senate passed the legislative proposal of the Heat Act (*Warmtewet*). This Act regulates the supply of heat to private and business customers and introduces price regulation and a licensing system. The Act has, however, not yet entered into force because the envisaged price regulation proved to be too complicated. It was subsequently decided to amend the Act. The revised Act is expected to enter into effect on 1 July 2013.

Poland



Gigantic water pipes connecting to a hydroelectric power station, Poland

Numerous amendments to the Polish Energy Law of 1997, which introduced mechanisms supporting renewable energy generators, implemented the first RES Directive on 1 October 2005. Despite the lapse of the 5 December 2010 deadline for the transposition by the Member States set forth in Directive 2009/28/EC on the promotion of the use of energy from renewable sources (the Second RES Directive), the Second RES Directive has still not been implemented.

Primarily due to the above, there have been discussions about a whole new draft of a separate Renewable Energy Sources Act since early 2011, which is meant to significantly change some of the support rules, although basic principles are anticipated to remain substantially the same. The Polish Ministry of Economy is currently conducting intensive works on the most recently published version of the Renewable Energy Sources Act. It was planned that the new law enter into force on 1 January 2013, but the actual works, including wide public consultations, accelerated and slowed down at different times, and have been accompanied by numerous controversies. The completed draft regulation has been amended several times (with the last version published in October 2012, and another one expected from the Council of Ministers at the end of the 1st quarter of 2013), and now the earliest realistic date of its entry into force seems to be 2014. Therefore it is still the original support system that is applicable to renewable energy sources at the time of publication of this summary, but a system reform is being awaited and is actually necessary to end the period of uncertainty in the industry and to allow for the making of vital long-term decisions.

The current support system has contributed towards the development of renewable energy sources in Poland,

especially to the significant increase of onshore wind farm investments. According to the Regulator's database, the installed capacity of wind energy generation sources in Poland was only 287,90 MW in 2007, whereas in 2012 it increased to 2341,312 MW.

Under the current legislation, the development of renewable energy sources in Poland, applicable to all renewable energy units (regardless of their technology or capacity and including the most developed sector of wind energy) is based on several elements such as: (i) certificates of origin of energy, (ii) mandatory purchase of all energy generated from renewable sources, (iii) transmission of and off-take duty on energy from renewable energy sources connected to the transmission and distribution grids and (iv) excise tax exemptions. However, the development of certain technologies, such as solar, biomass or biogas projects has been very limited, primarily due to insufficient support (i.e. the existing support neither specifies any preferential grid connection for smaller solar units, nor diversifies the actual level of support due to the size or technology of generation).

If the new support system enters into force substantially as presented in the latest draft available, then the green energy support system in Poland will be differentiated according to the size and technology of renewable energy sources and, as a result, is expected to include specifics for sources such as solar and biomass, significantly raising actual support for these kind of projects. Additionally, under the current regulation of renewable energy support there are several detailed regulations that allow some larger units in conventional power plants to qualify as "green", where the co-firing process is applied. This is viewed by many as a primary source of the oversupply and decreasing value

of green certificates (which are the basic element of the support system) that has been observed recently. The new support scheme is presented by the Polish government as aiming to provide a stable and predictable support system, properly differentiated for particular technologies, and taking into account the sector development to date.

A general overview of the planned support scheme for renewable energy is presented below.

Green certificates and mandatory purchase of energy

The Draft (in the version published in October 2012) presents a support scheme for particular renewable energy sources generated by units divided into several groups depending on their total capacity and technology applied. Under the planned regulation the support system will be based (as the current one is) on two principal elements: (i) the mandatory purchase of energy at a regulated price (the current proposed figure is 198.9 PLN/MWh, to be indexed by inflation and not to be lower than the average black energy price) through to the end of 2035, and (ii) the “green certificate” system, whereby each MWh of green energy receives a certain number of certificates, which may be traded and whose value is derived from the statutory duty, imposed on most energy companies, to have a certain percentage of green energy in their overall portfolio (this duty may be met by purchasing and redeeming these certificates, with the other method being the payment of the so-called substitution fee). The currently proposed figure constituting the base value of the certificate (i.e. the substitution fee) is 286,74 PLN/MWh, with no indexation.

Certain smaller renewable energy installations (including for example some of the solar installations), subdivided into several groups, will also be subject to a mandatory purchase by the supplier of last resort, but the price (referred to as a “feed-in tariff”) will be determined by way of a Ministry Ordinance and will be guaranteed for a given installation for a period of 15 years following commissioning (and in any event not beyond 31 December 2027). This means that the price will be guaranteed for the given installation at the level resulting

from the relevant Ordinance binding at the time the given installation is commissioned (price levels will therefore change periodically, but will remain stable in respect of the particular installation following commissioning).

In an attempt to promote stability, a renewable energy installation will be eligible to receive green certificates for a continuous period of 15 years following commissioning of the given unit. This means that units already operating when the new law becomes effective will receive support for a shorter duration, since commissioning (and not the entry into force of the new regulations) is the starting point for calculating the 15 year period.

Corrective indices

Differentiation of the support system in relation to the size and technology of renewable energy sources is to be obtained primarily through the so-called corrective indices (i.e. indices differentiating the number of green certificates a given installation receives per 1 MWh of generation due to its size and technology). After several amendments of the proposed indices and also of the location of the statutory regulation, the current corrective indices have been placed in a separate act, meaning that not only the Renewable Energy Act, but also other new acts are being drafted for the Polish energy sector, such as the Energy Law and the Gas Law.

Indices for future periods will be set by the Minister of the Economy once every three years, for the next five year period. The indices for the first two years of each five year period are to be the same as the indices for the last two years of the five year period covered by the previous ordinance issued by the Minister of the Economy. Furthermore, the Renewable Energy Sources Act proposes that facilities in operation on the effective date will receive green certificates indexed by 1.0 for 15 years from the commencement of their operation.

Corrective indices proposed in the draft Renewable Energy Sources Act (based on October 2012 draft)¹ are as set out in the following table:

Type of energy	2014	2015	2016	2017
Biogas > 200 kW	1,10	1,06	1,02	1,00
Biomass > 50 MW	1,15	1,13	1,10	1,08
Wind onshore > 500 kW	0,90	0,88	0,86	0,83
Wind offshore	1,80	1,80	1,80	1,80
Hydro energy > 20 MW	2,30	2,25	2,20	2,15
Geothermal energy	1,20	1,20	1,20	1,20
Solar 1 MW – 10 MW	2,45	2,32	2,20	2,07
Solar (installed on buildings) 100 kW – 1 MW	2,85	2,70	2,55	2,40

¹ It is quite likely, that figures eventually adopted may be different.

Similarly to the feed-in tariff, the corrective indices will vary over time, but once a given installation obtains an index applicable at the time of its commissioning, it will keep the index at the same level for the subsequent 15 years.

Priority grid connection

Priority grid connection for renewable sources has been provided for in the draft Energy Law (drafted in parallel to the draft of the RES Act). Grid operators will be obliged to provide priority for transmission, distribution and off-take of energy produced from renewable energy sources. Unlike at the moment, grid operators will also be obliged to specify the grid upgrades necessary to connect renewable sources, without limiting power output, and to complete them by specific dates. The procedures for connecting to the grid for so-called micro-installations have also been simplified to a great extent.

Other forms of support

The current and planned renewable energy support system in Poland is supplemented by certain additional legislative measures, such as:

- excise tax exemptions;
- simplified procedures for connecting to the grid;
- beneficial support for smaller installations; and
- simplified registration procedures for smaller installations.

Growth perspective

Up until now, the Polish renewable energy sector has been developing quite dynamically, with the most effective support, however, being actually offered to onshore wind energy. Other technologies, such as solar, have not developed significantly. Continuously delayed works on the new RES Act has resulted in problems with financing renewable energy investments, due to some anxiety among investors and a sense of a lack of stability and predictability as to the future shape of the renewable energy support scheme in Poland.

It seems, however, that this uncertainty on the green market could be considered only as a temporary one. It is expected that the new draft legislation will eventually be adopted in the next couple of months and actually enter into force in early 2014. Moreover, new support schemes for renewable energy are quite likely to be more stable and predictable than the current ones and differentiation of support mechanisms for particular technologies may contribute to create certain new opportunities. Due to the above, despite the temporary uncertainty on the Polish green market, it may be assumed that the Polish renewable energy sector will continue to develop dynamically and may be considered as promising for potential investors.



Power generating wind turbines, Poland



Romania



Budeasa dam, Arges, Romania

Green Certificates (GCs)

The current support mechanism for renewable energy in Romania is the combined compulsory quotas with trading of GCs. The generators of electricity from renewable sources¹, receive a number of GCs for each MWh delivered to the grid, while the electricity suppliers are under an obligation to buy GCs offered for sale by the generators up to a certain mandatory quota calculated as a percentage of the number of MWh that each supplier delivers to end consumers in one year.

The number of GCs varies depending on the renewable source as follows:

- (a) hydropower plants of up to 10 MW: three GCs for each MWh produced by new hydropower plants, two GCs for each MWh produced by refurbished hydropower plants and one GC for each 2 MWh produced by hydropower plants that are neither new nor refurbished;
- (b) two GCs until 2017 and one GC starting in 2018 for each MWh produced by wind farms;
- (c) six GCs for each MW produced by solar power plants;
- (d) two GCs for each MWh produced from geothermal sources, biogas, bio-liquids, and biomass²;
- (e) one GC for each MWh produced from waste fermentation gas or mud fermentation gas³.

The GCs are valid for 16 months. Renewable generation capacities commissioned by the end of 2016 will receive green certificates for (i) 15 years, if built with new equipment or (ii) seven years, if built with second hand equipment and installed in isolated areas. Hydro power plants of up to 10 MW will receive GCs for 10 years, if refurbished and for three years, if non-refurbished. During the tests for commissioning for all energy capacities, regardless of the source, one GC is granted per each MWh.

The energy suppliers are under an obligation to acquire GCs for the energy used for their internal consumption or sold to end-consumers. Conventional generators are under an obligation to acquire GCs for the energy used for their internal consumption (other than technological) and energy delivered to end-consumers connected through a direct line to conventional generation capacities.

The national regulator sets the mandatory number of GCs that have to be acquired quarterly by each electricity supplier or generator (which is the product between the annual mandatory quota of GCs⁴ and the quantity of electricity used for internal consumption or delivered to end-consumers as per the above).

¹ Generators developing power plants with installed capacities of over 125 MW have an obligation to notify the European Commission in order to benefit from GCs.

