The promotion of wind power in Germany and Finland –

A Comparative Overview on Legislation

by Mari Tepp, Robert Schachtschneider & Robert Brückmann

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eclareon Berlin
Luisenstr. 41
D-10117 Berlin
Phone: +49 (0)30 246 286 90
Fax: +49 (0)30 246 286 94
www.eclareon.com
eMail: policy@eclareon.com

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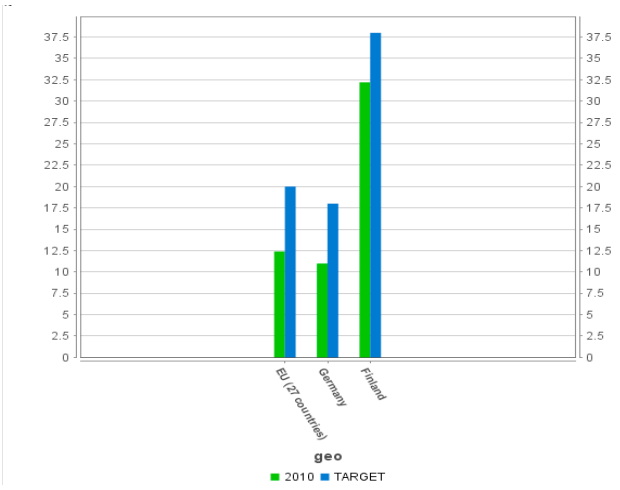
The following policy report will elaborate on the distinct legislative framework for the promotion of wind energy in Germany and Finland. Regarding the inert development of wind power in Finland, we aim to stimulate debate by singling out the German wind energy market as a successful model for a developed wind energy market.

Status quo of wind power

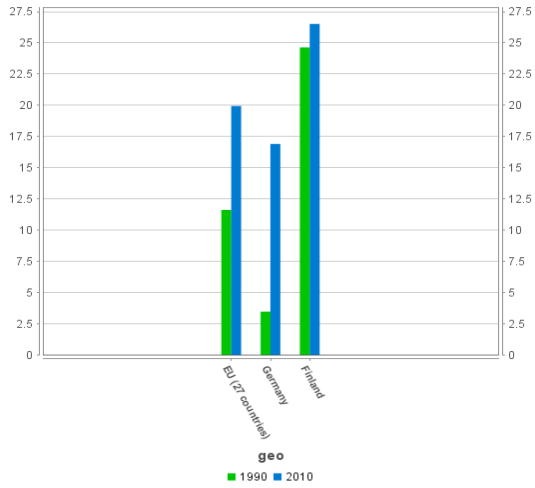
According to the EU 2009 renewable energy directive (2009/28/EC), the share of renewable energies in gross final energy consumption is to be an average of 20% by 2020 for the entire EU. This target is divided into binding individual Member State targets, which for Germany is set at 18%, whereas for Finland at 38% of the final energy consumption. For the coming years this demands considerable efforts to be taken by both countries as the current share is still considerably lower (see graph 1).

According to Eurostat, Finland currently produces 26.5% and Germany 17 % of its electricity from RES. However, when looking at the evolution in energy generation in both countries since 1990, significant differences appear. Thanks to its large hydro and biomass resources, Finland was able to cover a quarter of its electricity consumption by renewable energy already in the early 1990s. Since then, however, the RES-E share has increased only by about 2%. During the same time Germany was able to increase the share of RES-E by almost five times (see graph 2).

Graph 1: Share of renewable energy in gross final energy consumption in %



Graph 2 : Electricity generated from renewable sources % of gross electricity production (Source: Eurostat 2011)



Considerable differences also appear when looking at electricity generation from wind energy. In Germany approximately 8% of the electricity demand is covered by wind energy compared to only 0.5% in Finland (Eurostat 2011, Ympäristöministeriö 2012). According to the Finnish Climate and Energy Strategy, the share of wind power in Finland should be able to cover 6-7% of the overall demand by 2020. In real terms this would mean that 700 - 800 new wind plants with a total capacity of 2GW need to be installed within the next 8 years. Compared to Finland, the German wind sector is highly developed with over 22 000 wind power plants with a total installed capacity of 29GW (of which 28,77 GW on-shore installed capacity). The wind energy sector employs about 100 000 people.

