

Minutes of the Finnish Country Workshop (15 March 2018, Espoo, Finland)

Summary of the Finnish Country Workshop

The Finnish Country Workshop was held on 15 March 2018 at Dipoli, Aalto University. The aim of the workshop was to outline the topical issues of offshore wind power in Finland keeping in mind the meshed grid approach. Stakeholders and others interested in wind power related issues were invited to attend the workshop. Participants included, for example, industry experts, representatives of the transmission system operator and public administration.

The day started with opening words and an introduction to the Baltic InteGrid project. The project has numerous project partners from countries around the Baltic Sea, which were briefly introduced together with the structure and phase of the project. The Finnish Country Workshop contributes to developing a Baltic Offshore Grid Forum, which could continue after the project is completed.

Aalto University participates especially in the project's work packages related to policy and regulation. In addition, Aalto University is the leader of the work package providing the recommendations of the project to the Ten Year Network Development Plan, Maritime Spatial Plans and Policy and Regulation in general. In spring 2018, Aalto University will publish a Finnish Country Report providing the legal and policy framework for offshore wind power in Finland with connection to the project's work package 3.1 outlining legal, regulatory and institutional analysis.

The workshop outlined the topical legal and political questions on offshore wind energy in Finland. These included the recent change in the real estate taxation of wind power plants, national maritime spatial plans and a proposed new technology-neutral subsidy system for renewable energy sources. The construction of the first offshore wind farm in Finland, Tahkoluoto, was also covered. In addition, the development of electricity transmission networks of the Baltic Sea area was explored.

As a result, several barriers for offshore wind power development were identified in the workshop. These barriers include such issues as political will, real estate tax and lack of a special subsidy system for offshore wind power. Political will is needed to boost the development of offshore wind power and wind power projects in general.

Topical questions on offshore wind energy

Finnish Wind Power Association, Anni Mikkonen

Anni Mikkonen from the Finnish Wind Power Association presented an overview of the current questions related to wind power in Finland. The growth of wind power overall has been rapid from the year 2014 because of the implementation of a subsidy system for renewable energy, and in 2017 4.8 TWh of electricity was produced by wind power, which accounts to 7.4 % of

electricity production in whole. Finland's first offshore wind farm, Pori Tahkoluoto, was put in operation in 2017. Altogether, 516.15 MW of cumulative wind power capacity was installed in Finland in 2017.

The development of technology drives the development of wind power plants and enables the growth in production and the fall in production costs. The capacity factor for wind power was 26% in 2013 and 32.5% in 2017.

Key changes in Finnish legislation includes the change of the definition of a power plant in the Real Estate Tax Act. Consequently, as of 1 January 2018 wind power plants are defined as power plants according to the real estate tax act if there is more than one power plant connected via a shared connection point to the distribution or transmission grid and the nominal power of the plants accounts in total to more than 10 MVA. Power plants have a higher real estate tax, and as more wind power plants are now taxed at this rate according to the Real Estate Tax Act, this increases the production costs for wind power.

Another essential issue is the proposed new subsidy system for renewable energy. The Finnish Government has made a proposal to replace the current feed-in tariff system with a technology-neutral operating aid for renewable energy in the form of a tendering process for the period 2018–2020.

In addition, the Ministry of the Environment is currently preparing a one-stop shop Act for environmental permits, water permits, nature protection exemptions, EIAs, and construction permits. The Act would make it possible to obtain all the above mentioned permits from a point of single contact. As far as offshore wind power is concerned, it could thus be possible to combine the water permit and construction permit procedures and EIA.

Tahkoluoto – the first offshore wind power farm in Finland

Suomen Hyötytuuli, Esa Holttinen

Esa Holttinen from Suomen Hyötytuuli shared experiences of the construction of Finland's first offshore windfarm, Tahkoluoto. In addition, Tahkoluoto is the world's first offshore wind farm built for challenging ice conditions and the most northerly situated OWF. In such conditions, for instance pack ice has to be taken into account in constructing OWF. Mr. Holttinen described in detail the construction phases of Tahkoluoto. It was built in two periods during the open sea, summer 2016 and summer 2017. The power plants are situated 0.5–3 kilometers from the shore and in 8–15 meters deep water. Finland, or even the Baltic Sea region, does not have all the required equipment to set up offshore wind power, for instance a wind turbine installation vessel was brought from the North Sea. Overall, approximately 400 people were involved in the construction of Tahkoluoto.

In the future, the levelized cost of electricity will decrease as the plant sizes increase. The Northern Baltic Sea conditions, when compared to standard North Sea locations, are more favorable to offshore wind power in wave conditions, water depth, distance to coastline and corroding water. Operating temperature range and ice conditions are less favorable to OWF in

the Northern Baltic Sea.

Possible drivers to develop more offshore wind power in the Northern Baltic Sea include optimizing plants for lower wind speeds, suitable installation equipment in the area and investments in port infrastructure.

