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# Onshore Wind Power in Denmark

## Introduction

The following paper is in response to a request from the Environment Committee. It gives background to wind power in Denmark including an overview of the policy position behind its development and schemes offered to encourage the expansion of the industry.

Denmark had 4,772MW of wind power installed by the end of 2013, contributing to 4% of the EU's total installed wind capacity.<sup>1</sup> This puts it in sixth place behind Germany, Spain, the UK, Italy and France (see Figure 1).

Denmark currently has over 5000 wind turbines (onshore and offshore)<sup>2</sup>. Latest figures published for 2012 (2013 not available until autumn 2014) show that wind power contributed to almost 30% of domestic electricity supply. Of the total power generated by wind that same year, 72% came from onshore wind and 28% from offshore.<sup>3</sup>

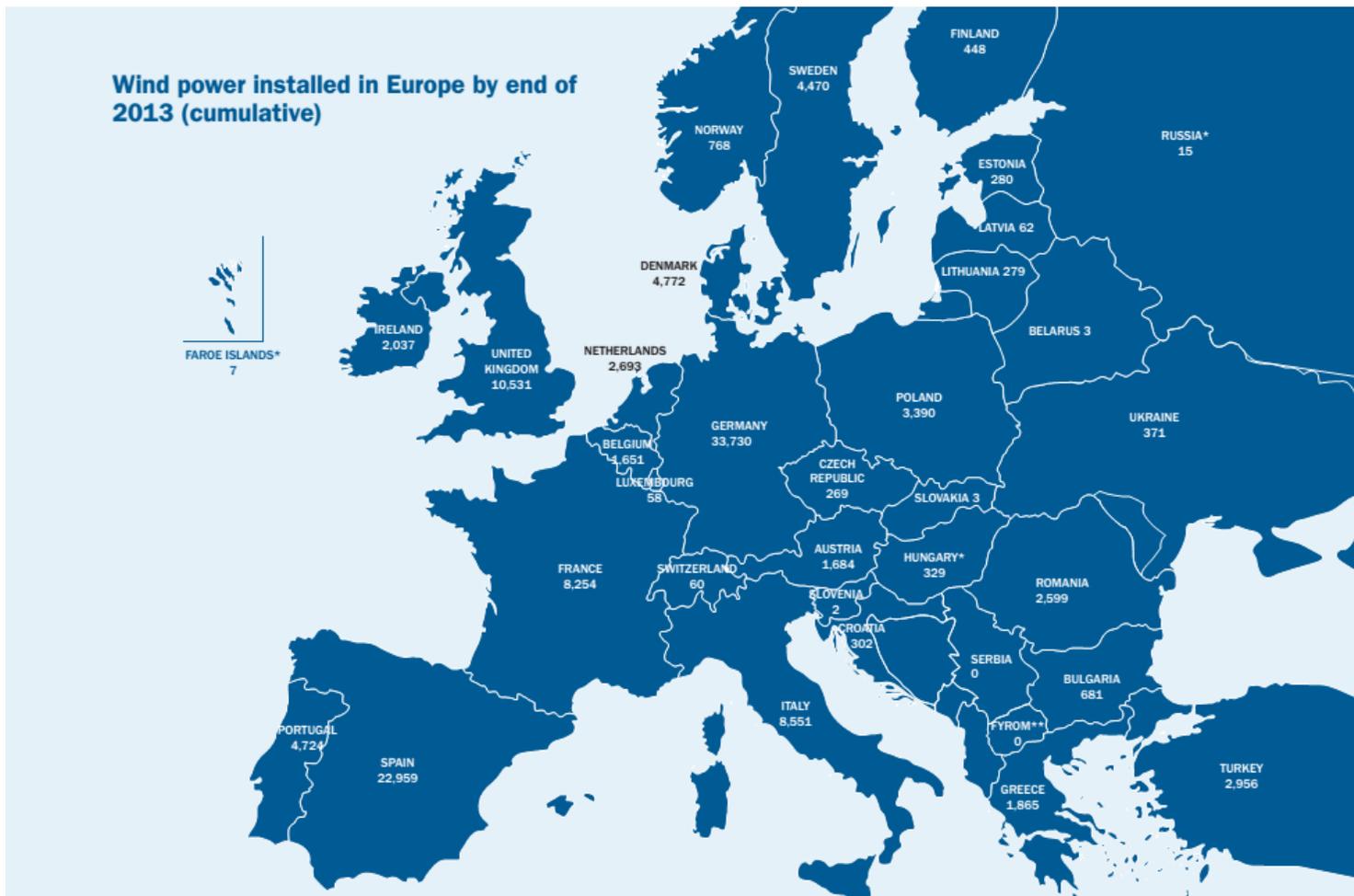
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<sup>1</sup> European Wind Energy Association, 2014, *Wind in Power 2013 European statistics*. <http://www.ewea.org/statistics/european/> (p.12)