In April 2012 Lauri Tarasti admitted that wind power has so far not reached its potential in Finland and there is a need to reduce bureaucratic and legal barriers to the construction of wind plants (see *Tuulivoimaa edistämään selvitys,* from 13.4.2012). In his letter to the Ministry of Economics and Employment, Lauri Tarasti singled out main obstacles which he estimated to impeding wind power plants construction. According to him, there has so far been a lack of debate about wind energy on a political, ideological as well as economic level undermining the acceptance and construction of wind power plants.

Construction of wind plants, however, only represents one part of the issue. This article aims to offer some explanations, why the developments in the field of wind energy have been so different in Germany and in Finland. Which are the legislative mechanisms supporting the use of RES for electricity production? What are the other reasons for the success story of wind energy in Germany? Could some of these lessons prove to be useful for Finland? The first part of the article will concentrate on the description of the support system in place in Germany, while the second part will focus on grid issues. Where possible, a comparative perspective with Finland is used.

Support for wind energy in Germany

The strong support for the development of renewable energy in Germany has been shaped by the Schröder-cabinet in the late 1990s introducing a support scheme as set out in the Renewable Energy Act. Moreover, the coalition of social-democrats and green-party decided to phase out nuclear power in 2000. This fundamental political consensus was watered down by the liberal-conservative coalition in 2010, but following the Fukushima catastrophe and strong public opposition, was shortly afterwards reinforced and cemented in 2011. This decision materialised the so-called energy transition (*Energiewende*) aiming to completely restructure Germany's energy policy. The energy transition is besides the EU sovereign-debt crisis the major German reform package and biggest challenge alike.

The promotion of wind power has to be understood as an integral part of Germany's efforts to reach the 2020 goals and realise the *Energiewende*. The Act on Granting Priority to Renewable Energy Sources Renewable Energy Act (EEG) constitutes a milestone in the promotion of renewable energy, setting out a Feed-in-tariff (FIT) and a market premium which are paid by the grid operator to plant operators for electricity exported to the grid (*see also* RES LEGAL *and* RES LEGAL Europe). Plant operators are free to choose between the two instruments. The FIT offers producers a fixed above the market price sum per kWh for the electricity supplied to the grid. The FIT is available for 20 years. The market premium, on the other hand, is designed to encourage the direct marketing of RES electricity and to enhance the competitiveness of RES electricity production among all sources of electricity, since the premium paid to producers is partly dependent on the monthly average selling price of electricity at the stock market. Plant operators under the market premium are eligible for a management premium as a compensation for the higher administrative efforts of selling and estimating the volume of electricity generation. Compared to more than 10 years of FIT in Germany, the support scheme for wind energy in Finland only dates from 2010 and is set out in the Act No 1396/2010. According to current rules, the generators of electricity from wind receive a variable premium feed-in tariff on top of the wholesale electricity price for a period of 12 years.

In addition to the support schemes set out in the EEG, in Germany the KfW Renewable Energy Programme Standard provides low interest loans for investments in on-shore plants (*see also* RES LEGAL *and* RES LEGAL Europe). In Finland, grants are made available for investment and research projects that involve generation and use of RES technologies. In the following section, a more detailed analysis of the German support mechanism is given.

In Germany the criteria for eligibility and the tariff levels for the **FIT** are set out in the Act on Granting Priority to Renewable Energy Sources (EEG). According to this Act, operators of renewable energy plants are statutorily entitled against the grid operator to payments for electricity exported to the grid

(*see* RES INTEGRATION country reports). FIT also applies to electricity that was temporarily stored prior to being exported to the grid (§ 16 par. 2 EEG). The amount of tariff is set by law and is usually paid over a period of 20 years (§ 21 EEG). For off-shore plants, the payment period is dependent on the distance between the cost and the plants, but FIT is paid at least for 12 years (§31 EEG). The application of different payment periods is due to different power generation levels and shorter amortisation rates for off-shore wind plants. In order to qualify for FIT, the technical requirements as stipulated in the Ordinance on System Services by Wind Energy Plants have to be fulfilled. Plants with an installed capacity exceeding 100 kW have to be equipped with the respective technical devices allowing the grid operator to reduce the output by remote means and to retrieve information about the amount of electricity fed in. Besides technical requirements, the plant has to fulfil strict environmental criteria as set out in the Federal Immission Control Act (*Bundes-Immissionsschutzgesetz*) in order to protect humans, animals and plants, soil, water and atmosphere, cultural and other goods from environmental hazards and prevent further environmental hazards (§ 1 BImSchG).