² Three GCs are granted for each MWh produced from biomass resulting from energy crops (i.e. crops that are especially cultivated for biofuels and biomass) and forestry waste.

³ For the electricity produced in high-efficiency cogeneration systems from the renewable sources enumerated above, one additional GC is granted. The generator can choose between the GCs and the high efficiency co-generation bonus.

⁴ The mandatory quota for 2012, as adjusted by ANRE, is 0.1188 GC/MWh for electricity used for internal consumption or delivered to end-consumers.

GCs price

In 2012, the minimum price for a GC was 28.172 EUR/GC (121.89 RON/GC) and the maximum 57.389 EUR/GC (248.30 RON/GC)⁵. The GCs prices are annually indexed by the average inflation index published by Eurostat. If the suppliers or generators do not comply with their quarterly quota of GCs, they have to pay the maximum GCs sale price, for each non-acquired GC. The money is collected into a guarantee fund⁶ that will buy pro-rata, according to the electricity generated, the non-acquired certificates at a price at least equal to the minimum price. If the suppliers or generators do not comply with their annual quota of GCs, they are under the obligation to pay a EUR 110 penalty for each non-acquired GC. The money is collected and used for granting incentives for small renewable energy projects.

The GCs can be sold on a centralised GCs market and/or by sale purchase agreements.

Regulated tariffs for capacities up to 1 MW or 2 MW

The electricity generated by high efficiency cogeneration from biomass power plants, with installed capacities of up to 1 MW or 2 MW, can be sold to the electricity suppliers in the area where the plants are located at regulated tariffs established by the regulator. No GCs are granted when the electricity is sold at regulated tariffs. The regulated tariff has not yet been set by the regulator. For the moment the electricity is sold at the market price and such power plants receive GCs.

Monitoring activity

The national regulator monitors the investment and operational costs/incomes of the generators. If the national regulator finds that the IRR for electricity generators is 10% higher than the approved IRR for each renewable technology, the regulator proposes measures to reduce the number of GCs for the respective technology. The adjustment proposed by the regulator must be approved by the Government and will only be applicable to renewable energy capacities that will start producing electricity after the date of its entry into force, but not earlier than 1 January 2015, except for photovoltaic projects for which the adjustment may begin on 1 January 2014.

Proposed amendments

Recent statements made in the press by various Romanian officials indicate that GCs have triggered an increase in the electricity prices applicable to end-consumers (approximately 10%). As a result the GCs support scheme currently in force should be adjusted to lower the impact on end-consumers. It appears that the adjustment to the current support mechanism would entail a reduction in the number of green certificates granted to generators and/or a reduction in the maximum price.

⁵ At the time of writing, the revised minimum and maximum prices for 2013 were yet to be published by the national regulator.

⁶ The fund has yet to be set up.

Russia



Mechanism 1 – The Kyoto Protocol

Russia adopted several central legislative acts allowing the realisation of two Kyoto Protocol structures: Joint Implementation and the Green Investment Scheme. The Clean Development Mechanism, allowing countries to earn tradable Certified Emission Reduction credits for emission/reduction projects in non-Annex I countries, remains unregulated in Russia.

Joint Implementation (JI)

According to Article 6 of the Kyoto Protocol, for the purposes of fulfilling its obligations under Article 3, any party may transfer to or acquire from any other party Emission Reduction Units (ERUs) awarded for the implementation of projects aimed at reducing anthropogenic emissions or at increasing absorption of greenhouse gases in any sector of the economy.

Under Russian law, JI 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 owners of the source of emissions (the project host) and the investors (which can only be represented by a Russian company).

Government Decree No. 780 dated 15 September 2011 sets out the procedure for state approval of a JI project, including the following stages:

- application for the approval of a JI project lodged to Sberbank, one of the Russian major state-owned banks fulfilling the function of the “carbon units operator”, attaching project documentation, relevant expert conclusions, an investment declaration stating that

the profit derived as a result of the relevant project will be used for the purposes of realisation of further projects aimed at energetic and ecological efficiency increase and certain other documents;

- examination of the application by Sberbank in order to define that all required documents are in place followed by Sberbank’s evaluation of the project to define its energetic and ecological efficiency, technical and financial potential and economic and social effect; and
- approval of the project by the ‘Coordination Centre’ (i.e. the Russian Ministry of Economic Development (MED)).

However, notwithstanding the importance of the existing JI rules in Russia, a number of issues remain unresolved. For instance, the need for a Russian-based investor means that the transfer of ERUs, should take place (or, at least, be from sources) in the territory of the Russian Federation, which may entail specific Russian tax consequences (e.g. profits tax and VAT) and cause uncertainty about the legal nature of the contractual relationships between the project host, investors and buyer of ERUs insofar as the legal nature of the ERUs remains somewhat unclear under current Russian legislation.

In practice, about 120 JI projects have been approved by the Russian MED using the framework procedure discussed, and about 30 JI projects were under the approval procedure as of the beginning of 2013. The approved projects include, among others, projects for the utilisation of associated gas, for landfill gas collection and utilisation, and for modernisation of the metallurgical enterprises.

It is to be noted, however, that the mentioned Government Decree No. 780 establishes an important restriction in terms

of JI project realisation: there is a limit to the amount of ERUs which may be subject to such projects, which is equal to 300 mln units. Interestingly, the said limit has already been exceeded by the 150 approved JI projects and above mentioned applications. Therefore, a further increase to the 300 mln ERUs limit is being actively awaited by the market players in order to be able to implement new JI projects in Russia.

Green Investment Scheme (GIS)

This legal structure provided for by Article 17 of the Kyoto Protocol allows inter-governmental emission trading and Assigned Allocation Units trading. The realisation of this mechanism in Russia was not possible until 27 June 2009, when a special Government Order No. 884-r was adopted. According to this Order, Sberbank was appointed to participate in the implementation of pilot projects for GHG emissions trading. Moreover, MED, with the participation of both the Russian Ministry of Foreign Affairs and Sberbank, was empowered to negotiate on the conclusion of international treaties (memoranda of understanding) relating to participation in carbon trading for submission to the Russian Government.

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

According to Article 16 of the Federal Law on Environmental Protection of 10 January 2002, 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 into catchment areas;
- underground and soil pollution;
- disposal of production and consumption waste;
- pollution of the environment with noise, heat, electromagnetic, ionising and other types of physical influences; and
- 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 therefore not regarded as taxes. The correctness and timely payment of such levies is controlled by the Russian ecological, technical and atomic supervision service (*Rostekhnadzor*).

The adoption of the Federal Law on environmental protection was not followed by a quick development of the system of laws and regulations required for the practical implementation of that Law. Many procedures for developing such a system envisaged by the Law have not been introduced yet, including the procedures for limiting, suspending or terminating the operations of companies that cause harm to the environment and a system of tax or other benefits for companies employing advanced environmental technologies and implementing ecological measures.

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.

However, Russian legislation in the field of the application of non-traditional renewable energy sources, including wind energy, remains not well developed. A first step forward towards the encouragement of the use of renewable energy sources was made by the Federal Law "On energy saving and energy efficiency increase" dated 23 November 2009.

In accordance with this law, for example, all state (regional and municipal) programs in energy saving fields must provide for an increase in the use of secondary energy sources and/or renewable energy sources. Moreover, it establishes several tax incentives in this sphere, including a corporate property tax exemption for energy efficient equipment, an investment tax credit for companies investing in the creation of renewable sources of energy, an increased depreciation coefficient for properties with high energy efficiency class, and a partial compensation for interest paid on loans and credits in the framework of energy saving projects.

Mechanism 4 – Heat

The use of renewable energy sources, including biomass, is not widespread 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.

In addition, a Federal Law "on heat supply" was adopted in this sphere on 27 July 2010 providing for a program of heat supply systems' development, as well as general tariff principles for the services of heat production, realisation, transfer and dispatch. It is noteworthy, however, that this document does not determine clearly the state policy in the field of generation of heat from renewable sources.

Mechanism 5 – Various sources of funding

Financing may be provided from Russian federal and regional budgetary sources, as well as by investors.

Background

The energy potential of renewable energy sources (RES) in the Republic of Serbia is significant and estimated at over 4.3 mln tonnes of oil equivalent (toe) annually (participation of biomass in the total potential amounts to approximately 63%, with 14% of hydro potential, 14% of solar energy potential, 5% of wind energy potential and 4% of geothermal energy potential). Notwithstanding the above, Serbia at the moment may not be recognised as a country in which RES are systematically and thoroughly used. With a minimal number of plants for RES exploitation and insignificant annual production accomplished therein, Serbia is still struggling to have its potential in this field adequately used.

Becoming more and more aware of sustainable development demands, Serbia appears decisive in its intention to encourage usage of RES. Not only is promoting RES stated as one of the goals to be achieved under several national Strategies (such as the Energy Development Strategy and the Sustainable Development Strategy), but mandatory legislation has been transforming over the years and has shown an enhanced understanding of RES' importance.

Regulators

In addition to the Energy Agency of the Republic of Serbia (the main state regulatory body with competence relating to production, trade and distribution of electricity, natural gas, oil and oil-products) a new regulatory body was established in 2004 – the Energy Efficiency Agency. This authority is principally in charge of preparing the proposals and programs relating to measures aimed at enhancing energy efficiency and RES exploitation, providing advice to relevant stakeholders and organising educational activities for the promotion of energy efficiency, while at the same time monitoring the relevant programs' implementation.

Legal framework

— International

- In 2006, Serbia ratified the Energy Community Treaty and assumed the obligation to implement the EU Directives 2001/77/EC and 2003/30/EC
- In 2007, Serbia ratified the Kyoto Protocol
- In 2009, Serbia became a member state of the International Renewable Energy Agency (IRENA), whose goal is to "promote the widespread and increased adoption and the sustainable use of all forms of renewable energy"

— National

- Energy Act (2011) with implementing regulations
- Planning and Construction Act (2009) with implementing regulations
- Environmental Protection Act (2009) with implementing regulations

Incentive measures

As mentioned above Serbia is considered to have potential for the widespread use of RES in the production of both heating (especially by means of its biomass and solar) and electricity power (via small hydro-power and wind-power plants, up to 10 MW). In line with this and the intention to promote and encourage a wider use of RES in Serbia, the Energy Act envisages a category of "privileged" electrical power and heating producers, such as producers generating power through RES. However, the relevant implementing regulations allowing for the application of state-subsidised mechanisms favouring RES producers have been adopted only with respect to electrical-power producers, whilst the relevant regulations for RES heating producers are still pending.

