

【欧州】 【海事】

Maritime issues - Renewable energy including offshore wind power generation: European Commission presents the European Wind Power Action Plan for immediate actions to support the European wind power industry and the expansion of offshore wind power generation

Andrea Antolini Former Researcher JTTRI

【概要 : Summary】

In the EU, wind power is considered being one of the key renewable energy sources for reaching the climate neutrality target by 2050 and to reach energy independence from Russian fossil fuels imports, in particular.

In 2022, wind energy generation provided on average 16% of electricity consumed in the EU and often reaches more than 30% per day. However, the European Commission estimates that between 240 and 450 GW of offshore wind power is needed by 2050. In fact, offshore renewables and especially offshore wind power generation are expected to become an indispensable part of the energy mix that will be necessary to reach the EU's energy and climate targets for 2030 and climate neutrality by 2050.

Therefore, while currently 92% of wind power generation is taking place onshore, to cover the future energy demand, the construction of offshore wind farms will have to be decisively accelerated in quantity, size, and power capacity at all suitable maritime locations in the EU.

This is reflected in the EU Member States' new target to achieve 111 GW of offshore renewables by 2030, which is nearly twice as high as the 60 GW envisaged under the Offshore Renewable Energy Strategy of November 2020. To reach this new target of installing offshore renewables by 2030, in fact about 12 GW of offshore capacity of wind energy or other offshore renewables would have to be installed each year. However, in 2022, only 1.2 GW new offshore wind installations were installed out of the total of 16.3 GW.

To accelerate the deployment of the envisaged 111 GW of capacity by 2030, and to strengthen the competitiveness of European wind energy manufacturing the European Commission has launched its Wind Power Package in October 2023. Under this action plan, the Commission will provide direct support to deploy offshore wind farm projects, and it encourages the EU Member States to take specific actions to ease some of the challenges in the wind industry. Furthermore, the Commission is committed to launch a Grids Action Plan to support the necessary expansion of electricity grids.

【記事 : Article】

1. The state of deployment of the offshore wind farms

Wind power is considered being a key renewable energy source for generating electricity. In 2022, wind energy generation provided on average 16% of electricity consumed in the EU and often reaches more than 30% per day (COM (2023) 669 final). While currently 92% of wind power generation is still taking place onshore, the offshore sites of wind power generation are constantly gaining importance (COM (2023) 669 final). Europe's first offshore wind farm was installed in Vindeby, Denmark, in 1991 and the EU's North Sea is currently still the leading region for the deployment of offshore wind installations (COM (2020) 741 final). The EU's main producers of offshore wind energy are the Member States Germany, the Netherlands, Belgium, and Denmark (COM (2020) 741 final).

However, meanwhile also the Baltic Sea, the Atlantic Ocean, the Mediterranean Sea and the Black Sea as well as the waters in the outermost regions and overseas territories are considered suitable for the two types of offshore wind energy installations, bottom fixed or floating types (COM (2020) 741 final). The floating offshore wind energy installations are considered being the best solution for deeper waters and to explore sites with higher and more constant wind speeds. The first pilot projects are in operation and the full deployment of floating offshore wind energy installations is expected to accelerate by the end of this decade (COM (2020) 741 final). The utilisation of floating offshore wind farms in deeper waters will allow an expansion into 80% of offshore wind resources in the EU's deep-water areas, which cannot be utilised by conventional bottom fixed structures (European Commission 2021c). The projects are expected to lead to the installation of 350 MW of floating capacity in European waters by 2024 (European Commission 2021b).

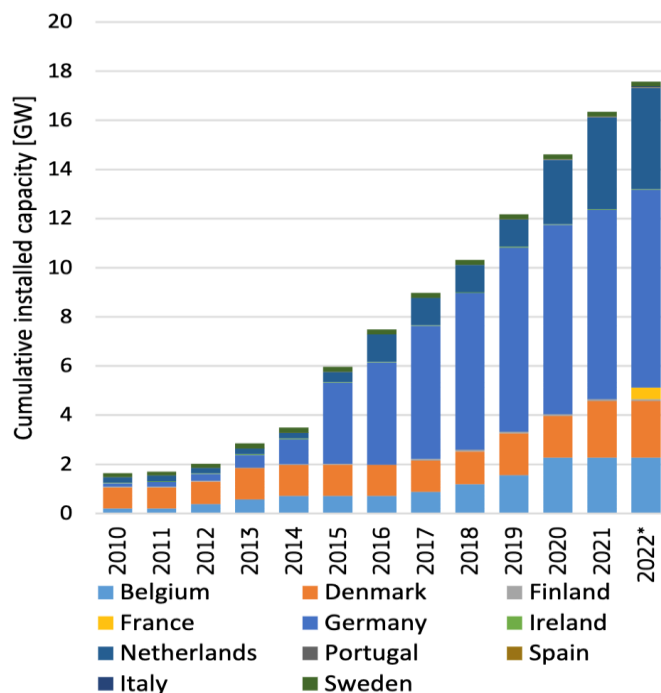
As analysed in an earlier report, offshore wind power generation holds a great potential for delivering large amounts of renewable energy in the future and other marine renewable energies like wave or tidal energy (Antolini 2022a). While currently, offshore wind energy is the only commercially deployed marine renewable energy source with large-scale adoption, also other marine renewable energies are expected to play an important role in achieving the European Green Deals net-zero emissions target by 2050 (European Commission 2021b).

