

# European Energy Journal

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# Wind power in Croatia; Project Opportunities and Challenges



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## 1. National Action Plan and RES

Within the process of accession to the EU Croatia undertook to implement the third Energy Package and align with the goals for the security of supply, competitiveness of energy sector and sustainability of energy development. Strategy of Energy Development was passed in 2009 setting up the milestones for energy efficiency programs and development of renewable energy sources (RES). The general undertaking of Croatia to reach 20/20/20 goal was further developed through national action plans (NREAP) passed in 2010: National Energy Efficiency Program for period between 2008 and 2016, National Action Plan on Promotion of Production and Consumption of Biofuels in Transport 2011-2020 and other NREAPs for various fields of industry.

Latest NREAP is the Second National Energy Efficiency Action Plan for the Period until the end of 2013. This NREAP was the precondition for fulfilment of EU goals on 20% reduction of primary energy consumption until 2020 and requirement under the 2006/32/EC Directive. In addition to the reporting on current status of implementation of energy efficiency programs and achieved benefits, it encompassed material measures for increase of renewable energy share in heating and cooling sectors, electricity sector and transport.

Transposition of these postulates was made through newly passed laws and regulations. 2012 and 2013 brought new rules that reflect EU directives' standards and requirements in energy sector. The new Energy Law, the Law on Regulation of Energy Activities, both passed in October 2012, Electricity Market Law of February 2013 and the Law on Gas Market of March 2013 were the last train for Croatia to fulfil undertaken obligations prior to entry to EU. The new regulations should guarantee the market development and market liberalization, quality of supply, competitiveness, consumer protection and sustainable development.

Although Electricity Market Law laid general rules and procedures for production of electricity from RES as well, the details of the development process still remains within the secondary legislation which was passed on basis of laws previously in force and thus, today the secondary legislation is not entirely aligned with laws. The same problem arises in connection to the issuance of new energy approvals for construction of production facilities since the secondary legislation that should prescribe details for acquiring such approval was not passed yet. Thus, it seems that at the moment, just prior to entry in the EU, Croatian legislation complied with implementation of the milestones from EU directives. However,



Croatian legislator should act promptly bringing into line the rules on all levels that would indeed enable swift and functional development of energy projects.

Since mid-2012 Croatian Government is intending to replace a number of secondary legislation that regulates the renewable energy sector with one law on renewable energy. The intention is to simplify development process and attract investment by avoiding complicated and exhausting legal procedures. Unfortunately it has not been passed yet but it is expected to be in legislative procedure in the last quarter of 2013.

## 2. RES and Wind Power – current status

Since 2007 renewable energy projects have increased in Croatia. Very favourable subsidies, guaranteed takeover of electricity, state's affirmative view on development of such projects has a great influence to rapid growth of RES. However, the growth is impeded by challenges of practical implementation of such projects. The economic crises also influenced the projects, but within last two years, subject to the state's awareness that simplification of implementation process as well as more practical and reasonable approach to project develop-

ment is imperative, defined positive direction for RES in Croatia.

Currently in Croatia installed power from wind parks is 175.25 MW, from cogeneration facilities 10.49 MW and from biogas facilities 8.13 MW. Until mid-2014 it is expected that further 960 projects will be realised in total power of 319.99 MW which include wind power plants with 232.7 MW, biomass power plants with 46.00 MW and solar power plants with 32.69 MW.

According to the data of the Croatian transmission system operator (TSO) as of 23 April 2013 available on-line there are 10 operational wind farms and one in test run, while a number of wind projects are waiting their finalisation. Below maps, extracted from the official Ministry of Economy Registry of RES, demonstrate fully implemented and currently working wind power plants on the territory of Croatia on figure 1 and on-going planned projects on figure 2.

Each of these projects was faced or is facing the challenges in its implementation. These challenges include not only technical issues but also changes of legislation that influence



**Figure 1** – Fully implemented and currently working wind power plants on the territory of Croatia.  
Source: <http://oie-aplikacije.mingo.hr/InteraktivnaKarta/>



**Figure 2** – On going- planned projects of wind power plants on the territory of Croatia  
Source: <http://oie-aplikacije.mingo.hr/InteraktivnaKarta/>





conditions of investment and its feasibility, increasing the risks and costs. In this article special attention is given to the opportunities and challenges that wind projects are facing in Croatia.