Development of the electricity transmission networks in the Baltic Sea area

Fingrid, Antti Harjula

Antti Harjula from Fingrid, the Finnish continental TSO, gave a presentation on the development of the electricity transmission grid in the Baltic Sea area. ENTSO-E, the European network of transmission system operators for electricity, has six regional groups in its System Development team, with one of them being the Baltic Sea Regional Group. These regional groups help to identify and address network investment and development challenges reflecting regional particularities and needs. The Baltic Sea Regional Group covers an area of several synchronous grids, the Nordic, Continental Europe and IPS/UPS.

In the Baltic Sea region, a comparison between the years 2010 and 2016 shows a shift in production from thermal power towards renewable energy sources. In Sweden and Germany, the use of nuclear power has reduced. In addition, a transition from coal power to less coal-intensive production, such as gas power generation, can be seen. Among other factors, these increase challenges for the power system, for instance in maintaining a continuous power balance. As a result, there is a need for more flexibility between synchronous areas and stronger connections within and outside the region to ensure sufficient power and market integration.

The drivers to develop the grid in the Baltic Sea region include new connections to Continental Europe, renewable energy integration, electricity transmission from north to south and higher electricity demand as production is being electrified in several industries and electric cars are emerging. In addition, the Baltics are sought to be synchronized to Continental Europe.

Overview on the new RES subsidy system

Energy Authority, Roland Magnusson

Roland Magnusson from the Energy Authority gave a general account of the new proposed subsidy system for renewable energy. The Finnish Government has made a proposal to replace the current feed-in tariff system with a technology-neutral operating aid for renewable energy in the form of a tendering process for the period 2018–2020.

According to the proposal, preconditions for participating in the tendering process include qualifications for the project type and for the stage of the project. The project must be a wind power plant, solar power plant, wave power plant, biogas plant or a wood fuel plant. In addition, the plant must be new and state aid must not have been granted for the operation or investment of the plant. According to the proposal a wind power plant should, with the exception of its foundations, be in its entirety new and not contain any used parts. For the stage of the project, it is required that no binding decision on the commencement of construction work exists, the



permits required for the construction of the plant are non-appealable and the plant has a connection offer from a TSO or a connection agreement has been concluded.

In the proposed system, the energy producer makes a tender on the premium, the annual production of electricity and section of which the subsidy time begins from. A producer of electricity whose power plant has been approved in the premium system on the grounds of tenders could receive subsidies determined in accordance with the premium. The tenders are accepted in the order of profitability. The producer would be obliged to produce electricity according to the accepted tender. Failure to comply would oblige the producer to pay to the state a sub-production allowance. A delay in the project or only partial implementation of the project could result in the loss of construction security or payment of the subsidy for a shorter period than what has been applied for. The rights and obligations under the premium system would be in force for a maximum period of 12 years.

In order for the proposed new subsidy system to come into force, the Parliament's approval and Parliamentary budget authorization are required and compliance with EU state aid rules must be ensured.

Offshore wind construction challenges

EPV Energia, Sami Kuitunen

Sami Kuitunen gave a brief overview of the challenges in offshore wind farm projects. From the projects that were in the planning in 2014 in Finland, there are currently three noteworthy offshore wind power projects ongoing (Suurhiekkä, Maanahkiainen, Røyttä). Key regulation in relation to offshore wind power includes regional land use planning, master plans, maritime spatial planning, EIA assessments, water permit, construction permit, real estate tax and Act on Wind Power Compensation Areas.

Three maritime spatial plans will guide the land use in the Finnish EEZ and the territorial waters once they have been drafted. Three Regional Councils have the responsibility to draft and adopt the plans by 31st March 2021. Maritime spatial plans explore different forms of use for maritime areas, which include for instance the energy sector and maritime transport.

In the construction of offshore wind power, constructability must be taken into account. For instance, a factor affecting the placement of wind power is pack ice. In addition, social acceptability can affect offshore wind power projects as all of the planned projects are situated close to the shore. Furthermore, Finland is geographically aside from offshore wind power development, which is concentrated in the southern parts of the Baltic Sea. The tight definition of the main grid and national legislation also set challenges for OWF projects.

Offshore wind power is driven by employment, industry policy and technology, framed by the EU's renewable energy policy. Wider utilization of offshore wind power in the Baltic Sea requires cooperation between states.

Panel Discussion

At the end of the workshop, the speakers participated in a panel discussion.

The panelists identified a number of barriers for offshore wind power in Finland in addition to economic viability. These barriers include such issues as political will, real estate tax and lack of a special subsidy system for offshore wind power. Political will needed to boost the development of offshore wind power and wind power projects in general. For instance, the change in the Real Estate Tax Act affects the cost-efficiency of wind power projects significantly.

In the new proposed technology-neutral subsidy system, offshore wind power does not have its own quota, but is competing with other renewable energy production forms. This hinders the chances of offshore wind power projects to be accepted in the subsidy system. The panelists would rather see a tendering process where mature and immature technology are competing in separate processes. It is also a matter of political will what the subsidy is allocated for.

The maritime spatial plans to be drafted by March 2021 are not legally binding, but the panelists consider them as an important tool to express long-time plans and to show the direction for developing the maritime areas.

Finland is also a relatively small country and bigger investments are directed elsewhere. National special characteristics make it difficult to copy solutions from other projects. In Finland, the production focuses in the north while the consumption is in the south, which creates demands for the transmission system.