Electricity: feed-in tariff mechanism

Producers of electrical energy from renewable sources may apply to obtain eligible producer status and subsequently become entitled to the feed-in tariff for delivered energy. In order to benefit from the feed-in tariff, the privileged producer must conclude a written power-purchase agreement, as a buyer, with the state's incumbent, EPS (public enterprise for power generation, distribution and trade). However, the costs incurred through this incentive are finally borne by the end customers. The agreement is entered into for a 12 year period and it may be unilaterally terminated by the producer on 30 days' notice.

The current incentive measures became effective in January 2013 and they envisage the application of feed-in-tariffs as per the type of power-plant producing electricity from RES and the capacity installed (P), stated in MW.

The table on the next page contains details as to currently applicable feed-in-tariffs (EUR cent/kWh):

Type of power plant	Installed powerP (MW)	Incentive measure – feed-in tariff (EUR cent /kWh)
1. Hydro power plants		
	up to 0.2	12.40
	0.2–0.5	13.727–6.633*P
	0.5–1	10.41
	1–10	10.747–0.337*P
	10–30	7.38
on existing infrastructure	up to 30	5.9
2. Biomass power plants		
	up to 1	13.26
	1–10	13.82–0.56*P
	more than 10	8.22
3. Biogas power plants		
	up to 0.2	15.66
	0.2–1	16.498–4.188*P
	more than 1	12.31
for biogas of animal origin		12.31
4. Landfill and sewage gas power plants		6,91
5. Wind power plants		9.20
6. Solar power plants		23
	on facility up to 0.03	20.66
	on facility 0.03–0.5	20.941–9.383*P
	on ground	16.25
7. Geothermal power plants		7.5
	up to 1	9.67
	1–5	10.358–0.688*P
	more than 5	6.92
8. Waste power plants		8.57
9. Power plants combined with coal production	up to 10	8.04
10. Power plants combined with natural gas production	up to 10	8.89

Certain upper limits for using the incentives are legally set (i.e. the above incentives apply until the total installed capacity reaches the value of: (a) 10 MW for solar power plants, or (b) 500 MW for wind power plants).

Heating

The Serbian authorities are currently working on new incentives intended to encourage renewable heating production. No details on what such measures will be are available at the moment, since the relevant regulations have not been adopted yet.

Planning and construction in the field of RES

According to the Planning and Construction Act, power producers using RES are granted certain rights facilitating the construction procedure and, later on, operation of the power plant (e.g. the abolition of licence requirements for temporary structures, which have as their main purpose

the investigation of possibilities for the use of RES facilities; legal servitudes relating to wind-power plants; the possibility of constructing RES projects on agricultural land with the approval of the authorities and a simplified procedure for the production of solar collectors and cells).

Goals/actions

Implementation of the Serbian Energy Development Strategy implies an increase in the contribution of electricity produced from RES to the total national electricity power consumption from the current 21.2% to 27% by 2020. This goal is to be accomplished through the harmonisation of national legislation with the *acquis communautaire*, incentive measures, the elimination of administrative impediments through the amendment of the relevant regulations and co-operation with international financial institutions in order to gain financial support (loans) for future RES projects.

Measures under the Slovak Renewable Energy Act (Act No. 309/2009 Coll.) promoting electricity produced from renewable sources and from high-efficiency cogeneration (RES) vary depending on the type of renewable source (e.g. support for solar energy is constantly declining) and the capacity of the production plant (e.g. in general, power plants with an overall installed capacity of over 125 MW do not have the right to receive support in the form of mandatory off-take or additional payment). Power plants with a lower installed output are supported more than larger ones.

The key rights of a producer of electricity under RES are:

- the right to priority connection to the regional distribution grid and to priority access to the grid and the transmission, distribution and supply of electricity;
- the right to off-take electricity for the electricity price on loss;
- the right to additional payment; and
- the right to assume liability for divergence by the regional distribution grid operator.

Mechanism 1 – Mandatory off-take of electricity

The regional distribution grid operator, to which the renewable energy power plant is connected, is obliged to off-take all such produced electricity for the electricity price on loss. The price on loss represents the arithmetic mean of electricity prices for the purpose of covering losses of all regional distribution grid operators and is calculated on the basis of the schemes determined by the Slovak Regulation Office for network industries (RONI).

The guaranteed off-take of electricity applies to power plants with an overall installed capacity of (i) up to 1 MW for its whole operating life (ii) above 1 MW for the period of 15 years from the commencement of facility operation or the year of its significant reconstruction or modernisation.

An electricity producer can also supply electricity to other entities under a commercial contract (mandatory off-take is a right not duty). However, if the electricity producer wants to apply for support in the form of mandatory off-take of electricity for the electricity price on loss, then the producer is obliged to supply the entire volume of its produced electricity to the regional distribution grid operator.

Mechanism 2 – Additional payment

An electricity producer has the right to an additional payment from the regional distribution grid operator corresponding to the difference between the price of electricity produced from renewable energy sources and the above mentioned electricity price on loss.

The price of electricity produced from renewable energy sources is regulated by the Regulatory Office for Network Industries (RONI) and set at a fixed price. This price should be higher than the normal market price of electricity and depends, in particular, on the type of renewable energy source, the technology used, the date of commencement of electricity production and the size of the installed capacity (e.g. with respect to new solar power plants, the limitation concerns only facilities with an output of up to 30 kW).

In general, an additional payment is limited (i) to electricity production of up to 10 MW, but the amount varies according to the type of renewable energy source, (ii) for the period of 15 years from the commissioning of the power plant or its significant reconstruction.

In calculating long term support, the fixed price for electricity produced from renewable energy sources in the year in which the plant was commissioned is decisive. The Renewable Energy Act guarantees that this price will be used for the calculation of the additional payment in the following 15 years. This guarantees to the electricity producer that support will not be decreased significantly in the following years. However, RONI may increase the regulated price for the period of one calendar year, by imposing a surcharge that reflects the increase or decrease in last year's price of raw materials that were used for the production of electricity.

Examples of some regulated prices for energy produced from renewable energy power plants put into operation after 1 January 2013 are set out in the table on the following page. Electricity prices for energy produced from renewable energy plants put into operation before 2013 differ significantly.

Type of renewable energy source	Price of electricity in EUR/MWh
Hydro power plant with installed capacity	<ul style="list-style-type: none"> — up to 1 MW – 109,08 — 1 MW–5 MW – 97,98 — above 5 MW – 61,72¹
Solar power plant with installed capacity up to 100 kW placed on the building	119,11
Wind power plants	79,29
Geothermal energy power plant	190,51
Incineration or co-incineration of biomass by combined production	<ul style="list-style-type: none"> — intentionally cultivated biomass (excluding cereal straw) – 112,24 — other waste biomass (excluding cereal straw) – 122,64 — cereal straw – 154,27 — bioliquids – 115
Co-incineration of biodegradable parts of municipal waste with fossil fuels by combined production; if the determined share of biodegradable part in the municipal waste is reached	123,27
Incineration of biogas	<ul style="list-style-type: none"> — landfill gas or sewage treatment gas plant – 84,89 — biogas produced with anaerobic fermentation technology with a total installation power of <ul style="list-style-type: none"> • up to 1 MW incl. – 134,08 • above 1 MW – 118,13 — gas produced by thermo-chemical incineration of biomass in an incineration generator – 149,87 — fermented mixture produced by aerobic fermentation of biodegradable waste – 144,88

Mechanism 3 – Tax incentives

Electricity produced from renewable sources is exempt from electricity excise tax (the tax is currently 1.32 EUR/MWh), as stipulated by the Act on the Excise Tax on Electricity, Coal, and Natural Gas (Act No. 609/2007 Coll.).

Mechanism 4 – New renewable energy projects

Many governmental documents declare long-term support for renewable energy sources and the proposed future increase of renewable energy sources in the Slovak Republic. The National Renewable Energy Action Plan confirmed the 14% target share of energy from renewable sources in gross final energy consumption by 2020 (the same as the goal set for Slovakia by Directive No. 2009/28/EC on the promotion of the use of energy from renewable sources).

However, the support for solar and wind projects is constantly decreasing and the development of new wind or solar power plants has been stopped. The most promoted renewable energy source will be biomass, used in cogeneration for combined production of electricity and heat. It cannot be excluded that the stop-time regime may also affect other types of RES.

New renewable energy power plants with an installed output of more than 1 MW (for solar power plants – above 100 kW) can be constructed only if they receive a certificate of compliance with the government's long-term energy policy

from the Ministry of Economy, accompanied by a confirmation that the project has been approved by the transmission/distribution grid operators to which the plant will be connected.

In October 2012, the Slovak transmission grid operator, SEPS, published its study of the impact of renewable energy sources on the Slovak transmission grid. On the basis of this study, SEPS declared that it would not be possible to consider further construction of renewable energy source facilities, not even in the scope of the remaining part of the National Action Plan of the Slovak Republic, until the end of 2016 or until the transmission capacity of the Slovakia-Hungary profile has been increased. Otherwise, the safe and reliable operation of the transmission grid could be disrupted.

Therefore, investment plans may be orientated primarily on existing projects to which support has already been granted and guaranteed for at least 15 years from operation.

Under the amendments to the Renewable Energy Act effective from 1 March 2013, the facilities built or put into operation in contradiction of the law or without the above mentioned certificate of compliance from the Ministry of Economy (if needed), will not have the right to receive support. This amendment increases the power of RONI to withdraw support for renewable energy sources in cases where power plant operators repeatedly violate some of their duties.

¹ Under the last amendment of the Renewable Energy Act, hydro power plants with installed capacity over 5 MW will not have right to mandatory off-take or additional payment.

Background

The Energy Act (*Energetski zakon*, Official Gazette of the Republic of Slovenia No. 97/1999 *et al*) (EZ) determines a legal framework for electricity generated from renewable energy sources. Pursuant to the EZ the Government of the Republic of Slovenia adopts national targets with respect to the future consumption of electricity generated from renewable energy sources for a period of ten years. The Resolution on the National Energy Programme (*Resolucija o Nacionalnem energetskem programu*, Official Gazette of the Republic of Slovenia No. 57/2004) (ReNEP) coordinates the future operations of institutions dealing with energy supply and determines goals and mechanisms for the transition from assuring the supply with energy products and electricity to a reliable, competitive and environmentally friendly supply of services. Currently a long term national energy programme is in preparation which is supposed to lead Slovenia's transition to a low carbon society by 2030 and to increase the share of renewable energy sources by 20% by 2020 and 30% by 2030, as well as to increase the amount of energy produced locally. The new programme is expected to be adopted in 2013, as are the amendments to the EZ, that are mostly driven by European legislation related to the third energy package.

