

THE LEGAL REGIME OF GENERATION FACILITIES FUNCTIONING BASED ON THE OFFSHORE WIND POWER INDUSTRY (EXPERIENCE OF FOREIGN STATES)

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The coming decade is of great importance for meeting the objectives of the Paris Agreement provisions on the achievement of global zero emissions by 2050. The key scientific international organizations, e.g., the International Renewable Energy Agency (IRENA), the Ocean Renewable Energy Action Coalition (OREAC) and others have come to the conclusion that it is the offshore wind energy industry that is able to solve the arising tasks by satisfying the current global electricity demand by 18 times. With reference to Russia, one can surely state that the offshore wind energy industry has enormous technical potential of 13.373 GW in its marine territories and water areas. Nevertheless, the modern legislative framework of the Russian Federation is unable to ensure qualitative progress in the development of this renewable energy type. The legal regime of generating facilities functioning based on the offshore wind energy industry is an integral part of the legal regulation of public relations in offshore WPPs. In this respect, the presented article proposes a study of the mentioned aspect taking into account the experience of foreign states that are leaders in the construction and exploitation of offshore WPPs, namely, Germany and Great Britain.

Keywords: energy law, energy law of foreign states, renewable energy sources, wind energy industry, offshore wind energy, offshore WPPs, offshore WDPPs.

2021 signifies the beginning of an important decade putting the world community on the track for the achievement of global net-zero emissions by 2050 established in accordance with the Paris Agreement.

Regardless of the fact that a large number of research aimed at the search of the solution to the set tasks has been carried out from the adoption of this international document, priority has been currently given to the offshore wind energy industry.

The offshore wind energy industry acts as the main technology for the delivery of large-scale, affordable and zero-carbon energy, but the sea potential is now practically unexploited as the existing offshore WDPPs generate as little as 35 GW [1]. At the same time, based on an assessment of the World Bank, the global potential of fixed and floating offshore wind-driven power plants is about 71,000 GW [2].

In general, the advantages of the offshore wind energy industry are of great importance in various spheres of life. Thus, the offshore

wind energy industry has achieved significant cost reduction for the last decade with the leveled cost of energy dropping by almost two thirds making it competitive in terms of price with fossil fuel at energy markets in Europe and China [3].

A life cycle analysis also shows that the energy payback period of offshore wind power plants is short, especially compared to generation based on fossil fuel [4].

Taking into account the enormous technical potential (i.e., the evaluation of the quantity of technically feasible generating capacities considering only the wind speed and the water depth) of the offshore wind energy industry in the Russian Federation, namely 13.373 GW [5], there is a need for the development of the state legal regulation of this energy industry.

An integral part of rapid development of the offshore wind energy industry is comprehensive understanding of technical issues related to offshore wind turbines stimulating the current research and development programs [6]¹.

The presented article proposes to review the legal regime of electricity generating wind power plants functioning based on the offshore wind energy industry taking into account the experience of foreign states that are leaders in this energy sector, namely, Germany and Great Britain.

It is worth noting that “features of the legal regime of power facilities cover the whole life cycle of such facilities including design, construction, exploitation, update, reconstruction, repair and decommissioning” [7].

However, construction planning, permit obtainment and grid connection are elements that are also of importance for the establishment of the content of the legal regime of power facilities.

Thus, the following basic aspects of the legal regime of energy generating facilities can

be singled out following an analysis of the main legal provisions of the selected states regulating the reviewed public relations sphere:

(1) *definitive provisions* acting as the basis for the content of the legal regime of power facilities.

Taking into account that the selected states belong to different legal families, legal acts are of a different structure and content, the structure of the legal provision also varies.

Thus, pursuant to Clause 11, Paragraph 3 of the Act on Development and Promotion of Wind Energy on Sea (Gesetz zur Entwicklung und Förderung der Windenergie auf See (Windenergie-auf-See-Gesetz - WindSeeG): “A marine wind-driven power plant is any power plant for generation of power from wind energy set up at sea at least three nautical miles away from the coastline of the Federal Republic of Germany from the seaward; the coastline is shown on map No. 2920 The German Coast of the North Sea and the Adjacent Waters, 1994, XII, and on map No. 2921 The German Coast of the Baltic Sea and the Adjacent Waters, 1994, XII, the Federal Maritime and Hydrographic Agency, scale of 1:375,000, one coastline is shown” [8].

Within the context of the laws of Great Britain, namely, the Energy Act 2013, “offshore installation” means any installation which is intended for underwater exploitation of mineral resources or exploration with a view to such exploitation”. At the same time, “offshore” generating station is a generating station that is: (a) in waters in or adjacent to England or Wales up to the seaward limits of the territorial sea, or (b) in a Renewable Energy Zone, except any part of a Renewable Energy Zone in relation to which the Scottish Ministers have functions” [10] based on Section 15 of the Planning Act 2008.

Thus, the following attributes of reviewed generating facilities can be singled out:

- installation used for generation and production of electric energy based on renewable energy sources such as: wind, waves, tides;
- location of an installation in the maritime zone (territorial sea and exclusive economic zone).

