【欧州】【海事】

Maritime Issues – Renewable energy including offshore wind power generation: The EU's Baltic Sea countries sign declaration of intent on the offshore wind development in the Baltic Sea

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【概要：Summary】

The EU intends to achieve net-zero GHG emissions by 2050, based on its European Green Deal (COM (2019) 640 final). In order to achieve climate-neutrality in the EU by 2050 but also the targets related to the Paris Agreement, it will be essential to increase the EU's wind energy production, among others. In fact, also in the European Green Deal, wind power is considered being one of the key elements to achieve the carbon neutrality target in 2050.

Besides onshore wind parks, the offshore wind power generation has gained attention. In contrast to onshore wind parks, the offshore wind power generation benefits from the utilisation of the stronger and steadier winds at sea and less space restrictions, to an extent. As provided for in the Paris Agreement, the European Green Deal, and the national energy and climate plans, electricity generation from offshore wind will grow significantly in the coming decades.

The development of offshore wind is becoming crucial for the EU to meet its 2050 climate-neutrality targets, but the construction of offshore wind farms will have to be decisively accelerated in quantity, size and power capacity at all maritime locations suitable in the EU.

In the past, most of the offshore wind capacity in Europe has been installed in the North Sea by Germany and the UK. However, a study on the Baltic Sea offshore wind energy cooperation under the Baltic energy market interconnection plan (BEMIP) initiative considers a possible expansion in the Baltic Sea Area, which could exceed a total capacity of 93GW. Considering the potential of offshore wind power generation in the Baltic Sea, the potential power generation capacity could reach around 325 TWh/year. There is plenty of potential to building new offshore wind farms in the Baltic Sea area. Therefore, the signing of the "Baltic Sea Offshore Wind Joint Declaration of Intent" underlines the Baltic Sea countries' willingness to accelerate the development of offshore wind energy in this region.

【記事：Article】

1. The EU's 2050 carbon neutrality target and the role of wind energy

Based on the European Green Deal (COM (2019) 640 final), which the European Commission presented on 11 December 2019, the EU intends to achieve net-zero GHG emissions by 2050. Furthermore, in contrast to the EU's current target to reduce the GHG emissions by 40% below 1990 levels by 2030, on 17 September 2020, the Commission presented a proposal to reducing the GHG emissions by 55% by 2030, based on

1990 levels. The Commission also tabled an amendment to the proposed European Climate Law, to include the 2030 emissions reduction target of at least 55% as a step towards the 2050 climate neutrality goal. It invited the Parliament and Council to confirm this 55% target as the EU's new Nationally Determined Contribution (NDC) under the Paris Agreement, and to submit this to the UNFCCC by the end of 2020. Accordingly, a legislative proposal should be presented by June 2021 to implement the new target, which would include the revision and expansion of the EU Emissions Trading System (EU-ETS) and the framework for land use emissions, the reinforcement of energy efficiency and renewable energy policies, and the strengthening of CO2 standards for road vehicles. However, in order to achieve these more ambitious GHG emission reduction target in 2030 and carbon neutrality by 2050, the EU will have to transform its energy system and to replace fossil fuels with renewable energy sources. According to the European Commission's European Green Deal (EGD)" …increasing offshore wind production will be essential, building on regional cooperation between Member States".

2. The Baltic Sea's wind power generation potential

Wind power is considered being one of the key elements to achieve the carbon neutrality target in 2050. Besides onshore wind parks, the offshore wind power generation is expanding, as offshore wind generation benefits from the ever-larger turbines and the utilisation of the stronger and steadier winds at sea. The EGD mentions explicitly offshore wind installations as a key element for achieving the 2050 net-zero GHG emission target. However, the construction of offshore wind farms will have to be decisively accelerated, in quantity, size and power capacity in order to achieve the 2050 target.

In 2019, 3.6 GW of new net offshore wind capacity was installed in Europe, thereby setting a new record in annual installations. The target is to increase offshore wind capacity from currently installed capacity of 12 GW in the EU-27 to nearly 130 GW by 2040, or even to around 180 GW. However, the European Commission expects that about 450 GW of offshore wind power generation will be needed by 2050 to achieve the carbon neutrality target. This would require Europe to build 7 GW of new capacity each year by 2030 and to further increase the annual increase in new capacity to 18 GW by 2050. Therefore, the EU is committed to further support the construction of offshore wind farms and to accelerate the offshore wind power generation.

In Europe, currently the North Sea accounts for 77% of all cumulative offshore wind capacity, the Irish Sea 13%, and the Baltic Sea 10% and the Atlantic Sea under 1%. Mainly Germany and the UK, but also Denmark and the Netherlands are constantly increasing their offshore wind power generation. In 2017, the UK accounted for the largest amount of 43% of installed offshore capacity, followed by Germany with 34%, Denmark 8%, the Netherlands (7%) and Belgium (6%).