In Finland the payment of the **FIT** is variable and depends on the market price. The sum of the market price and the premium feed-in tariff is the fixed target price. For this reason, the premium feed-in tariff is equal to the difference between the target price and the average market price of the previous three months. The target price for wind energy is set at €ct 8.35 per kWh. However, as a part of the plan to encourage wind power plant construction, until the end of 2015 there will be an "early bird rate" for wind plants and an increased target price is set at €ct 10.53 per kWh. Feed-in tariffs will be available only until the total capacity installed reaches 2,500 MVA. Contrary to Germany, the tariff in Finland does not differ for on- and off-shore wind plants. Both new on-shore and off-shore generation is eligible as long as the plant has not received other state grants and the nominal capacity of the generator is at least 500 kVA. This requirement on the other hand means that the tariff mainly applies to wind parks whereas small wind power plants are left outside the scope of the FIT.

In Germany, the amount of tariff for a given plant is the tariff level as defined by law minus the degression rate, which depends on the year in which the plant was put into operation. The current version of the EEG sets out the tariffs for 2012. The range of tariffs is the following:

- **On-shore:** €ct 4.87 – 8.93 per kWh (according to duration of payment) + repowering bonus of €ct 0.5 per kWh and plant service bonus of €ct 0.48 per kWh (§ 29 par 1-2; § 30 EEG).
- **Off-shore:** €ct 3.5 – 19 per kWh (according to duration of payment and scheme chosen by plant operator)

The tariff levels will decrease every year to adapt the **FIT** and to force technological innovation and reduced system costs. New plants will receive the tariff level applicable on the day they are put into operation. This tariff level will apply for the entire payment period, i.e. for 20 years[1]. Incentives to invest are derived from the investment security and investment return based on the amount and duration of the FIT. The degression is 7% for electricity from off-shore plants from 2018 onwards[2] and 1.5% for other plants from 2013 onwards[3].The tariff level will be reduced to the actual market value if the plant operator fails to export all electricity generated by his system or did not notify the grid operator in time about switching from direct marketing back to FIT. The costs of FIT are included in the electricity price and thus, passed on to the final consumers via their electricity bills[4]. However, a branch of final consumers, such as manufacturing companies or rail operators, are exempted from this regulation. One can clearly debate the fairness of cost distribution and burden sharing but this is beyond the scope of this article. In 2013, the costs of FIT per kWh are expected to equal €ct 5,4/kWh. It is fair to argue that the FIT has clearly allowed boosting the production of electricity from renewable sources; however,

[1] §§ 20; 21 par 2 EEG
[2] § 20 par 2 no. 7a EEG
[3] § 20 par. 2 no. 7b EEG
[4] § 37 par. 2 EEG

it has also resulted in one of the highest electricity costs in Europe mainly shouldered by households. However, one needs to bear in mind that electricity prices do not account for the negative externalities of fossil fuels (such as CO_2 emissions) and nuclear energy (final storage of nuclear waste) as well as large public subsidies for coal.

As an example of the high variety of support mechanism present in the German renewable energy market, plant operators may claim a **market premium** for electricity they sell directly[5]. The amount of the market premium is calculated each month and is dependent on the average monthly electricity price traded on the stock market (*see also* RES LEGAL *and* RES LEGAL Europe). In general, plant operators are free to choose between the regular FIT and the market premium for direct selling. For a plant operator to be eligible for the flexibility premium, he shall provide additional installed capacity that may only be used on demand rather than on a regular basis. Eligibility to the market premium terminates when the payment period of the FIT ends and eligibility to the feed-in tariff terminates[6]. The eligibility period is usually 20 years plus the year in which the system or plant was put into operation[7]. The period in which electricity is sold directly and the market premium is received shall be credited accordingly against the tariff payment period This means that the payment period expires regardless of whether the system operator receives the FIT or the market premium.