¹ Xiaoni Wu, YuHuYeLi, Jian Yang, Lei Duan, Tongguang Wang, Thomas Adcock, Zhiyu Jiang, Zhen Gao, Zhiliang Lin, Alistair Borthwick, Shijun Liao. Foundations of offshore wind turbines: A review // Renewable and Sustainable Energy Reviews 104 (2019) 379–393.

The following types of generating facilities functioning based on the offshore wind energy industry can be singled out: [11]

— Fixed offshore WPPs located at a depth of less than 50 meters.

Depending on the foundation type: gravity base foundations, monopile foundations, tripod foundations, jacket (lattice structure) foundations [12].

— Floating offshore WPPs located at a depth of 50 to 1,000 meters. Depending on the mounting configuration: semi-submersible platform; spar; and tension leg platform (TLP) [13].

The Global Offshore Renewable Map website [14] presents a map of operating WPPs and the ones under development with the information on the construction project status, the country the generating facility is located in, owners, produced energy volume, etc.

(2) *planning* is a laborious procedure including research of various character: engineering, construction, technical, environmental, economic research, etc.

The results of planning are a document setting out the technical conditions for the use of the territorial sea and the exclusive economic zone of a specific state: the territory development plan (Flächenentwicklungsplans) in Germany and the development consent order in Great Britain.

This is the way to solve a large number of tasks, namely: drafting of spatial specifications for the construction of pilot wind turbines in sea regions and test fields; regions and test sites in the territorial sea; determining the technical conditions for a marine connection line or a test field connection line; determining the technical requirements for the grid connection of pilot wind turbines at sea.

In essence, the laws of each of the selected states provide for an independent system of planning of the development of marine territories.

The German experience of the legal regulation in this sphere is a clear constructive algorithm fixed in details in the basic legal act. Thus, Paragraph 6, Section 1, Part 2 of

the Act on Development and Promotion of Wind Energy on Sea (Windenergie-auf-See-Gesetz — WindSeeG) defines the liability and the plan drafting procedure consisting in the following:

The Federal Maritime and Hydrographic Agency (Das Bundesamt für Seeschifffahrt und Hydrographie) announces the beginning and the termination of the territory development plan drafting procedure.

The Federal Network Agency for Electricity, Gas, Communications, Post and Railroads (Die Bundesnetzagentur für Elektrizität, Gas, Telekommunikation, Post und Eisenbahnen) requires that operators of the transmitting system submit a joint written application on the preliminary project within reasonable terms.

The Federal Maritime and Hydrographic Agency conducts a hearing where it determines the examination framework for the territory development plan. Taking into account the hearing conclusions, it creates a draft of the territory development plan and an environmental report to comply with the requirements of the Environmental Impact Assessment Act. Operators of transmitting networks and marine wind turbines submit the required information to the Federal Maritime and Hydrographic Agency.

The Federal Maritime and Hydrographic Agency prepares the territory development plan following the approval of the Federal Network Agency and in coordination with the Federal Environment Agency, the Chief Directorate of Waterways and Shipping and coastal states.

There is a statutory opportunity for the amendment and update of the territory development plan based on a proposal from the Federal Maritime and Hydrographic Agency or the Federal Network Agency (Paragraph 8 of the regulation under consideration). A decision on the terms and volume of the amendment or update procedure is taken by mutual consent of the Federal Maritime and Hydrographic Agency and the Federal Network Agency.

The laws of Great Britain provide for various options for two generation types of offshore WPPs, namely:

- if the capacity of a proposed maritime project is more than 100 MW, it is referred to the category of nationally significant infrastructure projects (NSIP) under the Planning Act 2008 and requires obtainment of a development consent order (DCO) from the State Secretary of the Department for Business, Energy and Industrial Strategy (BEIS).

- if the capacity of a proposed installation is 1 to 100 MW, Section 36 of the Electricity Act 1989 applies, and a consent from the State Secretary of the Marine Management Organisation (MMO) is required.

Notwithstanding the fact that the planning procedure in Germany and Great Britain significantly differs, it still plays a considerable role in the implementation of offshore WPP construction projects being a basic one; either way, planning forecasts not only positive ratios of exploitation of a generating facility but also analyzes possible complications related to its implementation and use.

(3) authorization procedures and licenses

Licensing in general is an integral part of this process as the activities related to construction and exploitation of offshore WPPs are extremely complicated not only because such projects are implemented in the open sea but also due to the construction and engineering features of the structures.

In Great Britain, a generation license is required for any new offshore wind energy project in accordance with Section 6 (1) (a) of the Electricity Act 1989 and is issued by Ofgem (an independent power energy regulation authority) that has the right to set out rules for conducting tenders for Offshore Transmission (OFTO) licenses [15].

Such license can be obtained by filing an application to Ofgem and will include standard terms and conditions and sometime specific ones.

In Germany, the scope of the licensing regime covers every stage of the approval, construction and exploitation of offshore

WPPs and their grids located within the boundaries of the exclusive economic zone of Germany, which is enshrined in the Wind Energy at Sea Act (WindSeeG).