### 3. Project opportunities and challenges

The opportunities and challenges that wind energy projects are usually facing in Croatia could be summarized under the following topics: difficulties in implementation of legislation, takeover of electricity by TSO, changes of feed-in tariffs, connection lines – special conditions for wind plants, limitations of connection to the grid, financing and security difficulties as well as land and local community issues. These could greatly influence the decision to proceed with or abandon the investment. Of course the list is not exhaustive and the practical implementation of specific projects always has its way of raising additional concerns investors could face. Nevertheless, it also appears from the practice of latest projects that the trend of the legislator and competent authorities is to simplify the procedures and create acceptable solutions for better finalisation of planned developments.

#### *Difficulties in implementation of legislation*

As already noted, the legislative background for the RES and cogeneration is still predominantly found in the secondary legislation passed in 2012 or in the beginning of 2013. From the perspective of wind farming projects most important of these are the Regulation on Acquiring Status of Privileged Producer of Electrical Energy, Regulation on Using RES and Cogeneration and the Tariff System for the Production of Electrical Energy from RES and Cogeneration.

Each of this secondary legislation covers its specific topics. While the energy laws are passed by the Croatian parliament, the first two regulations are laid down by the Ministry of Economy and the Tariff system is prescribed by the Croatian Government. Given the multiple legal sources laid down by different public authorities it is no wonder that they are often not quite aligned and their application creates difficulties for the operators of wind farm projects in Croatia.

To name just one example, the Regulation on Use of RES and Cogeneration has proven, to a large extent, to be inapplicable in practise after it brought some significant changes to the proceedings for construction of RES and cogeneration plants on the land owned by the Republic of Croatia as described under the land challenges below. Under the Regulation the title to the land is granted to a project company based on the public tender prepared and conducted by a new public body – the Centre for Monitoring Business Activities in the Energy Sector and Investments (CEI). In line with the Regulation CEI should also be the body responsible for later supervision of the development of projects acquired in the public tender procedure. In practice no such public tender has been conducted yet and the prescribed procedure for acquiring project rights to the state owned land proved not to be suitable for implementation in practice. The reason for this is that the recently established CEI has no authorities or resources to grant project rights on the state owned real property, since this power falls under the scope of duties of another state agency – the Government Asset Management Agency (AUDIO).

Additional challenge arose at the end of 2012 and 2013 when the legislator passed new energy laws which require completely new set of secondary legislation. It means that currently secondary legislation, up to certain extent, is not in line with applicable laws.

A single Law on RES and cogeneration, passed by the Parliament and not a single Ministry, would surely need to clarify this and other inconsistencies of the current legislative framework. Unified procedures for all RES and cogeneration projects and a clear division of competences between various regulators would surely contribute to boost completion of projects which are now on hold.

#### *Obligation of TSO to takeover electricity producer from RES*

The rules of Electricity Market Act prescribe the statutory obligation of TSO to take over total electricity production from RES. Such obligation is conditional however, to specific



prerequisites set by regulations, particularly the grid rules of transport and distribution systems. This obligation of TSO applies only to the producers of electricity from RES that obtained the status of so called "*privileged producer*" and concluded a contract for purchase of electricity with Croatian Market Operator (HROTE).

In 2013 Electricity Market Act sets also 25 years pre-emption right of HROTE to purchase electricity produced from RES reasoning such right with fulfilment of undertaken obligation by Croatia to produce specific quantities of electricity from RES. This minimal goal of electricity share from RES within total consumption until 31 December 2020, undertaken by the State is prescribed by the Ordinance on

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The domestic component clause was removed from the current Tariff system, but was replaced by a similar system

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Minimal Share of Electricity Produced from RES and Cogeneration within the Subsidies Regime. The goal is currently set at 13.6% from facilities that use RES and 4% from cogeneration facilities. Annual percentages of electricity production from RES are set by the competent ministry and define dynamics of entry into the electricity purchase contracts between HROTE and producers.