Considering the Baltic Sea's offshore wind capacity, it accounts for 2 GW of installed offshore wind capacity, with Denmark having installed 872 MW, Finland 68 MW, Germany 1,074 MW and Sweden 192 MW. However, the Baltic Sea's capacity could be significantly increased, according to the "STUDY ON BALTIC OFFSHORE WIND ENERGY COOPERATION UNDER BEMIP". The potential number of offshore wind farm blocks with a capacity of 500MW that could be placed in the Baltic Sea has been estimated based on a screening process that accounts for wind conditions, water depth, and spatial and environmental planning constraints. The total offshore wind farm capacity identified through this process exceeds 93GW in the Baltic Sea, with national totals of between 4.5GW in Lithuania and 20GW in Sweden. Average wind speeds at the identified sites, as measured at 100m above sea level, range between 7.9 m/s and 9.6 m/s. The total net output implied for the gross potential capacity identified is 325 TWh/year.

3. “The Baltic Energy Market Interconnection Plan” (BEMIP)

The Baltic energy market interconnection plan (BEMIP) initiative aims at building an open and integrated regional electricity and gas market between EU Member States in the Baltic Sea region. The BEMIP initiative’s members are Denmark, Germany, Estonia, Latvia, Lithuania, Poland, Finland and Sweden. Non-EU Member Norway participates as an observer. As part of the BEMIP implementation, a number of cross-border and domestic infrastructure projects of common interest have been completed across the Baltic Sea area for improving the integration with the Nordic electricity market. The key electricity infrastructure projects, such as Estlink, Nordbalt and the LitPol Link, connecting the three Baltic States with Finland, Sweden and Poland respectively, significantly improved the Baltic countries’ integration in the EU energy market. Other major projects of common interest (PCIs) are projects in the Baltic region, which will connect the Baltic and Finnish gas networks with the continental European gas network, among others. In the context of the Baltic Energy Market Interconnection Plan (BEMIP) Renewable Energy Working Group the neighbouring Baltic Sea EU Member States consider the creation of an initiative to support the development of offshore wind power in the Baltic Sea.

The “STUDY ON BALTIC OFFSHORE WIND ENERGY COOPERATION UNDER BEMIP”, prepared for the European Commission in 2019, analyses the potential of offshore wind in the Baltic Sea Area. The main aim of the study was to gather information on the potential for offshore wind power in the Baltic Sea Area and to propose a roadmap for the implementation of a coordinated offshore wind strategy for the region. The study analyses the opportunities for and obstacles to the development of offshore wind power in the Baltic Sea Area, and the possible benefits from and obstacles to regional cooperation and coordination of offshore wind power. According to the study, the competitiveness of offshore wind generation varies across the Baltic Sea area, mainly due to wind conditions, connection costs and market values. Especially in the southern part of the Baltic Sea, there are attractive sites due to higher market values for offshore wind power generation. Accordingly, there exists a scope for better utilization of the most attractive sites for offshore wind power through a cooperative, regional approach. The market and grid modelling show that offshore wind power in the best sites can be competitive already in 2030 and therefore, offshore wind power can play a significant role in the transition of the Baltic Sea Energy system in accordance with the EU’s long-term decarbonisation strategy. The cooperation on offshore wind power projects as cross-border renewable energy (RES) projects is expected to generate substantial economic benefits through the achievement of renewable energy targets at lower cost. In addition, benefits can be realised by integrating the cooperation on offshore wind power in regional grid planning. The development of advanced offshore hubs, which connect wind power to two or more Member States, could also be beneficial. Therefore, also this option should be explored.

The study concludes that the Baltic Sea area clearly shows the availability of sites suitable for large-scale offshore wind farm deployment projects with around 93 GW by 2050, up from today’s 2.2 GW. These sites could generate up to 325 TWh/year.

According to the study, there are basically two scenarios possible. Considering a scenario with a minimum result, reflecting a continuation of current expectations and trends, the 2.5 GW offshore wind power installed in the Baltic Sea Area in 2020 would increase to 6.5 GW in 2030 and 17 GW in 2050. Instead an ambitious scenario would double the results of the low scenario, with 12.7 GW in 2030 and 32.1 GW in 2050.