Guarantee of origin as a condition for obtaining support

To obtain support, producers need to prove that electricity has been produced from renewable energy sources through guarantees of origin. The Slovenian Energy Agency (*Javna Agencija Republike Slovenije za energijo*) issues the guarantees of origin upon a producer's request, under the following conditions: (i) the electricity generating plant must have a valid declaration (see Regulation on the issuing of Declarations for production units and Guarantees of Origin, *Uredba o izdaji deklaracij za proizvodne naprave in potrdil o izvoru električne energije*, Official Gazette of the Republic of Slovenia No. 8/2009 *et al* which determines the conditions and procedure for obtaining a declaration) and (ii) the investor has to prove that the plant has been operating in compliance with regulatory requirements for the whole period of the guarantee. The declaration is valid for five years and is issued for each reporting period after the expiry of a calendar month.

Mechanism 1 – Connection to the grid

At the request of a producer, distribution and transmission system operators are obliged to connect to the grid every plant that has (i) a valid energy authorisation, (ii) consent for the connection to the grid and (iii) a valid declaration

for the plant. Moreover, an investor in a plant can also file a request to connect a plant which does not have a valid declaration, but will have to obtain one within six months after the construction completes and the plant starts being operational. An investor with a valid declaration does not bear the costs related to the strengthening of the transmission and distribution grid which are necessary for the plant's operation but bears the production costs of the interconnection between the particular plant and the grid.

Mechanism 2 – Support

Pursuant to EZ, support can be granted when: (i) the cost of electricity generation, including the normal market yield in relation to the invested assets, exceeds the electricity price on the market and (ii) the nominal electrical capacity of a plant does not exceed 125 MW. The Decree on Support for Electricity Generated from Renewable Energy Sources (*Uredba o podporah električni energiji, proizvedeni iz obnovljivih virov energije*, Official Gazette of the Republic of Slovenia, No. 37/2009 *et al*) (Decree on Support) provides that support is granted either in the form of financial operating aid, or for plants whose nominal electrical capacity is lower than 5 MW, also in the form of a guaranteed purchase price for the current operation, as well as providing the mechanism for obtaining support. Support may be granted for a maximum period of 15 years or for a shorter period, depending on when the plant became operational for the first time.

Support is paid for net electricity generated and which a plant either: (i) supplied to the grid, (ii) sold on the market or (iii) used for its own off-take. Reference costs form the basis for (i) the price determination stipulated in the contracts on guaranteed purchase (formula) and (ii) the amount of financial operating aid in the contracts on the provision of support. Reference costs are determined in EUR/MWh of net electricity generated.

Generally the following rates are applicable for the guaranteed purchase price (which equals the applicable reference costs) in 2013 depending on the nominal electrical capacity of the plant:

- hydro energy: from 82,34 to 105,47 EUR/MWh;
- wind energy: 95,38 EUR/MWh;
- geothermal energy: 152,47 EUR/MWh;
- biomass energy: from 167,43 to 224,35 EUR/MWh (or determined individually);
- biogas: from 129,15 to 160,05 EUR/MWh;
- gas generated from mud of wastewater treatment plant: from 66,09 to 85,84 EUR/MWh;

- landfill gas: from 61,67 to 99,33 EUR/MWh;
- biodegradable waste: from 0 to 77,44 EUR/MWh;
- solar energy: from 289,98 to 477,78 EUR/MWh for plants that obtained support in 2009; from 218,56 to 444,34 EUR/MWh for plants that obtained support in 2010, from 231,98 to 382,23 EUR/MWh for plants that obtained support in 2011, from 202,99 to 290,82 EUR/MWh for plants that obtained support in the first half of 2012, from 137,89 to 197,55 EUR/MWh for plants that obtained support in the second half of 2012 (until December 2012), and from 97,19 to 150 EUR/MWh for plants that obtained support in December 2012*.

Financial operating aid is the difference between the reference cost and reference market price of electricity. Generally, the following rates apply:

- hydro energy: from 30,98 to 61,90 EUR/MWh;
- wind energy: from 43,17 to 54,85 EUR/MWh;
- geothermal energy: 105,86 EUR/MWh or as determined individually;
- biomass energy: from 144,28 to 206,43 EUR/MWh or as determined individually;
- biogas: from 82,54 to 94,65 EUR/MWh (only for plants with a nominal capacity below 10 MW);
- gas generated from mud of wastewater treatment plant: from 19,48 to 39,23 EUR/MWh (only for plants with a nominal capacity below 10 MW);
- landfill gas: from 15,06 to 52,72 EUR/MWh (only for plants with a nominal capacity below 10 MW);
- biodegradable waste: from 27,73 to 30,83 EUR/MWh (only for plants with a nominal capacity of more than 50 kW, plants larger than 10 MW are treated individually);
- solar energy: the operating aid is determined as the difference between the guaranteed purchase price (i.e. reference costs) and the reference market value of electricity. Thereby the reference market value in 2009 amounted to 65 EUR/MWh, in 2010 to 53,41 EUR/MWh, in 2011 to 53,13 EUR/MWh, in 2012 to 55,79 EUR/MWh and in 2013 to 50,66 EUR/MWh.

With the exception of solar energy the regulatory environment for support mechanisms has remained rather stable in Slovenia for the last four years. In January 2013 the government increased the obligatory contributions of electricity users to the financing of support mechanisms for renewable energy sources by more than 300%, which resulted in an average electricity price increase of between 6% and 8%. Although such increase in contributions represents a significant burden for large industrial electricity users on the one hand, it does improve the long term financial stability of support schemes for renewable energy sources on the other.

Mechanism 3 – Fiscal stimuli and financing

The ReNEP provides a number of measures and instruments to increase the share of renewable energy sources, namely:

- investment subsidies for renewable energy sources (on the basis of CO₂ payment relief or with direct subsidies); and
- providing financing opportunities with lower interest rates for investments in renewable energy sources.

In accordance with ReNEP the Slovenian Environmental Public Fund (EKO Fund) offers low interest rate financing, guarantees and subsidies, as well as economical, technical and financial consulting services for investments in renewable energy sources. Thus, EUR 24 mln of low interest loans (three months EURIOBR + 1,5%) are available in 2013. Applications have to be submitted by 30 November 2013 at the latest. Subsidies in 2013 are available only for investments made by natural persons.

Further, the general system of tax reliefs is also applicable to investments in relation to renewable energy sources. Recently the general R&D tax relief has been increased from 40% to 100% and the general tax relief for investments of 40% is now only limited by the general basis of tax assessment.

* From December 2012 onwards the guaranteed purchase price for solar power plants is decreased by 2% each following month. Moreover, the guaranteed purchase price in relation to solar power plants is also dependent on the type of the solar power plant. Integrated solar power plants have not been entitled to any support since 2012.

Background

In accordance with the Draft Renewable Energy Plan 2011–2020, submitted to the European Commission by the Spanish Ministry of Industry, Tourism and Trade, it is estimated that Spain's renewable energy should contribute 22.7% to the final gross consumption of energy in Spain by the year 2020. The contribution of renewables to the production of electrical energy should reach 42.3% by the same year. Such provisions indicate that Spain should exceed the objectives fixed for the said period by Directive 2009/28 on the promotion of the use of energy from renewable sources. However, the new measures adopted by the Spanish Government may make these provisions more difficult to meet.

The Spanish market for renewable energy has received high levels of investment. Most of the investment, thus far, has been directed towards solar energy as a result of the geographical location of the country and the system of incentives put in place. There is concern, however, that the latest changes in Spanish energy legislation could lead to a loss of investment due to investors' unease surrounding the lack of legal certainty and legitimate expectations in the renewable energy sector.

Mechanism 1 – The Energy Sector Act 54/1997 and the Royal Decree 661/2007 on the production of electricity in the Special Regime

Royal Decree 661/2007 was adopted in 2007 as a response to growing investments in the sector. It established a more beneficial payment regime than that previously in force (Special Regime). The main objective of the Royal Decree 661/2007 was to further develop the Energy Sector Act in relation to the economic and legal regime applicable to installations producing energy from renewable sources.

At the end of 2010, two Royal Decrees and one Royal Decree-Law, were enacted, introducing material changes to the Special Regime:

- Royal Decree 1614/2010, 7 September 2010, governs and modifies certain aspects of electricity generation activities that use solar thermoelectric and wind power technologies. Among the most important amendments introduced are the limitation on the number of equivalent hours of operation that are entitled to the equivalent premium, and the temporary reduction of premiums for wind power technology.
- Royal Decree 1565/2010, 19 November 2010, amends the main regulations establishing the Special Regime, specifically: Royal Decree 661/2007, regulating the activity of generation of electricity under the Special Regime, and Royal Decree 1578/2008, on compensation for solar photovoltaic electricity generation activity. In summary, this Royal Decree limits the right given to photovoltaic facilities under the economic regime to receive the premium during their whole lifespan to 25 years (although this period has since been extended to 30 years).
- Royal Decree-Law 14/2010, 23 December 2010, introduced an obligation for electricity generation companies to pay a toll for access to transport and distribution networks and limited the equivalent operating hours of photovoltaic installations entitled to a regulated tariff, among other measures designed to reduce the tariff deficit.

Nevertheless, this compensation scheme was ended for new installations. The enactment of Royal Decree-Law 1/2012, dated 27 January 2012, was another milestone in the process to reduce and restrict the privileged remuneration system of the Special Regime. The aim of such regulations was to eliminate the tariff deficit of the Spanish electricity system, although they were wholly unsuccessful.

By virtue of Royal Decree-Law 1/2012, economic incentives (such as feed-in tariffs, premiums and supplements) have been removed for all production facilities in the electricity Special Regime (including solar photovoltaic) which, as of 28 January 2012, had yet to be recorded in the remuneration pre-allocation registry. The removal of these incentives is equally applicable to electricity production facilities included in the ordinary regime which had not been granted administrative authorisation by the Public Administration as of 28 January 2012. Similarly, the pre-allocation procedure for the granting of economic incentives has been suspended.

These new provisions do not apply to Special Regime facilities which had submitted an application for inclusion in the Remuneration Pre-allocation Registry and whose term for an award of a formal resolution by the Administration has expired. Thus, the former installations that qualify for the Special Regime have not been affected by Royal Decree-Law 1/2012.