This statutory guarantee on purchase of electricity produced from RES, or in this case wind power plants that concluded the contract with HROTE and obtained status of privileged producer, gives warranty for return on investment so enticing development of RES projects. Naturally, return on investment in the end

largely depends on the level of subsidy granted within the purchase price (feed-in tariffs). Nevertheless, as long as the goal of RES produced electricity share is not met the investors have this guarantee that the state will primarily purchase the electricity produced from RES.

#### *Changes in feed in tariffs and Domestic component*

With the new Tariff system in force since 2012 the privileged feed-in tariffs set out in 2007 for RES and cogeneration plants changed substantially. The prescribed feed-in tariff for electrical energy generated from wind power was raised from the former 0.65 HRK / kWh to the current 0.71 HRK / kWh. The said amount will be corrected annually for the official inflation index in the previous year. The duration of application of the feed-in tariff has also extended. While the old feed-in tariff was applicable for 12 years, new investors look up to a 14-years period of their privileged status and feed-in tariff for the purchased electricity. The new Tariff system is applicable only to the new privileged producers of electric energy. Wind farms already in operation will continue to receive the purchase price calculated based on the old feed-in tariff for the period of 12 years.

A former important element of the feed-in tariff was the so called "*domestic component*", which enabled producers to acquire right to an even more privileged tariff, in case the wind power plants were, for instance, partially manufactured in Croatia. The domestic component was introduced to boost the national economy and enable transfer of know how to Croatian companies which were engaged in the wind farm projects in order to contribute as domestic suppliers. Due to certain anti-competition considerations, the domestic component as such was removed from the current Tariff system in force, but was replaced by a similar system.

The Tariff system currently provides for a fixed tariff of 0.71 HRK / kWh, which is subsequently corrected for an inflation index. On top of the fixed tariff, in place of a previous portion of domestic component, a variable tariff was





introduced, so that based on the prescribed manners of contribution to the local community the fixed tariff may be increased by up to 15%. The variable tariff is dependent on the measurable contribution to the local community, development of economic activity, employment, development of public services and raising life quality (PMAX), whereby the local community means all cities and municipalities in the Republic of Croatia. Formula for calculating the local contribution is given in the Tariff and the types of contribution are indeed made very broad to include all types of necessary goods and services provided by Croatian suppliers.

It is not quite clear from the Tariff, whether the goods and services which account to the variable tariff must be linked to the exact wind farm project and how close this link should be. Nevertheless, project developers should base their calculations on the premise, that the local contribution must be clearly linked to the wind park project itself.

#### **Connection lines and transformer substations**

As one of the main activities of Croatian TSO is the obligation to monitor construction of electricity production facilities, construct transmission capacities and create other conditions within existing grid necessary for secure and reliable functioning of electricity facilities. TSO announced that within its project of renovation it intends to renew up to 800 km of transmission lines until 2016.

TSO is setting up the rules and preconditions on connection to the grid for electric energy producers. Namely, the construction of wind power plant and obtaining of relevant construction permits is subject to the conditions for connection to the grid determined in the energy licences issued by TSO (so called: *energy consent*). Usually, such conditions include the construction of connecting lines and construction of transformer substation. For purposes of connection to the grid the project company has to enter into the connection agreement and pay connection charges set by HERA (Croatian Energy Regulator). For the wind power

plant projects, besides these standard terms, TSO prescribed additional technical conditions for connection to the grid. Such additional rules for wind plants are the consequence of particular effect that wind power plants connections make to the grid, and are passed with the intention of preventing distortions of the system and finding optimal technical solutions.