<sup>2</sup> Danish Energy Agency (July 2014) Register of wind turbines <http://www.ens.dk/en/info/facts-figures/energy-statistics-indicators-energy-efficiency/overview-energy-sector/register>

<sup>3</sup> Danish Energy Agency (2012) *Energy Statistics 2012* <http://www.ens.dk/en/info/facts-figures/energy-statistics-indicators-energy-efficiency/annual-energy-statistics> (p.10)

Figure 1: Wind power installed in Europe



Source: EWEA 2014<sup>4</sup>

<sup>4</sup> European Wind Energy Association, 2014, *Wind in Power 2013 European statistics*. <http://www.ewea.org/statistics/european/>

Planning for onshore wind turbines is the responsibility of the local municipalities for turbines up to 150 metres. Turbines over 150 metres are dealt with by the Ministry of the Environment, who also manages the production, implementation and enforcement of planning legislation for onshore wind. Any planning proposal at a general or strategic level, and those requiring an Environmental Impact Assessment (EIA), are also handled by the Ministry of the Environment.<sup>5</sup>

## Policy Position

The EU's 2020 Climate and Energy Package set Denmark with a target of at least 30% renewable energy of its total energy consumption by 2020<sup>6</sup>, and 10% renewable energy in the transport sector by 2020<sup>7</sup>.

Denmark has set its own target of 100% renewable energy in the entire energy supply and transport sectors by 2050. By way of achieving this, a new Energy Agreement was reached in Denmark in March 2012 setting interim targets. These include more than 35% of final energy consumption from renewable energy sources by 2020, and 50% of all electricity consumption supplied by wind power by 2020<sup>8</sup>.

Supporting the expansion of wind power up to 2020, the energy agreement sets plans for 1000 MW of offshore wind turbines, 500 MW of near-shore wind turbines and 500 MW of onshore wind turbines, while also accounting for decommissioning old wind turbines.<sup>9</sup>

## Schemes

The Promotion of Renewable Energy Act entered into force in Denmark on 1 January 2009. It contains four new schemes to promote the development of wind turbines:

### **1. Loss of value to real property due to the erection of onshore wind turbines**

If a property loses more than 1% in value due to the erection of new wind turbines, the owner is entitled to full compensation for the loss. The turbines must be 25 metres or more in height, and the affected property must be within a distance of up to six times the turbine's height. To give neighbours the opportunity to assess the consequences, it

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<sup>5</sup> Danish Energy Agency Onshore Wind Power [online]. Available at <http://www.ens.dk/en/supply/renewable-energy/wind-power/onshore-wind-power> and Danish Energy (2009) *Wind Turbines in Denmark*. <http://www.ens.dk/en/supply/renewable-energy/wind-power/facts-about-wind-power/facts-numbers> (p.12)

<sup>6</sup> European Commission, *Europe 2020 in Denmark – Renewable Energy*. Available at [http://ec.europa.eu/europe2020/europe-2020-in-your-country/danmark/progress-towards-2020-targets/index\\_en.htm](http://ec.europa.eu/europe2020/europe-2020-in-your-country/danmark/progress-towards-2020-targets/index_en.htm)

<sup>7</sup> European Commission, *Biofuels and other renewable energy in the transport sector*. Available at [http://ec.europa.eu/energy/renewables/biofuels/biofuels\\_en.htm](http://ec.europa.eu/energy/renewables/biofuels/biofuels_en.htm)

<sup>8</sup> Danish Ministry of Climate Energy and Building (2013) *Energy Policy Report 2013*. Available at [http://www.ens.dk/sites/ens.dk/files/policy/danish-climate-energy-policy/dkenergypolicyreport2013\\_final.pdf](http://www.ens.dk/sites/ens.dk/files/policy/danish-climate-energy-policy/dkenergypolicyreport2013_final.pdf)

<sup>9</sup> *ibid*

is the responsibility of the developer of the wind project to notify all neighbours within the distance, at last four weeks before the planning process starts.<sup>10</sup>

The owner of the property must notify their claim for compensation to Energinet.dk, which operates the electricity grid in Denmark. Those within the distance do not pay a fee; however owners beyond the distance pay DKK 4,000 (£427) to Energinet.dk, which is refunded if the right to compensation is granted.<sup>11</sup>

An owner can choose to enter into a voluntary agreement for compensation with the erector of the wind turbine, or can ask Energinet.dk to submit the claim to an impartial appraisal authority to make a specific appraisal of the property, and determine the loss. The Energy and Climate Minister has appointed five valuation authorities for this purpose.<sup>12</sup>

If the property owner's claim is successful, the erector must be notified before the turbine has been erected and must pay the valuation authority costs. If the claim is rejected then Energinet.dk pays the valuation authority costs that are not covered by the DKK 4000 fee. This cost is recouped from the electricity consumers as a public service obligation (PSO) contribution.<sup>13</sup>

## **2. Local citizen's option to purchase wind shares in new projects**

Any citizen 18 years or older living within 4.5km of new wind turbines, will be given the option to buy a share in local turbine projects. Priority is given to those living closest, however any shares not bought will be offered to permanent residents in the rest of the municipality.<sup>14</sup>

The erector of the turbines must announce the project in the local papers. The shares on offer must equate to at least 20% of the cost of the turbines; a single share is around DKK 3,000-4,000 (£320-£427). Shareholders share the costs, revenues, risk and influence on equal terms with the erector of the turbine.<sup>15</sup>

The wind developer must hold an information meeting advertised by local newspapers. The meeting must include a run through of the sales material to give an indication of the nature and financial conditions of the project. Following this meeting, local citizens have four weeks to make a purchase offer.