In addition to the discussed support instruments, both countries provide **loans** to investors in wind energy plants. In Germany the KfW Renewable Energy Programme Standard provides low-interest loans with a fixed interest period of 10 years including a repayment-free start-up period for investments in installations for electricity production. Only on-shore wind plants are eligible. Up to 100% of the investment costs are eligible for support (without VAT) with a maximum of of EUR 25 million per plant/project. It is a long-term and low-interest loan with a fixed interest period of 10 years including a repayment-free start-up period. In Finland, in addition to the feed-in-tariff, generators of renewable energy from wind can benefit from **state subsidies.** The so-called "Energy aid“ is a state grant for investments in RES. Grants are available for investment and research projects that involve the use of renewable energy and apply to all technologies. Grants are available for research and investment projects that involve the generation of renewable energy or the application of RES technologies. Among other costs, the costs for preparation, planning costs and materials are eligible for the subsidy. The amount of subsidy depends on the aim of the project in question. Up to 40% of investment costs may be subsidised for investment projects in the field of wind energy.

Compared to the Finnish wind energy support system, the German model has been developing longer and the renewable energy market (as also apparent through the support schemes) has achieved a higher flexibility. The higher flexibility of the support mechanism as well as its adjustment mechanisms to create incentives for technological innovation have surely encouraged investments into wind energy. However, it is clear that the support mechanisms for wind energy could not have been put in place without a strong political and public consensus to promote renewable energy.

Grid issues

In Finland, the use of the grids for the transmission of electricity from renewable sources is regulated by the general legislation on energy (*Sähkömarkkinalaki*, Electricity Market Act no. 386/1995) and there are no special provisions for electricity from renewable sources. Plant operators are contractually entitled against the grid operator to connection to the grid if they meet the required technical specifications. The grid operator is obliged to enter into an agreement with a plant operator following the non-discriminatory principle in regards to other plant operators. The grid operator shall expand his

[5] §§ 33a par. 1, 33c, 33g EEG
[6] Annex 4 EEG
[7] § 21 EEG

grid according to the needs of his customers. This obligation includes upgrading the grid if the upgrade is required to connect a renewable energy plant to the grid and if the upgrade is economically and technically reasonable. Connection procedures are not regulated by law and depend very much on initial talks between grid and plant operators. The analysis in RES-integration showed that the main barriers impeding the deployment and integration of RES-E are directly or indirectly linked to the lack of grid capacity. This is true for barriers as insufficient investment security as a consequence of strong competition for attractive wind power sites, which is only partially eased by the option to reserve grid capacity (RES-INTEGRATION Finland Country profile 2011).

For the connection of RES-E plants to the transmission grid (110kV grid), *gross modo* the following steps apply. Firstly, informal negotiations between the plant and the grid operator take place, during which the plant operator explains the location and size of plants and the grid operator examines availability and determines the costs. After this the grid operator assigns a connection point and the plant operator thereafter develops investment plans. The grid operator may offer a letter of intent (LOI) to the plant operator, which says that there are reserved capacities to connect the plant to the grid. The LOI expires if there is no progress in the project (normally after 1 or 2 years). Until then the plant operator needs to have a building permit for the RES plant. After the grid operator has provided a building permit, the grid development agreement follows. Then the grid operator develops the grid and the plant operator is responsible to build the connection to the grid connection point. After this a connection agreement is concluded, where all technical details are defined.

In the RES-INTEGRATION study the interviewed stakeholders stressed that the reservation of capacity is extremely important as it allows for planning security. In the case of wind power plants, the capacity reservation prevents a wind power project from being overtaken by another project that has been concluded more quickly and could block the originally foreseen grid capacity. However, the reservation period of one to two years might be too tight considering the duration of the application process (when for example a new zoning plan or Environmental Impact Assessment is required) and hence is not always sufficient to provide planning security.

In Germany, contrary to Finland where the non-discriminatory principle applies, plants generating electricity from renewable sources are given priority for the connection to and use of the grid by grid operators. Moreover, those interested in feeding in electricity may demand that the grid operator expands his grid. Plant operators are statutorily entitled against the grid operator to the connection of renewable energy plants to the grid. The person obligated is the grid operator who is most closely located to the plant site and whose grid is technically suitable to receive electricity. In cases where plants with a capacity of up to 30 kW are located on a plot of land which already has a connection to the grid, the grid connection point of this plot will be deemed to be the most suitable connection point[8]. A grid is deemed to be technically suitable even if the grid operator has to expand his grid at an economically reasonable expense to import electricity.[9] The grid operator shall, after receipt of the necessary information and without delay, submit to the plant operator a timetable for the immediate establishment of grid connection, the information required to test the grid connection point and, upon request, the grid system data required to test grid compatibility and a cost estimate within eight weeks. The EEG does not specify any deadlines by which the grid operator shall carry out the grid stability test. Whether the expansion of the grid is economically reasonable in a given case will be determined by weighing the plant operator's interests against the grid operator's interests.