4. Declaration on the commitment to expand offshore wind energy in the Baltic Sea

At the occasion of the Offshore Wind Conference,

hosted by the Polish Wind Energy Association (PSEW), in Szczecin, Poland on 30 September 2020, the high-level representatives of eight Baltic Sea Area countries including Poland, Germany, Denmark, Sweden, Finland, Lithuania, Estonia and Latvia as well as the European Commission signed a joint declaration with the aim to accelerate the set-up of new offshore wind capacities in the Baltic Sea.

The EU Baltic Sea countries signed the "Baltic Sea Offshore Wind Joint Declaration of Intent" on the initiative of Poland, in order to promote the development of offshore wind energy in this region.

The signatories of the Baltic Sea Offshore Wind Declaration jointly commit to the expansion of offshore wind energy in the Baltic Sea Area. They want to foster mutual collaboration in the context of the Baltic Energy Market Interconnection Plan (BEMIP). The countries share a common vision of the Baltic Sea Region as an area of dynamic economic development. The countries are convinced that cost-efficient and environmentally sustainable deployment of offshore wind, through voluntary cooperation will be crucial to ensure a clean, secure and affordable energy supply for the eight EU Member States in the Baltic Sea Area. The Member States will aim to work towards increased offshore wind electricity supplies and better transmission infrastructure across the Baltic Sea, taking into account the need to ensure a sustainable, competitive and secure supply of electricity to consumers. The Member States intend to further contribute to political, economic and technological integration in the Baltic Sea Region through increased regional cooperation on offshore wind development. The joint declaration underlines that a significant increase in offshore energy can be most efficiently achieved through a cooperative, regional approach. The cooperation among Baltic Sea countries will be key to unlocking the 93GW potential of offshore wind energy by 2050.

The joint declaration of intent does not establish any legal commitments nor does it replace or modify any existing legal obligations.

However, Baltic Sea Area Member States intend to explore most effective ways to coordinate their efforts in reducing the costs of energy in the region within the BEMIP High-level Group.

The Sides aim to work together to provide a level playing field and equal access to the market for companies investing in the development of offshore wind farms. The Sides intend to facilitate the efficient integration of offshore wind energy together with other renewable sources of electricity to supply stable electricity to consumers. They will strive to cooperate on identifying potential joint and hybrid projects across the Baltic Sea and foster their development.

The Sides concur to utilise the BEMIP High-level Group as the framework for offshore cooperation in the Baltic Sea Region and jointly decide to create an offshore working group within BEMIP to start work as soon as possible. They will also jointly support the European Commission in creating the legal framework according to the approach described in the Baltic Sea Declaration.

The Sides task the BEMIP High-level Group to adopt, in the Spring of 2021, a work programme for offshore wind development taking into account national policy plans of every Baltic Sea Region's country in their National Energy and Climate Plans and the EU policy developments in relation to renewable energy production.

This collaboration will include questions of hybrid offshore wind projects, smart grids, energy system integration and digitalization. According to the Declaration, the countries will also develop coordinated approaches to maritime planning, taking into account other uses of the sea space and environmental protection. In addition to its EU Council Presidency, Germany currently also holds the Presidency of North Sea Energy Cooperation. The experience gained in the expansion of offshore wind energy in the North Sea can now also be put to greater use in cooperation with the Baltic Sea countries. Besides the German experience with wind farms in the North Sea, many countries in the Baltic

Sea region are at an early stage in the development of offshore wind energy. Therefore the initiative represents an important step forward for those neighbouring Baltic Sea Member States.

The European Commission is expected to publish an Offshore Renewable Energy Strategy on 18 November 2020 that aims to support an ambitious deployment and integration of offshore wind and ocean renewable energies across the EU.

5. Conclusion

The EGD explicitly includes an offshore wind strategy for achieving the 2050 net-zero CO2 emission target. Regarding the current development of offshore wind farms, it can be expected that Europe will be able to increase its grid-connected offshore wind capacity, as new sites in the offshore region will be found. However, it will need further innovations such as floating turbines that can accelerate the offshore wind generation in formerly inaccessible locations order to meet sustainable energy goals. Presently, most of Europe's offshore wind capacity is installed in the North Sea, but the Baltic Sea could host a potential 93 GW by 2050. Therefore, an expansion of offshore wind power generation in the Baltic Sea needs to be pushed forward with the aim to achieve the 450 GW vision for offshore wind by 2050.

The aim will be to strengthen the political, economic and technological integration of the region through intensified joint work in the field of offshore wind. In this context, the EU Baltic Sea countries' signature of the "Baltic Sea Offshore Wind Joint Declaration of Intent" is a clear signal for the willingness to accelerate the development of offshore wind energy in this region. The BEMIP High-level Group will operationalise the Baltic Sea Offshore Wind Declaration and draft a work programme for offshore wind development in the Baltic Sea.

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