The Federal Maritime and Hydrographic Agency (Bundesamt für Seeschifffahrt und Hydrographie — BSH) is the competent authority responsible for applications and relevant procedures.

Unlike other public permission types, the Approval of Planning (Planfeststellungsbeschluss) is characterized by the concentration effect, i.e., basically all and any public permissions are concentrated in and issued by the Approval of Planning [16].

Following the review of the features of authorization procedures and licenses, it is worth paying attention to considerable differences between the laws of Germany and Great Britain: on the one hand, German experience is a more guided and step-by-step process when each permission is required for each stage of the implementation of an offshore WPP project, on the other hand, a single license by analogy with Great Britain does not play down the role or importance of authorization processes and covers the whole range of activities related thereto.

An important difference is the authority issuing a permission or a license: a government authority in Germany and an independent authority in Great Britain.

(4) construction, exploitation and decommissioning of generating facilities

Considering that the activities related to the offshore wind energy industry is in any case an intrusion in the environment and can affect life and health of humans, there is an objective necessity to set and systemize requirements for design and construction, exploitation, repair, decommissioning of generating facilities functioning based on offshore WPPs.

Great Britain has adopted a number of recommendations [17] to ensure safety of operations of offshore WPPs, namely, the Wave & Tidal Health & Safety Guidelines, the Wind Turbine Switchgear Safety; the requirements

of the Health and Safety at Work Act are also applicable.

The government of Great Britain is also studying the impact of offshore WPPs on navigation, reaction to emergencies, marine radars and GPS connection. Thus, wind turbine developers need to make sure that the impact of their developments is minimal. This provision has been reflected in the recommendations of the Maritime and Coastguard Agency (MCA) [18].

With the adoption of the Wind Energy At Sea Act (WindSeeG) in Germany, the issues of environmental safety, life and health of humans are regulated in Section 2 stipulating that the following persons are responsible for the establishment, exploitation and termination of operations of companies: recipient of the decision on the approval of planning or the approval of planning; system operator; persons appointed to manage or supervise the company or a part of the company within the framework of their duties and powers.

The named persons should guarantee absence of any threats to the marine environment, safety and convenience of movement, national and union defense, solve other predominant public issues and guarantee exercising of private rights during the construction, exploitation and following the termination of operations of a facility.

Responsible persons should also without delay report any deviating conditions to the Federal Maritime and Hydrographic Agency, which is also a control authority responsible for the state supervision over facilities.

Special provisions are set out for marine wind turbines.

Needless to say, in addition to special provisions ensuring safety of generating facilities, there exist general provisions to be complied with at the performance of any offshore WPP construction and exploitation works.

(5) grid connection

The result of the construction and the start of exploitation of offshore WPPs, project profitability and implementation opportunity directly depend on grid connection.

In Germany, the tender winner gets a right to physical connection to the National Network Operator within the framework of the capacity volume in accordance with the accepted proposal.

The corresponding territorial operator responsible for connection should publish the technological connection completion date. It is the territorial operator that finances and uses its own resources to build connecting objects and systems (Section 17d of the Energy Industry Act) and it also has the right to reimbursement of such expenses.

Great Britain has embarked on an application course; thus, the holder of a license for offshore power transmission files an application to the system operator of the National Network, then concludes two agreements: a bilateral connection agreement and a construction agreement (CONSAG). The holder of a license for offshore power transmission bears any expenses related to planning and construction of offshore and onshore transmission cables and grid connection.

In general, this connection type has no significant rules but there are some interesting legal provisions; e.g., the holder is entitled to renewal of the reference supply date or a long-term standstill period if the National Network operator fails to perform any system reinforcement or connection works indicated in the construction agreement related to the wind power plant. However, the owner is not entitled to compensation.

Renewable energy sources have no priority distribution compared to energy from other sources and can be restricted in oversupply periods.

Speaking of a comparative analysis of the approaches of Germany and Great Britain towards the connection of offshore WPPs to a network, one can note the absolutely opposing legal regulation of the legal relations under consideration. However, it is not as if the legal restrictions imposed by the laws of Great Britain have made any certain damage to the development of the use of WDPPs as

this country is now the world's leader in the offshore wind energy industry. [19]

The presented article has obviously analyzed just the key aspects of the legal regime of offshore WPPs; tenders and bidding procedures, state support measures and subsidies, investments (including foreign) in offshore project implementation, etc. can be singled out as separate and specific aspects.

Besides, special legal provisions arouse interest in the laws of Great Britain and Germany as they significantly differ one from the other; for example, Germany performs a preliminary examination of territories, recommends system operators to get sufficient

insurance to cover financial and property damage caused to operators of marine wind power plants by delay of connection to the electrical transmission grid [20]. Provisions of energy laws in Great Britain are introduced not only at the state level but also at the level of separate subjects (Scotland, Northern Ireland).

Following a comparative study of the legal regime of generating facilities functioning based on the offshore wind energy industry, we can conclude that there is a rather large number of approaches to the legal regulation in this sphere that can be used for further implementation in Russian laws. ■

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