The claim for purchase and transmission arises when the plant is connected to the grid. When purchasing and transmitting electricity, the grid operator shall give electricity generated from renewable

[8] § 5 par. 1 EEG

[9] Based on § 5 par. 4 EEG. In the reasoning of the EEG in 2004, 25% of the overall plant construction costs are considered as economically reasonable grid expansion costs. The plant operator bears the costs of connecting the plant to the most closely located or technically and economically most suitable grid connection point as well as the costs of the measuring devices necessary to record the electricity transmitted and received (§ 13 par. 1 EEG).

sources priority over electricity from energy sources other than renewable ones ("principle of priority“)[10]. In case of curtailment, the grid operator shall make sure that priority is given to electricity generated from renewable sources or by CHP unless other installations for the generation of electricity must remain connected to the grid in order to guarantee the safety and reliability of the electricity supply system. The grid operator shall not claim grid use charges for the purchase and transmission of electricity from the operators of renewable energy plants. According to the EEG, the grid operator is the buyer of electricity, as he does not only import electricity from the operators of renewable energy plants but also pays for it. For this reason, the grid operator has sole responsibility for the effects of this electricity on his grid as soon as he agrees to import it.

Upon request of those interested in feeding in electricity, the grid operator is obliged to immediately optimise, boost and expand his grid in accordance with the best available technology in order to guarantee the purchase, transmission and distribution of electricity from renewable sources[11]. This obligation shall not only exist for grid operators whose grid the plants are immediately connected to, but also for upstream grids with a maximum voltage of 110 kV, provided that the expansion measures are necessary to guarantee the purchase, transmission and distribution of electricity[12]. Plant operators are entitled to the expansion of the grid only if it is economically reasonable[13]. The grid operator shall not make the conclusion of a contract a condition for the fulfilment of his obligation to expand the grid[14]. A given plant operator may take legal action against the grid operator to claim the expansion of the grid if the connection of a plant or the export of electricity would otherwise be at risk. If the grid operator does not boost and expand his grid even though he is obliged to do so, those interested in feeding in electricity may demand compensation for the damage incurred. The grid operator is not liable to pay compensation if he can prove that the violation of his obligation was neither deliberate nor negligent[15].

Besides the legislative framework, grid expansion is a highly debated issue in current German political debate. Particularly, the FIT establishes a long-term support scheme that allows investors to construct renewable energy plants constituting a secure investment. However, at a current pace of newly installed capacities, grid expansion demands ever higher investment from the respective grid operators and coordinated grid expansion plans. Grid expansion issues are especially critical in case of off-shore wind parks. In the framework of the *Energiewende*, 25 GW of electricity shall be produced by off-shore wind parks by 2030 (currently the amount is only 0,3 GW). This is an excessively ambitious target especially considering the current grid construction problems by TenneT due to the extremely large investment volume needed. The core of the problem is how to distribute the costs of lacking grid expansion. In a consultation between the Chancellery, the Minister of the Environment and Minister of the Economy in the end of August a compensation pay (*Entschädigungsumlage*) for the non-availability of grid access was decided. The compensation has to be paid by the liable transmission grid operator, but it only amounts up to 20% of the total incurred losses. The difference is shouldered by the households (max. €ct 0.25/kWh) and the public hand. This approach fits the general rationale of the German support system of transferring the costs of green energy to final energy consumers, the households, who are generally still favourable to it. However, critical voices are growing. Another issue is the construction of an “electricity highway” from the production centres in the North to the consumption centres in the economically productive South of Germany.

The potential of wind energy

The rather slow development of wind energy in Finland compared to Germany has several intertwined

[10] § 8 par. 1 EEG
[11] § 9 par. 1 sentence 1 EEG
[12] § 9 par. 1 sentence 2 EEG
[13] § 9 par. 3 EEG
[14] § 4 par. 1 EEG
[15] § 10 par. 1 EEG)

reasons. German legislative support for renewable energy as introduced by the Schröder-cabinet has been operating for more than a decade and has considerably stimulated the market for renewable energy and has been the source of its continuous progress. So on the one hand, it is clear that as the Finnish renewable energy market has adopted its main support method for wind energy quite recently, the expansion of the renewable energy market is still in its early stage and needs to be further developed. However, a more diversified support scheme might lead to more market security and also to bigger investments.