Recently, Royal Decree-Law 2/2013, of 1 February 2013, on urgent measures in the electricity and financial sectors has been enacted. This legislation modifies Royal Decree 661/2007, introducing new measures concerning the expenses side of the Special Regime system, with the following new core restraints:

- (i) from 1 January 2013, the retribution of regulated activities (such as transport, distribution and Special Regime) must be updated with the “Consumer Price Index excluding unprocessed food and energy products”, which entails a reduction in the payments to electricity installations owners;
- (ii) a reduction or suppression of several premiums and tariffs has been set. The former have changed their value to 0 EUR/kWh, while for the latter, for instance, some upper tariffs are lower than the older ones; and
- (iii) energy producers under the Special Regime will have to choose between selling their energy on the market, at market prices plus a premium (if applicable), or receiving the regulated tariff.

What are the benefits of the Special Regime?

Taking into account all the new measures that have recently come into force, installations that qualify for the Special Regime enjoy the following benefits:

- connection and access to the grid of the company responsible for the distribution or transport of electricity, subject to the capacity of the network;
- transfer of all of the installations’ net production of energy, whenever its absorption by the corresponding network is feasible;
- receipt of one of the two types of payment envisaged (i.e. the regulated tariff or a premium, depending on which has been chosen by the energy producer, although note that this does not apply to all renewable energy sources); and
- sale of all, or a part of, the installations’ net production through direct lines.

Who qualifies under the Special Regime?

The following installations qualify under the Special Regime where their installed capacity does not exceed 50 MW:

- installations that use high efficiency co-generation or other forms of residual energy;
- installations that use renewable non-consumable energy such as biomass or bio-fuels;
- installations that use non-renewable waste; and
- plants for treatment of agricultural and livestock waste.

Installations over 50 MW fall under the normal regime.

How does it work?

Royal Decree 661/2007 on the production of electricity in the Special Regime:

The owners of installations benefiting from the Special Regime may choose between two types of payment, namely:

- selling the electricity produced at a regulated tariff expressed as EUR cent per kWh (the regulated tariff is dependent on the category to which the installation

pertains, the capacity installed and, in some cases, on the age of the installation); or

- selling the electricity produced on the market at the price the market determines, in which case the selling price is the one set by the organised market or as a result of the negotiations held, complemented, where applicable, by a premium expressed in EUR cent per kWh.

As a result of Royal Decree-Law 2/2013 it should be noted that the premium has been reduced in most cases to 0 EUR/kWh, and energy producers under the Special Regime will have to choose between selling their energy in the market, at market prices plus a premium (if applicable), or receiving the regulated tariff, taking into account that those that choose the option of market selling will not be able to subsequently change to the tariff option. Before this Royal Decree-Law, the owners of the installations could choose the option they preferred by only giving one month’s notice to the distributor enterprise and the National Energy Commission.

Main amendments to the planned regime in Royal Decree 661/2007 according to the last legislative changes:

- restriction of the equivalent working hours entitled to equivalent feed-in tariff or bonus;
- selling obligation at a fixed tariff for solar thermoelectric plants, for at least 12 months;
- review of the economic scheme for the solar thermoelectric plants under the Special Regime;
- review of the premiums received by wind power installations under the Special Regime;
- removal of economic incentives for new production facilities under the electricity Special Regime;
- reductions in premiums and fixed tariffs; and
- restriction on the possibility of choosing a premium or fixed tariff.

Installations with capacity > 50 MW:

The Government has decided to eliminate the right to receive a bonus for installations with an installed capacity that exceeds 50 MW. Such installations are obliged to negotiate freely on the market.

It should be noted that this new legislation has raised some doubts, essentially concerning the retroactive effect of the amendments and the law’s compliance with the Spanish Constitution and Community Law, which are currently being debated.

Mechanism 2 – Guarantees of Origin

The Guarantees of Origin system was implemented in 2007 by a regulation issued by the Ministry of Industry, Tourism and Commerce (Ministerial Order 1522/2007 regarding guarantees of origin in the energy sector). Certificates are used to certify that a number of kWh of electricity produced by a producer comes from renewable sources or from high-efficiency co-generation plants.

The certificates are issued by the National Commission of Energy, which makes annotations in specific accounts created for this purpose and manages the entire Guarantees of Origin system. The information on which the accounts are based comes from the administrative register of installations for the production of electric energy, which is the responsibility of the Ministry of Industry, Tourism and Trade. Once sold, the certificates are cancelled from the corresponding accounts.

Mechanism 3 – Technical Building Code (Code)

The Code, adopted in March 2006, requires that newly constructed buildings make use of solar energy. It demands that warm water is produced by solar thermal energy at a minimum share of between 30% and 70%, depending on the daily demand volume. It also requires a minimum contribution by photovoltaic energy in new buildings from the tertiary sector. For example, for offices whose area is larger than 4,000 sqm, a part of their electrical energy must be covered by photovoltaic installations. It is estimated that this mechanism will reduce CO₂ emissions by up to 55%.

Mechanism 4 – Tax incentives

As determined in Royal Legislative Decree 4/2004, which approved the consolidated text of the Company Tax Law, a company that invests in the production of renewable energy may benefit from a deduction of 10% on the investment value. No deductions from income tax are available for physical persons at the moment, but municipalities may apply optional discounts when determining tax obligations for neighbours who invest in renewable energy sources.

These include:

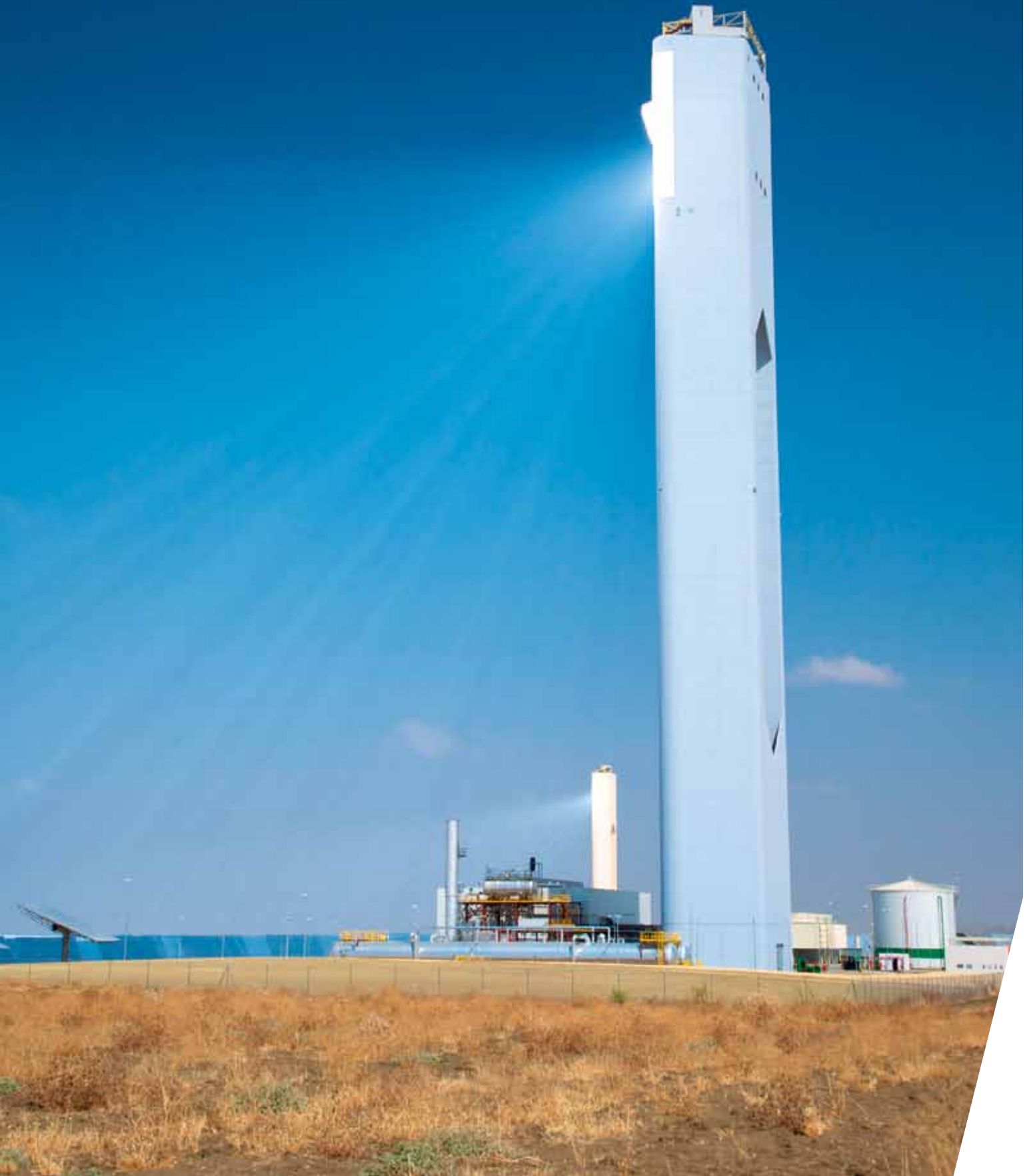
- a reduction of up to 50% on Economic Activities Tax;
- a reduction of up to 50% on Goods and Real Estate Tax; and
- a reduction of up to 95% on Constructions, Installations and Works Tax.

This incentive is contained in the text of the Law on Local Tax Offices, Royal Legislative Decree 2/2004, which approves the consolidated text of the Law on Local Tax Offices.