One of the challenges in development of wind power plants and their connection to the grid until recently were the legal issues connected to the construction of transformer substations. Namely, the construction of transformer substation was determined as the obligation of a project company. On the other hand, only TSO could be the owner of transformer substation (as part of infrastructure) and thus the official "investor" for purposes of obtaining building permits for transformer substations and their construction. Due to the fact that TSO is publicly owned company and subject to public procurement rules, the actual investors were in a position where the erection of transformer substations was financed by them while the construction should have been carried out by the best bidder chosen within public procurement process by TSO. This legal issue could lead to the drawbacks in construction on transformer substations both cost and time wise and in the end influenced the development of project itself. However, by amendments of the Construction and Physical Planning Act in 2011 this legal impediment was corrected in a way that project company had to obtain only the consent of TSO to be able to carry out construction of transformer substation independently and only later transfer ownership to the TSO (as part of infrastructure system).

Today's main challenge of connection to the grid for a project company is to fall within the so called "quota of maximum reception of the wind power plants in the power system of the Republic of Croatia" which is explained in the following chapter.

#### **Limitation of grid connection**

On 20 February 2012 the Croatian TSO passed the Criteria for the inclusion of wind power



plant projects on the list for connection to the grid, thus officially introducing the so called quota of maximum reception of the wind power plants in the power system of the Republic of Croatia. The TSO regularly establishes, updates and publishes the quota on its internet page currently found under <http://www.hep.hr/ops/>. Projects included in the quota can be connected to the grid after the wind farm is erected and the project completed. However, the projects which stayed outside the quota currently cannot be connected to the power grid until the quota is increased.

Notably, the current quota published on the TSO's web page is 400 MW of installed wind farm power. The quota has already been completed as of April 2013 with 10 operating wind farms, one wind farm in the test period and another 8 wind farm projects with already concluded agreements for connection to the grid. The "waiting list" for inclusion in the quota as of April 2013 consisted of 2 additional wind farm projects which did not make it to fit in the prescribed 400 MW. Therefore, any new project is currently on hold until the TSO increases the quota and publicly announces the new quota.

The reason for introducing the quota in 2012 is said to be the lack of capacity of the Croatian power system and its operator TSO to accept connection to the grid of new power plants. However, there are dissenting voices claiming that the Croatian grid is in the constant stage of development and that the connection capacity levels would be sufficient for many more power plants. It is rather the inadequate financial capacity necessary for purchase of electricity under privileged feed-in tariff that prevents larger development of wind farming. In line with the proclaimed strategy of the state to boost RES in the years to come, the RES community expects that the quota should be increased to 1000 MW on or around the Croatia's accession to the EU.

#### ***Financing difficulties - Security instruments***

When financing wind farm projects in Croatia, the banks and other financing institutions or

investors take great interest in their security options. As opposed to some European legislation, in Croatia it is not possible for the financing party to take over the wind farm project as a whole in case the project operator is unable to regularly service its debts to the creditor. Also, financial inability of the project operator is a valid ground for revocation of a number of necessary licenses and termination of a contract for purchase of electricity with HROTE with the feed-in tariff. The consequence is that in case of financial indebtedness the project operator might lose its most important source of revenue before the creditor was in the position to make use of the acquired securities.

Owners of wind plant projects usually run the project through a special purpose vehicle, the most important assets of which are closely

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It has not been clarified whether the wind power plants are rightly treated as movable assets or become fixed part of the land

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linked to the project itself. Creditors of wind farm projects in Croatia therefore opt for usual securities packages consisting of securities over the most important assets of a wind farm project, in particular the wind power plants themselves and the claims for payment of the purchase price for electricity under the feed-in tariff.

Wind power plants are treated in the financing practice as movable assets of the wind farm operator and are as such pledged in favour of the creditor. Since the wind power plants are subject to construction licences and must be erected on particular real property, it has not been clarified in the Croatian legislation,





court or arbitration practise, whether the wind power plants are rightly treated as movable assets or they become fixed part of the land once erected and by that real property. The discussion is even more relevant as the wind plant operators are rarely also the owners of the land where the wind plant is erected, but rather acquire easement or right to construct over the property owned by the Republic of Croatia, cities or municipalities or legal entities and natural persons.

The discussion on the legal understanding of wind power plants is a rather technical legal discussion since project operators, creditors and investors treat wind power plants as movables which may at given time be removed from the property where they are located. They are also successfully pledged as such in practice. However, any judicial conclusion to the contrary would have far reaching consequences to the validity or quality of security created over wind power plants up to date as the ownership title to the wind power plants could transfer to the owner of the land or the pledge agreements might be held invalid.