In the view of the necessity to promote wind energy during the coming years in Finland, several steps in addition to states subsidies and economic incentives might prove useful. So far the public discussion on wind energy has not yet been elaborated to its full extent. When looking at Germany, it is clear that the discussion about wind energy does not only need to concentrate either on moral connotation about renewable energies and environmental friendliness vs. nuclear power. Wind energy and renewable energies as a whole, can be discussed on a wider long-term (economic) cost-benefits scale. Therefore it might prove useful to bring the debate about wind power to a new level and include a wider cost-benefit analysis.

In 2010, Finland consumed 87.5TWh, i.e. 16.3MWh of electricity per inhabitant. This is the highest consumption per capita in Europe, 2.7 times higher than EU average of 6.2 MWh per inhabitant and 2.5 times more than in Germany (RES-Integration 2011). In addition to that, in terms of electricity intensity of the economy, Finland is the 3rd country in Europe. Since the beginning of the 1990's Finland's energy consumption has been growing steadily and according to the Finnish National Renewable Energy Action Plan, gross final electricity consumption is forecasted to grow 16% between 2010 and 2020. In the current situation, where Europe and including Finland are becoming more and more dependent on energy, wind power could certainly prove a useful tool to increase the country's energy independence.

In economic terms, it has been shown that wind power is useful in terms of production costs. With regards to fossil fuels and nuclear energy, the cost learning curve of wind power plants looking at the costs as a function of the market volume is highly significant and underlines the potential of wind energy (IEA Energy Technology Perspectives 2008). Therefore wind power can clearly serve as a means to diversify energy production by promoting the energy independence of Finland with economically justifiable costs. Finland's geographic exposure, particularly its long coastline and wind regime, facilitates stable electricity production from wind energy. Off-shore wind on the rocks can be regarded as an economically feasible form of electricity production. This holds for cheaper construction and maintenance costs compared to classic off-shore wind parks. Finland could become a pioneer in this field by developing this technology that could serve as a model for other countries. Eventually, technological innovation means also increased export chances and new potential markets. According to recent estimations, the use of Finnish wind power potential to its full potential would mean a significant decrease in the country's energy export bill (€ 300 millions) and an opportunity to accumulate technology export revenues (see Lauri Tarastin Tuulivoimaa edistämään selvitys 13.04.2012)

Finland has good wind resources along the coast line of Southern and Central Finland, and in general a high potential for wind generation in large parts of the country. However, on the downside, the coastline has a high density of vacation homes, or summer cabins, owners of which do not appreciate having a wind turbine next door thus creating potential conflicts with the owners of the cottages. (*see* RES Integration 2011 Country profile: FINLAND). As for regions of Finland where the population density is considerably lower, the grid is not very developed, thus requiring higher investments. Another barrier for the development of wind power is that most of country is forested and this pushes the good wind resource higher than in less forested countries, causing higher costs and at the west coast developers are facing barriers due to protection of birds. (*see* RES Integration 2011 Country profile: FINLAND). It is worth noting that some of Finland's most significant areas of hydropower

development are located in northern Finland (Kemijoki) and Oulujoki river basin in Central Finland. Taking into account the good wind resources in Lapland, as well as the hydro resources (also for storage), grid development might prove useful and can thereafter represents a significant potential for energy export.

When considering public opinion about wind parks, Germany might serve as an example. Wind energy enjoys strong public support (Forsa polls). The regulations in place for environment protection ensure a safeguard of the living quality and flora and fauna, but also allow the full-scale development of wind power industry. When asked about the production of renewable energy in the neighbourhood, 55% of the Germans interviewed were in favour of wind power plants. The support among interviewees with prior experience with wind power plants in the neighbourhood is even stronger (74%).