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<sup>10</sup> Danish Energy Agency (2009) Wind Turbines in Denmark (p.22). Available at <http://www.ens.dk/en/supply/renewable-energy/wind-power/facts-about-wind-power/facts-numbers>

<sup>11</sup> ibid

<sup>12</sup> ibid

<sup>13</sup> decisions of the valuation authority cannot be contested with another administrative body, but may be brought before the courts as civil proceedings by the owner of the property against the wind turbine erector.

<sup>14</sup> Danish Energy Agency (2009) Wind Turbines in Denmark (p.23). Available at <http://www.ens.dk/en/supply/renewable-energy/wind-power/facts-about-wind-power/facts-numbers>

<sup>15</sup> ibid

Energinet.dk must approve the sales material as a condition for the wind turbine erector obtaining the subsidy provided for in the Danish Promotion of Renewable Energy Act.<sup>16</sup>

### **3. A green scheme to enhance local scenic and recreational values**

The Danish Promotion of Renewable Energy Act has introduced a green scheme for the financing of projects that enhance the scenery and recreational opportunities in the municipality. Under the scheme, Energinet.dk pays DKK 0.004 (0.04 pence sterling) per kWh for the first 22,000 full-load hours, for wind turbine projects connected to the grid since 2008.<sup>17</sup> According to the Danish Energy Agency this could work out at DK 200,000 (£21,325) per turbine depending on their size.<sup>18</sup> Money for the scheme is recouped from electricity consumers as a PSO contribution. Money is lodged into an account for the given municipality, and the amount of money depends on the number and size of turbines connected to the grid in that municipality.

The green scheme may:

- Wholly or partially finance development works for enhancing scenic or recreational values in the municipality; and
- Be granted to municipal cultural and information activities aimed at promoting acceptance of the use of renewable energy sources.<sup>19</sup>

### **4. A guarantee fund to support financing of preliminary investigations etc by local wind turbine owners' associations.**

A new scheme with a total of DKK 10 million was established in January 2009. The scheme which is run by Energynet.dk, grants guarantees for commercial loans taken out by local groups, such as wind turbine associations. The money for the fund is recouped from electricity consumers as a PSO contribution.

The guarantee is to act as a security for groups of citizens, wind turbine owners' associations and others to apply for a loan to help finance preliminary investigations, before deciding whether to erect a turbine. This may include preliminary investigations of the area and proposed turbine sites, nuisance for neighbours, financial aspects etc. The maximum loan a guarantee can be applied for is DKK 500,000 per project.

The guarantee will lapse once the turbines are connected to the grid, or if the project is sold on. If the project is not implemented and the loan cannot be repaid, the guarantee will be paid.<sup>20</sup>

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<sup>16</sup> More information on the subsidy can be viewed here <http://www.ens.dk/en/supply/renewable-energy/wind-power/facts-about-wind-power/subsidies-wind-power>

<sup>17</sup> Danish Energy Agency (2009) Wind Turbines in Denmark (p.23/24). Available at <http://www.ens.dk/en/supply/renewable-energy/wind-power/facts-about-wind-power/facts-numbers>

<sup>18</sup> Danish Energy Agency, Green Scheme. Available at <http://www.ens.dk/en/supply/renewable-energy/wind-power/onshore-wind-power/green-scheme-enhance-local-scenic-recreational>

<sup>19</sup> *ibid*

### Replacement/scrapping scheme

The Promotion of Renewable Energy Act also contains a scrapping scheme for old wind turbines. According to this scheme, a scrapping certificate can be earned by replacing old inappropriately situated wind turbines with new and more efficient turbines. The most recent scheme granted the erector the right to an extra subsidy for new turbines that were grid connected up until December 2011. This was managed and paid by Energynet.dk.<sup>21</sup>

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<sup>20</sup> Danish Energy Agency (2009) Wind Turbines in Denmark (p.24). Available at <http://www.ens.dk/en/supply/renewable-energy/wind-power/facts-about-wind-power/facts-numbers>

<sup>21</sup> More information on this scheme can be obtained from the Danish Energy Agency at <http://www.ens.dk/en/supply/renewable-energy/wind-power/onshore-wind-power/replacement-scheme-wind-turbines-land-expired>