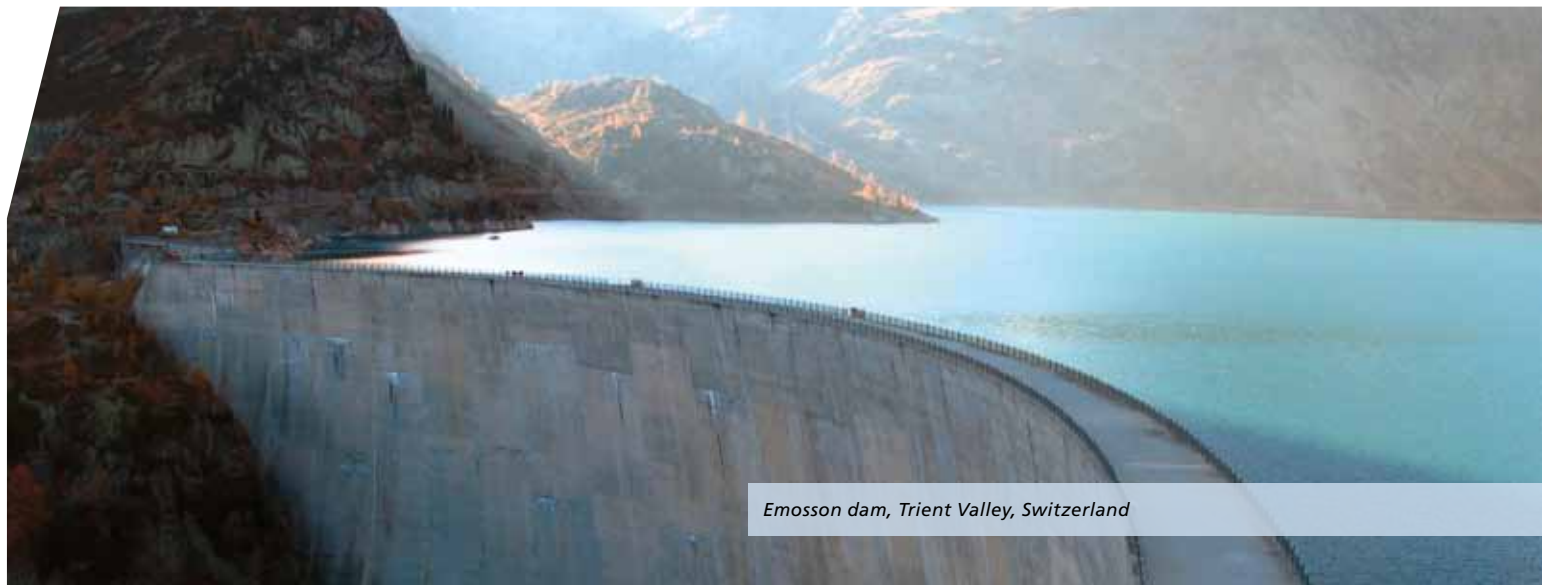
As a last step taken to reduce the tariff deficit, the Spanish Government has enacted the new Fiscal Measures Sustainability of the Energy Sector Act, 15/2012 of 27 December 2012. This Act aims to harmonise the tax system with a more efficient and environmentally-friendly use of energy, by internalising the costs of energy production.

In order to achieve this goal, a new tax over the value of electricity produced (both under the ordinary regime and the Special Regime) has been created, among others. The tax rate applied is 7% on all installations under the Special Regime.

Solar power station, Seville, Spain



Switzerland



Emosson dam, Trient Valley, Switzerland

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

The Swiss Federal Energy Act and the Swiss Federal Energy Ordinance are Switzerland's main mechanisms for encouraging the development of renewable energy. Today, Switzerland generates approximately 52% of its electricity from renewable sources, with hydropower plants contributing 95% of that renewable energy. Switzerland intends to increase the share of electricity produced from renewable energy by 5,400 GWh (or 10% of the country's current consumption) by 2030. This is promoted by feed-in remuneration for electricity generated from renewable sources (hydro energy up to 10 MW, photovoltaic energy, wind energy, geothermal energy and biomass energy).

Feed-in remuneration at cost covers the difference between production cost and market price, and guarantees producers of electricity from renewable sources a price that corresponds to their production costs.

Since 1 July 2011 an annual charge of up to CHF cent 0.9 (approx EUR cent 0.75) per kW/h is levied on high-voltage grid transmission costs, resulting in a distributable amount of about CHF 500 mln (approx EUR 409 mln) per year.

The Swiss Federal Energy Ordinance sets the principles governing the compensatory feed-in remuneration as well as the remuneration rates (CHF cent per kW/h) for various types of facilities:

- hydro energy: CHF cent 7.5–26 (approx EUR cent 6.15–21.30) per kWh
- photovoltaic energy: CHF cent 21.6–42.8 (approx EUR cent 17.70–35.05) per kWh

- wind energy: CHF cent 21.5 (approx EUR cent 17.60) per kWh
- geothermal energy: CHF cent 22.7–40 (approx EUR cent 18.60–32.75) per kWh
- biomass (waste combustion): CHF cent 11.4–14.2 (approx EUR cent 9.35–11.60) per kWh
- biomass (sewage gas): max. CHF cent 24 (approx max. EUR cent 19.65) per kWh
- biomass (other): CHF cent 17.5–28 (approx EUR cent 14.30–22.90) 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). Most of the rates will be gradually reduced over that period of time in view of the anticipated technological progress.

These reductions will, in general, only apply to newly registered production facilities, which will then receive their remuneration based on a constant rate throughout the entire period of remuneration.

New or upgraded facilities may register with the national grid company "swissgrid". Since there were so many registrations for compensatory feed-in remuneration after the start of the remuneration scheme on 1 May 2008, the total distributable amount of CHF 265 mln (approx EUR 215 mln) per year and CHF 500 mln per year (approx EUR 409 mln) since 2011 was quickly exhausted and out of a total of 30,778 applications (as of 1 May 2013) 24,486 applications were put on a waiting list. Despite the waiting list there is still a continued interest to participate

in the remuneration scheme. Against this background, an increase in the annual charge from CHF cent 0.9 (approx EUR cent 0.75) to CHF cent 1.5 (approx EUR cent 1.20) per kWh is currently being discussed. However, such an increase is not likely to be introduced prior to 2015.

Producers of electricity from renewable energy 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 a renewable energy plant. The plant operator, however, generally bears the costs of the connection to the network.

Mechanism 2 – The revised Swiss Federal CO₂ Act and CO₂ Ordinance

As a signatory to the Kyoto Protocol, Switzerland committed itself to reducing greenhouse gas emissions. In an initial phase, CO₂ emissions were to be reduced by 8% in the period 2008–2012 compared to 1990. The main political instrument to achieve this target in Switzerland is the CO₂ Act. The CO₂ Act focuses on the reduction of fossil-based energy consumption. A regulatory tax on the consumption of fossil combustibles (CO₂ tax) was introduced in 2008 in order to achieve the target defined in the Kyoto Protocol and the CO₂ Act.

A revision of the Swiss Federal CO₂ Act was necessary in order to introduce further measures for the reduction of greenhouse gases, covering the period from 2013 onwards. By 2020, domestic greenhouse gas emissions must be reduced by 20% compared to 1990 levels. The revised CO₂ Ordinance sets out in detail the respective provisions of the CO₂ Act and lists instruments that shall make it possible to achieve the legally defined targets. The listed instruments include:

- maintaining a CO₂ tax of CHF 36 (approx EUR 29) per tonne of CO₂ with the possibility of an increase to CHF 120 (approx EUR 97) per tonne;
- subsidies of up to CHF 3000 mln (approx EUR 2430 mln) per year to support CO₂-reduction measures in buildings;
- the possibility of introducing a CO₂ tax on motor fuels;
- the introduction of CO₂ output limitations for all new cars sold;
- the introduction of a duty for manufacturers and importers of motor fossil fuels to compensate for the emissions caused by motor vehicles;
- exemption from the CO₂ tax for companies agreeing with the Federal Government on a reduction of their CO₂ emissions to a certain level – negotiating such reduction targets and thus gaining the exemption from the CO₂ tax is a key priority for energy intensive companies such as producers of cement, glass, ceramic, synthetics and paper, as well as nutrition, touristic and chemical companies;
- the improvement of the existing emissions trading scheme with a view to combining it with the European system;

- the establishment of a technology fund financed with CHF 25 mln (approx EUR 20 mln) per year from the CO₂ tax revenue. This money is used to provide guarantees for innovative companies, making it easier for them to borrow money to invest in developing new low-emission technologies.

Mechanism 3 – Energy strategy 2050

After the Fukushima Daiichi nuclear disaster in March 2011, the Swiss Government decided to abandon plans to build new nuclear reactors. In order to cover the shortfall in the electricity supply due to this decision, the Swiss Government adopted an energy strategy for 2050. Priorities will be set on increased energy savings, the expansion of hydropower, the use of new renewable energy, and, if necessary, on gas production and imports. The legislative process will start at the end of 2013.

Ukraine

Mechanism 1 – Green Tariffs

The subsidy mechanism for electricity produced from non-conventional sources (Green (feed-in) Tariffs) has been available in Ukraine since 1 April 2009.

The Green Tariff is established by the National Energy Regulation Commission (NERC) for each generating company separately and will be effective until 1 January 2030. The Green Tariff differs between different types of alternative energy sources. The Green Tariff is equal to the established retail tariff for households (the one that was effective on 1 January 2009 – EUR cent 5.17 for 1 kWh) multiplied by a peak-time adjustment factor for solar parks and hydro plants (which is equal to 1.8) multiplied by the Green Tariff Index (GTI) established by law.

Each time NERC establishes retail electricity tariff rates (currently on a monthly basis) it monitors the green tariff rates to ensure that they do not fall below a set minimum

and adjusts them accordingly. The minimum green tariff rates are calculated in EUR, using the mentioned retail tariff for households (EUR cent 5.17 for 1 kWh) multiplied by the relevant GTI (and the peak-time adjustment factor for solar and hydro), on the basis of the official UAH-EUR exchange rate of the National Bank of Ukraine as on 1 January 2009 (10,86 UAH for 1 EUR). This allows investors to avoid the consequences of a devaluation of the Ukrainian Hryvnia (UAH).

The table below sets out the GTI and estimated green tariff rates applicable after 1 April 2013:

Type of renewable energy source	GTI	Green tariff, UAH cent (EUR cent) for 1 kW/h
Wind power plants with installed capacity of less than 0.6 MW	1.2	70.15 (6.73)
Wind power plants with installed capacity between 0.6 and 2 MW	1.4	81.84 (7.85)
Wind power plants with installed capacity of more than 2 MW	2.1	122.77 (11.8)
Biomass power plants	2.3	134.46 (12.9)
Biogas power plants	2.3	134.46 (12.9)
Ground solar installations	3.5	368.30 (35.3)
Roof solar installations with capacity of more than 0.1 MW	3.6	378.82 (36.3)
Roof solar installations with capacity of less than 0.1 MW	3.7	389.34 (37.3)
Solar plants installed on the roofs and/or fronts of private households with capacity of less than 10 kW	3.7	389.34 (37.3)
Micro hydro power plants (capacity of less than 0.2 MW)	2.0	210.46 (20.18)
Mini hydro power plants (capacity of more than 0.2 MW and less than 1 MW)	1.6	168.36 (16.14)
Small hydro power plants (capacity of more than 1 MW and less than 10 MW)	1.2	126.27 (12.11)

The Green Tariff indices and, consequently, Green Tariffs will be decreased for power plants commissioned after 1 January 2015 (by 10%), after 1 January 2020 (by 20%) and after 1 January 2025 (by 30%). A decrease in the GTI multiplier over time means that it is worth entering into Green Tariff projects early.