Concerning public opposition to wind parks in Finland, there are also reasons for optimism. A study conducted in 2010 tried to show the change in peoples' attitudes towards wind plants before and after the plant construction. The study showed the change in peoples' attitudes about the most common concerns usually put forward when talking about wind plants, i.e. noise, destruction of landscape, shadows etc. The study showed that even where opinions had already been rather positive before the construction of plants, they were certainly softened in all areas after the plant had actually been put to place. The study also showed that additional information about the effects of wind plants is still necessary, concerning for example the effects of wind plants to animals. Here it might equally prove to be useful to talk about the effect of the wind plants to the community in terms of a wider effect, for example including employment. In Germany the sector currently employs approximately 100 000 people. According to recent estimations, the development of wind power in Finland would mean approximately 25 000 new jobs in the sector by 2020. (see Lauri Tarastin Tuulivoimaa edistämään selvitys 13.04.2012)

In Germany, the public support for wind plants on the individual level has been encouraged through the support given to wind parks by the municipalities. Municipalities profit from wind parks in form of corporate taxes, jobs and even tourism, e.g. Ostfriesland offering special guided tours and excursions . The benefits of wind power are shown to outweigh whatever doubts may persist. Moreover, besides strong public support for renewable energy in general, public empowerment in form of public wind parks (Bürgerwindparks) constitutes a means to influence planning, benefit from production revenue and increase support. In Finland the support by the local governments equally seems to be on the rise. A research conducted in 2011, which included local decision makers and officials from 92 municipalities mainly situated in the coastal areas and Lapland, show that 90% of the respondents have a positive view on wind plant construction in their area and only 2 % of the decision makers oppose it completely. Furthermore, the municipalities where wind power plants had been constructed in recent years, 80% of the respondents felt satisfied with it and 74% of them believed that wind plant construction has had a positive effect on their community image. When respondents declared to be strongly in favour of wind plant construction they were asked about the benefits of wind plant construction. Here the main replies were "renewable, emission free energy" (80%), "construction of wind plants may help to boost Finnish innovation" (54%) and "creation of new jobs for local people" (49%). However, only 38% agreed that wind power plant construction positively effects the well-being and welfare of their community's people. It is clear that additional political commitment and explanatory work by the municipalities can help to further overcome public opposition.

In a nutshell, the potential and benefits of wind energy in Finland are high in various ways only waiting to be seized.

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Contact: eMail: policy(at)eclareon.com, Phone: +49 (0)30 246 286 90

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Information on authors:

Robert Brückmann

Head of Policy Consulting Unit

Robert Brückmann holds a University diploma in law from the University of Freiburg, Germany and has also passed the bar examination in Hamburg. He specialized in European law at the University of Helsinki, Finland. During his legal traineeship at the Hanseatic Higher Regional Court of Hamburg 2005-2008, he specialized and intensively worked on energy law and renewable energy law. Among others he gained experience at the Conergy AG, at the Federal Maritime and Hydrographic Agency of Germany, which is the authority for the application of offshore wind farms. He also worked at the law firm Sozietät Becker, Büttner where exclusively worked with renewable energy law.

Robert Brückmann has been working with eclareon in the area of policy consulting since February 2008 at the beginning as project manager, since February 2011 as head of policy department. In the last six years, he specialised in the analysis of legal framework for the use of RES at national and European level by planning and implementing the projects RES LEGAL, PV LEGAL, RES Integration and AEON Tren Barriers. Moreover, he established and coordinated the eclareon's research team.

Robert Brückmann is business fluent in English; he also speaks Finnish and French.

Mari Tepp

Researcher

Mari Tepp graduated her Bachelor's degree in 2011 in history and political science at the University of Tartu, Estonia. During her studies she spent three months in the U.S at Georgetown University and also did a longer exchange in the University of Lyon Jean Moulin in France. Since autumn 2011 she is pursuing a Masters degree in European Affairs with a specialization in law at Sciences Po Paris. Mari Tepp has gained experience while interning at the Foreign Ministry of Estonia as well as at the Estonian Embassy at the U.S. Since march 2012 Mari has been doing research for the project RES Legal being responsible for Estonian and Finnish national profiles.

Aside from Estonian, she speaks English, French, Finnish, Russian and has strong skills in German.

Robert Schachtschneider

Consultant

Robert Schachtschneider graduated his Bachelor's degree in 2009 in European Studies from Maastricht University followed by a Master's degree in Public Policy from Hertie School of Governance Berlin. During his studies, he spent one semester at Sciences Po Paris and obtained working experience as a young professional in the GIZ project on energy efficiency in buildings in Kiev, Ukraine (12 months). Robert Schachtschneider has been working at eclareon since November 2011 being responsible for the analysis of legal framework conditions as well as questions of grid connection and integration for renewable energy in the Dutch-speaking countries and Germany. He is actively involved in the projects RES Legal and PV Radar Europe.

Aside from German, Robert Schachtschneider is fluent in English, Dutch as well as French and has strong skills in Russian.