The next major security mechanism is the pledge or assignment in favour of a financier of a rather favourable privileged feed-in tariff payable by HROTE to the project operator. The importance of this security is logical, as the feed-in tariff is the main source of revenue of a wind farm operator. In the recent practise, HROTE has however refused to direct its payments of the assigned feed-in tariff to anyone but the financial institutions which directly financed the construction of wind farm which was granted the feed-in tariff. What was only HROTE's practise at first now is clearly regulated in one provision of the 2012 Tariff.

While the Croatian Government's motivation to limit payment of privileged tariff only to the privileged producer and its direct financier is understandable, the said regulation opens many questions. Is the security over the privileged feed-in tariff possible also in case of re-financing or only in case of original financing? Are only financial institutions entitled

to be granted this security or other possible financing parties are accepted as well, e.g. bondholders, equity investors or simply creditors other than banks? There is also a more general dilemma, namely can a Tariff, as piece of secondary legislation, overrule a general principle that holder of a certain right can freely dispose of, assign or pledge his right? Unless the disputed provision is changed in the expected legislation, the question of pledging or assigning claims to feed-in tariff might be resolved before a court of law.

### **Land and Local Community**

Wind power plant projects usually require vast land surfaces. Such land could be acquired from private owners or from the state or local communities. For purposes of wind power plants construction the most commonly used land right is the right to construct or servitude right.

In one scenario when the land is acquired from private persons it is usually combined from number of land plots in private ownership which entails lengthy and costly process of land acquisition. To simplify this process the legislator granted a special status to renewable energy projects. Namely, according to the Energy Law all locations for construction of energy plants marked in the physical planning documents, as well as construction, maintenance and use of energy plants and conducting of energy activities is considered to be "*the interest of Croatia*". This status of state's interest enables application of laws by which private ownership title could be limited. Such limitations are prescribed by expropriation rules according to which the real property can be expropriated from their original private owners if that is necessary for constructions in the state's interest, so called: "*acquisition for public purposes*". Also, the energy entities have statutory right under the Energy Act to use the real property that is not in their ownership for construction and maintenance of grid or systems for transfer and distribution of energy. On the other hand, natural persons and legal entities have an obligation to enable energy entities access to their real property on which energy



objects, equipment or network is constructed.

In situations when wind power plants are planned for construction on State land until recently it was not always certain what type of land property right should be constituted over the State owned land. In July 2012 by the Regulation on Use of RES and Cogeneration it was specifically prescribed that the RES projects can be constructed on the State owned land only on basis of servitude right or right to construct granted within tender procedure by CEI.

The increasing concern in development of energy project with special emphasis on wind power projects is the local community acceptance. Growing number of wind turbines in coastal area, primary business of which is tourism, are increasingly bringing negative attitude of local communities in focus. The last example is the local community response to the construction of wind power plant Fužine 56 MW – first phase 36 MW on location Zvirjak and Kobiljak. The local community challenged physical planning documents, environmental study and issuance of permits for construction of wind power plant by referendum. Although referendum has not succeeded the Council of the Ministry of Economy rejected the environ-

mental study for this project. It remains to be seen if the project will be further developed on the same location or the local community will succeed.

Thus, it is obvious that local initiative factor and local community interests should be not disregarded in planning and developing wind power projects especially having in mind that almost all are planned to be constructed in similar coastal areas.

#### **4. Conclusion**

Although the present wind farm projects in Croatia are obviously faced with various challenges and several complex legal issues, it seems that Croatia is aware of its great RES potential and motivated to enable the investors a more efficient realisation of their projects. This goal should primarily be realised by unifying legislative sources in one single legal act on RES, simplification of the licensing and contracting procedure, removing obstacles for grid connection and creating a clear division of competences between many energy market regulators and competent state bodies. Favourable feed-in tariff, both fixed and variable, will remain an important incentive for the investors to choose Croatia as an attractive destination for their wind farming investments.