It is important to remember that the Green Tariff is only available to renewable energy power plants constructed using a certain share of goods and services of Ukrainian origin (the so-called – “local content requirement”). It only affects new projects where construction started after 1 January 2012. The required share varies from 15% to 50%, depending on the date that the construction of the power plant is certified as complete.

Mechanism 2 – Significant tax benefits for renewable energy

Subject to certain qualifications, renewable energy generation companies enjoy the following benefits:

- VAT and customs duties exemptions for import of generating equipment;
- full corporate profit tax exemption until 2020 for profits originating from the sale of electricity;
- 75% discount on land tax for owners and less expensive land leases.

Mechanism 3 – Mandatory off-take of electricity

At the moment Ukraine has a single-buyer market for electricity and all volumes thereof, generated by way of using the above types of alternative energy, are sold on the Wholesale Electricity Market of Ukraine (WEM). WEM is administered by the State Enterprise “Energorynok” (Energorynok), which purchases electricity from the generating companies and resells it to the distributors for further supply. Under the law, WEM (Energorynok) has an explicit obligation to off-take and purchase at the Green Tariff all volumes of electricity produced from alternative energy sources, which have not been otherwise sold directly to customers.

Mechanism 4 – Preferential treatment at WEM

Generating companies selling electricity at Green Tariff rates are subject to preferential treatment compared to other power generating companies. In particular such companies:

- receive payments for the electricity supplied since the beginning of the billing month (while other generating companies receive payments for electricity sold in the WEM in proportion to the forecasted volumes); and
- are paid for 100% of the electricity supplied (while other generating companies receive payments in equal parts proportionally to the actual volume of electricity supplied).

Mechanism 5 – Access to the grid

The Ukrainian power grid is operated by the National Power Company “Ukrenergo” (which owns and operates the high-voltage main and interstate power networks) and local (regional) distribution companies (*oblenergos*) (operating local low-voltage power networks). Under the law, transmission system operators (TSOs) cannot refuse any undertakings generating electricity from renewable energy sources connection to their networks.

Starting from 2013, TSOs are required by law to prepare project and design documents for companies generating electricity from renewable sources that seek interconnection with those TSOs. The renewable generators are also not required to pay the connection fee to TSOs. The fee must be accounted for by TSOs using funds they receive as power transmission payments. The TSOs may nevertheless request that the company applying for interconnection provides reimbursable financial assistance of up to 50% of the connection cost, with a maximum repayment period of 10 years.

Mechanism 6 – Additional sources of funding

Ukraine is heavily funded by international financial institutions, such as EBRD and IFC. For example, in 2012 EBRD arranged a financing package of EUR 5.7 mln for the development, construction and operation of a 4.5 MW solar plant and made its first ever investment into wind power generation in Ukraine by organising a EUR 13.3 mln financing package. In 2013, EBRD is also going to provide financing to a 1.6 MW small hydro power plant. These projects are part of the EBRD Ukraine Sustainable Energy Lending Facility (USELF), an investment facility of EUR 70 mln (EUR 50 mln from EBRD and EUR 20 mln from the Clean Technology Fund) designed to provide finance to private local enterprises wishing to invest in renewable energy projects in Ukraine.

United Kingdom



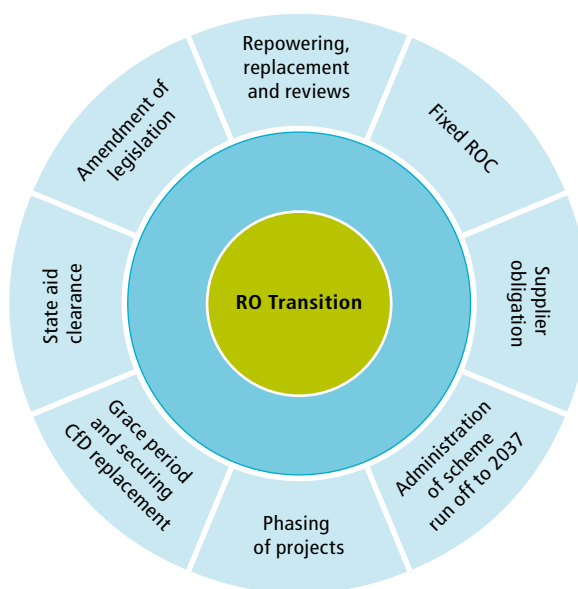
Offshore wind turbines at Scroby Sands, Caister, Norfolk, UK

Background

The UK Government has committed to sourcing 15% of its energy (across the electricity, heat and transport sectors) from renewable sources by 2020, a fivefold increase on renewable energy production in 2009. The UK Government's lead assumption is that this will involve producing 30% of electricity, 12% of heat and 10% of road and rail transport from renewable sources. The UK is also aiming to reduce its emissions by 18% by 2020 compared to 2008 levels, and to cut its emissions by 80% below 1990 levels by 2050, as required by the Climate Change Act 2008.

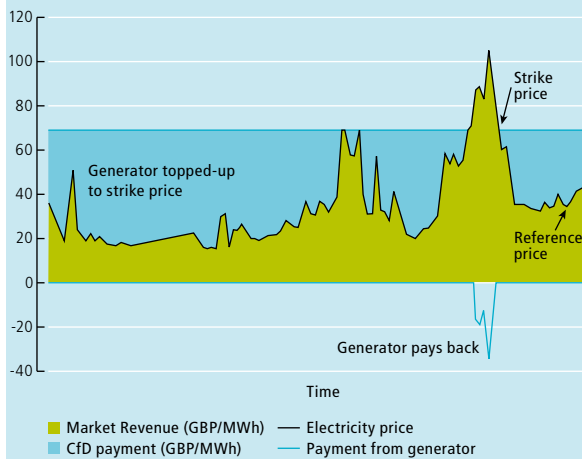
The UK Government is currently undertaking a wholesale review of the electricity market, the Electricity Market Reform (EMR), in order to ensure it achieves its objectives for decarbonisation, renewable energy, security of supply and affordability. The Energy Bill, which implements the main aspects of EMR, was introduced to the UK Parliament in November 2012 and is expected to receive Royal Assent in 2013. Some of the key elements of EMR are: the replacement of the Renewables Obligation with a Contract for Difference (CfD) support mechanism; use of a Final Investment Decision Enabling (FID Enabling) process in the period before full implementation of EMR; and the implementation of a Capacity Market.

Key EMR issues:

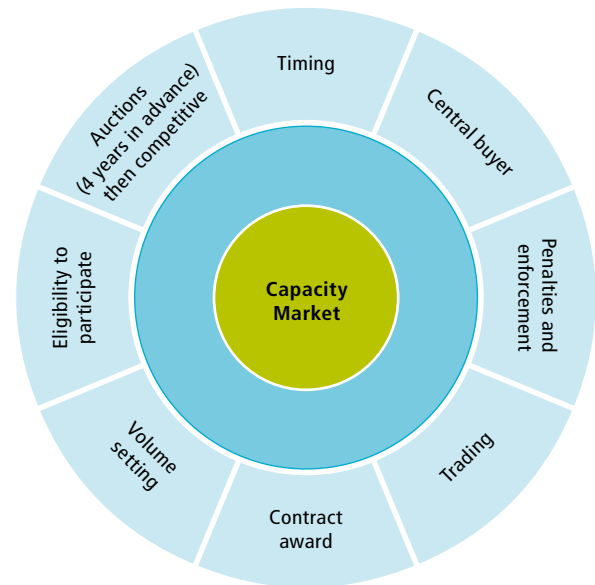


CfD eligibility and allocation

Electricity price (GBP/MWh)



Ongoing considerations; reviews enforcement and future changes



The Renewables Obligation (RO)

Why?

The RO was introduced in 2002 to incentivise the generation of electricity from renewable sources. It has been amended to reflect developments in UK policy since that time, notably in 2009 with the introduction of banding.

What?

The RO is the UK Government's main mechanism for encouraging the development of large-scale renewable electricity generation. It imposes an obligation on electricity suppliers to submit a certain number of certificates (known as "renewable obligation certificates" or ROCs) to Ofgem (the regulator) each year or to make a payment into Ofgem's buy-out fund. Suppliers may meet their obligation by either method or a combination of the two.

How?

The RO works by creating a demand from electricity suppliers for ROCs, which are awarded to generators in respect of the renewable electricity they generate. To ensure that this demand is maintained, from April 2011 the number of ROCs which suppliers are required to submit each year has been set at least 10% ahead of the number of ROCs which are expected to be awarded to generators. Assuming that there is a shortage of ROCs in the market, the value of a ROC reflects the "buy-out price" that a supplier would otherwise have to pay to Ofgem and the "recycling payment" that a supplier who submits a ROC receives

from the buy-out fund created from the payments made by suppliers who meet their obligation (in whole or in part) by making a payment.

Which technology?

Originally, 1 ROC was awarded for each MWh of electricity generated from renewable sources. However, the Government introduced a banding regime in 2009 which consists of awarding a greater number of ROCs per MWh of electricity generated from emerging renewable technologies and fewer ROCs to technologies that are better established. Following Government consultations in 2011 and 2012 on the review of the banding of ROs from 2013–2017, new banding levels are to be introduced on 1 April 2013 for the period 1 April 2013 to 31 March 2017. The proposed banding levels for 2013 are as set out in the table overleaf:

Renewable electricity technologies		Proposed level of support (ROCs / MWh)
Solar PV		Banding proposals subject to re-consultation. Closure of band to new projects at or below 5 MW, from 1 April 2013, subject to consultation.
Landfill gas		<ul style="list-style-type: none"> — 0 for open landfill sites — 0.1 for new Waste Heat to Power band at open and closed sites — 0.2 for closed sites
Biomass	Co-firing of biomass (standard)	<ul style="list-style-type: none"> — Solid and gaseous biomass (less than 50% biomass co-fired in a unit): 0.3 (proposed) in 2013/14 and 2014/15; 0.5 from 2015/16 — Bioliquids (less than 100% biomass co-fired in a unit): 0.3 (proposed) in 2013/14 and 2014/15; 0.5 from 2015/16
	Co-firing of biomass (enhanced)	<ul style="list-style-type: none"> — Mid-range co-firing (50-less than 85%): 0.6 — High-range co-firing (85-less than 100%): 0.7 in 2013/14; 0.9 from 2014/15
	Co-firing of biomass with CHP (standard and enhanced)	0.5 ROC uplift in addition to prevailing ROC support available to new accreditations until 31 March 2015 (prevailing ROC support = 1)
	Biomass conversion	1
	Dedicated biomass	1.5 until 31 March 2016; 1.4 from 1 April 2016
	Biomass conversion with CHP	1.5 in 2013/14 and 2014/15
	Dedicated biomass with CHP	2 in 2013/14 and 2014/15
	Sewage gas	0.5
Advanced and standard gasification/pyrolysis		2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17
Wind	Offshore wind	2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17
	Onshore wind	0.9
Hydro	Hydro-electricity	0.7
	Tidal impoundment (range) – tidal barrage (< 1GW)/Tidal impoundment (range) – tidal lagoon (<1 GW)	2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17
	Tidal stream/Wave	5 up to a 30 MW project cap; 2 ROCS above the cap
Energy from waste with CHP		1
Geopressure		1
Energy crops	Co-firing of energy crops (standard)	0.5 ROC uplift in addition to prevailing ROC support for co-firing of biomass (standard) (prevailing ROC support = 1). No uplift available for mid-range or high-range co-firing
	Dedicated energy crops	2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17
	Dedicated energy crops with CHP	2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17
	Co-firing of energy crops with CHP (standard)	0.5 ROC uplift in addition to prevailing ROC support for co-firing of energy crops (standard) (prevailing ROC support = 1.5). Band not available for mid-range or high-range co-firing
Anaerobic digestion		2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17
Geothermal		2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17
Micro-generation		2 in 2013/14 and 2014/15; 1.9 in 2015/16 and 1.8 in 2016/17

Note – Different banding levels may apply to certain types of generating stations accredited before 1 April 2009 and the default banding level of 1 ROC/MWh applies to eligible generation that does not fall within any other banding provision.

EMR

RO transition to CfDs

From 1 April 2017 (subject to limited grace periods) the RO will be closed to new renewable generating stations, as they will be expected to seek support under the CfD mechanism. A “vintaged” RO will continue for generating stations already accredited prior to 1 April 2017. From 2027 it is proposed that this will be amended to become a “certificate purchase obligation”, to reduce volatility in the final years of the scheme. The Energy Bill 2013 contains provisions to enable the Secretary of State to designate a body to act as counterparty to CfDs (known as the CfD counterparty). That body will have powers to collect money from suppliers to meet its obligations to generators under the CfD (known as the supplier obligation). The national System Operator and the Secretary of State will be responsible for determining eligibility and allocating contracts and the CfD counterparty will be under a duty to offer (and therefore enter into) these contracts.

Investment contracts

In the period before CfDs are issued, in order to combat uncertainty for investors and developers, the Government has committed to working with relevant developers through the FID Enabling process. The Energy Bill 2013 contains provisions allowing the Secretary of State to enter into a form of early CfD with such developers – referred to as an ‘investment contract’ in the Bill. The intention is to transfer such contracts to the CfD counterparty once it is established.

Levy Control framework

This is a framework that the Government uses to manage levy-funded spending in order to deliver its low-carbon objectives whilst ensuring that policies are affordable. The RO (and CfDs once they are implemented) are included in the framework. The Treasury has raised the cap of the Levy Control framework from GBP 2.35 bln in 2013 to GBP 7.6 bln in 2020 (roughly GBP 9.8 bln with inflation).

Feed-in tariffs

What?

The Energy Act 2008 included provisions for the introduction of a feed-in tariff scheme (FIT) for certain renewable generators with a maximum capacity of 5 MW, in order to incentivise small-scale generation, including by organisations, businesses, communities and individuals who are not traditionally engaged in the electricity market. The scheme began operation on 1 April 2010 and over 90,000 renewable installations have benefitted from the scheme so far. The FIT scheme provides for:

- a payment for all electricity (generation tariff); and
- the option for a payment for any unused electricity that the generator exports to the grid (export tariff).

Review

The FIT scheme has undergone a number of significant changes since its launch on 1 April 2010.

A number of these changes have come into effect as part

of the FIT Comprehensive Review consultation exercises run by the Government, which took place between 31 October 2011 and 26 April 2012. The FIT Comprehensive Review ran in 3 phases:

- Phase 1, which considered changes to small scale solar PV, came into effect on 1 April 2012;
- Phase 2A, which considered solar PV tariffs and a PV tariff degression mechanism, came into effect on 1 August 2012; and
- Phase 2B, which considered tariff changes and degression for all other technologies as well as scheme administration issues, came into effect on 1 December 2012.

Heat

Renewable Heat Incentive (RHI)

On 10 March 2011, the Government announced the details of the RHI. This is the first financial support scheme for renewable heat of its kind in the world. In the first phase, long-term tariff support targeted the non-domestic sectors, which contribute 38% of the UK’s carbon emissions. The Government plans to expand the existing scheme to cover additional technologies and will also offer a domestic scheme for individual households from summer 2013. The following technologies and fuels are eligible for support under the RHI: solid biomass; solar thermal collectors; ground and water source heat-pumps; deep geothermal; and biomethane injection and biogas combustion (except from landfill gas). Combined Heat and Power (CHP) will be eligible where the fuel or technology is listed above. Participants receive quarterly periodic support payments accruing from the date of installation and these are available for 20 years. In simple terms these payments will be calculated by multiplying the participant’s tariff level (set according to the type and size of the participant’s installation) by the amount of eligible heat generated from the eligible installation in that payment quarter.

Energy Companies Obligation (ECO)

In December 2012, the Electricity and Gas (Energy Companies Obligation) Order 2012 came into force. It is the Government’s new domestic energy efficiency programme which has replaced the existing CERT and CESP programmes, both of which came to a close at the end of 2012. The ECO works alongside the Green Deal (see further below) to provide additional support for packages of energy efficiency measures. The ECO also provides insulation and heating packages to low income and vulnerable households and insulation measures to low income communities.

Green Deal

Launched in January 2013, the Green Deal is a Government initiative aimed at transforming the energy efficiency of the UK’s building stock. The scheme enables property owners and tenants to install a selection of 45 energy efficiency measures, including small-scale renewable energy generation technologies, heat pumps, energy efficient boilers and insulation, all at no upfront cost. The cost of the work will then be repaid through financing packages which will levy a small additional charge on energy bills. The packages are

attached to the property, meaning that payments will be taken on by any subsequent occupiers who benefit from the resulting energy bill savings. The scheme contains a 'golden rule' that is meant to ensure repayments cannot be higher than the expected energy savings.

Transport

Renewable Fuel Transport Obligation (RFTO)

The RFTO imposes an obligation on suppliers of fossil fuel for road transport to source a gradually increasing proportion of the fuel they supply from renewable sources. The amount of biofuel that must be supplied increases annually until April 2013, when it will reach 5% of total road transport fuel supplied by volume. There are currently no plans to increase this trajectory. In December 2011, the RFTO order was amended to implement the sustainability criteria of the Renewable Energy Directive (RED). This introduced mandatory sustainability criteria which biofuels must meet for those fuels to be eligible for Renewable Transport Fuel Certificates (RTFCs). The 2011 amendment also introduced double rewards for some fuel types, including those made from waste materials such as used cooking oil, and a requirement to have data on the carbon and sustainability performance of fuels to be independently verified before RTFCs are awarded.

Other incentives/developments

Climate Change Levy (CCL)

The CCL is a tax levied on the supply of energy to non-domestic end-users. Renewable electricity is, however, exempt from the tax. Electricity suppliers prove that they have supplied exempt renewable electricity by obtaining Levy Exemption Certificates (LECs) with the electricity they buy from renewable generators. This provides renewable generators with an additional income stream.

Rights to offshore wind projects

In January 2010, the Government announced the award of nine offshore wind farm zones Round 3 licences, representing 25 GW of renewable generation capacity. Aside from being significantly larger (compared to 1.5 GW and 7.2 GW for Rounds 1 and 2 respectively), Round 3 differed from Rounds 1 and 2 in two main ways: it included (i) the Government's UK offshore energy Strategic Environmental Assessment (SEA) which determined the location of sensitive sites and the most appropriate sites for offshore wind farm development; and (ii) the Crown Estate's Round 3 programme. In Round 3 the Crown Estate has taken a more prominent lead role; it has developed a co-investing model, which combines the technical experience of the offshore wind industry with efficiencies generated by the Crown Estate's access to resources and stakeholders. In addition, the Scottish Government held a round for Scottish territorial

waters in 2009, resulting thus far in agreements for lease for four sites totalling 4.2 GW of capacity.

Offshore transmission systems

Offshore transmission assets transport electricity from UK offshore generation sites (such as wind farms) back to the GB grid. Generators have a choice of constructing the transmission assets themselves ("generator build") or to opt for a third party Offshore Transmission Owner (OFTO) to do so ("OFTO build"). If they construct the assets themselves, then the generator must transfer the assets to an OFTO post-construction and installation. OFTOs are selected on a competitive basis through a tender process run by Ofgem, the GB energy regulator.¹

UK carbon price floor

The UK Government is introducing a carbon price floor from 1 April 2013, in order to provide greater support and certainty to the price of carbon in the power sector and to encourage investment in low-carbon electricity generation. The UK will be the first country in the world to introduce a carbon price floor for the power sector. In its March 2011 Budget the Government announced a floor price for carbon in the power sector from 1 April 2013 to target a price for carbon of GBP 30 per tonne of carbon dioxide in 2020. The floor will start at around GBP 16 per tonne of carbon dioxide and the carbon price support rates for 2013–14 will be equivalent to GBP 4.94 per tonne.

Carbon Capture and Storage (CCS)

The Government is currently actively encouraging the creation of a new cost-competitive CCS industry in the 2020s. The Energy Act 2008 provided for a licensing regime that governs the offshore storage of carbon dioxide, in April 2012 the Government produced a CCS Roadmap and the UK CCS Commercialisation Competition makes available GBP 1 bln capital funding to support practical experience in the design, construction and operation of commercial-scale CCS. The government has also taken steps in its EMR which are likely to benefit CCS, such as the carbon price floor (see above) and the Emissions Performance Standard (EPS), which is an obligation on power stations not to exceed their annual CO₂ emissions limits due to apply to all new fossil fuel power stations at or over 50 MW.

¹ The Energy Bill 2013 contains a clause that provides an exception, in certain circumstances, to the prohibition of participating in the transmission of electricity without a licence during a "commissioning period". The clause, which amends the Electricity Act 1989, will enable generators to continue to commission the transmission assets prior to their timely transfer to the appointed OFTO and aims to ensure that UK offshore generators can build and test transmission assets for exporting their power, confident that they are acting within the law.

Offshore turbine and substation, part of an offshore wind farm under construction off the English coast, UK







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