During the last decade, the wind energy sector has seen a strong increase in offshore wind installed capacity due to the development of larger sites and significant technological advances, such as larger wind turbines and improved reliability (European Commission 2023a). According to the European Commission's Communication COM(2023) 668 final, the cumulative EU-27 offshore installed capacity amounted to 16.3 GW and 1.2 GW of new offshore capacity was installed to the grid in 2022 (COM(2023) 668 final). The main EU producers of offshore wind energy are Germany, the Netherlands, Belgium, and Denmark (European Commission 2023a). In 2022, the largest additions for 2022 were made in France (0.5 GW), the Netherlands (0.4 GW) and Germany (0.3 GW) (European Commission 2023a).

However, globally, in 2022, China expanded its position as the world's largest offshore wind market with 27 GW of installed capacity (European Commission 2023a). This is also reflected in the development within the global wind equipment market. While European companies still hold a significant share of the expanding global wind equipment market, this share fell from 42% in 2020 to 35% in 2022 (COM (2023) 669 final). This decrease was mainly caused by the rapid deployment of wind energy in China, which relies primarily on its growing domestic manufacturing sector (COM(2023) 669 final). Out of the world's

10 largest wind turbine manufacturing companies (covering over 80% of demand for wind turbines globally), 4 have their headquarters in the EU, while 4 are located in China (COM(2023) 669 final).

Fig. 1: EU Offshore wind energy, installed capacity, in GW



Source: European Commission 2023a

The European wind industry is also confronted with access problems to raw materials, such as copper, rare earth minerals, steel, nickel, or silicon (COM(2023) 669 final). Europe is dependent on third countries on the supply of these materials, for which the demand increases with the development of the sector worldwide (COM(2023) 669 final).

In the EU, also development challenges remain, as it typically takes about 11 years to get from the early stage of a wind farm development to its full completion, including generating electricity. The annual installation rates must accelerate and increase from 7 GW in the late 2020s to over 20 GW in the late 2030, according to the Offshore blue economy report 2023 (European Commission 2023a).

2. EU policies and measures to accelerate the deployment of offshore wind farms

According to the European Green Deal's climate neutrality goal in 2050, the development of offshore wind generation installations to produce electricity from renewable source wind is becoming a crucial tool for the EU to meet its climate targets: "...increasing offshore wind production will be essential, building on regional cooperation between Member States" to achieve the climate neutrality goal (COM (2019) 640 final). As part of the European Green Deal, 300 GW of offshore wind energy should be deployed by 2050, and to thereby produce around 30% of future EU electricity, with an intermediate objective of reaching 60 GW by 2030 (European Commission n.d.a). Accordingly, the "EU Strategy to harness the potential of offshore renewable energy for a climate neutral future" (EU Offshore Renewable Energy Strategy, ORES) (COM (2020) 741 final) of 19 November 2020 envisages an increase of Europe's offshore wind capacity from 12 GW to at least 60 GW by 2030 and to 300 GW by 2050. By 2030, at least 60 GW of offshore wind and 1 GW of ocean energy should be built (COM (2020) 741, COM (2023) 669 final). Therefore, offshore wind energy is expected to play a crucial role in achieving Europe's carbon-neutral goals (European Commission n.d.a, European Commission 2021a).

Furthermore, due the new geopolitical reality of the Russian invasion and war in the Ukraine, the EU's dependence on fossil fuel imports from Russia had to end, giving the increase of the use of renewable energies in the EU's energy mix a new and urgent reason. Against this backdrop, the REPowerEU Plan mentions a set of actions to save energy and to diversify supplies, to quickly substitute fossil fuels (COM(2022) 230 final). The REPowerEU Plan also aims at accelerating Europe's clean energy transition (COM(2022) 230 final).

The REPowerEU Plan mentions wind energy, in particular offshore wind, as a stable and abundant source of renewable energy that offers a significant future opportunity. In this context the REPowerEU points out the role of offshore wind power generation in the envisaged energy transition, which has become urgently necessary after the Russian invasion in Ukraine (Antolini 2022b). Under the REPowerEU plan, the wind energy should be faster deployed, the supply chains should be strengthened and permitting procedures should accelerate drastically (COM(2022) 230 final). Accordingly, the more rapid deployment of offshore wind farms is one of the EU's crucial measures (European Commission 2021a). Therefore, the European Commission presented in parallel to the REPowerEU Plan a Recommendation on speeding up the permit-granting procedures for renewable energy projects and facilitate Power Purchase Agreements (C(2022) 3219, COM(2022) 230 final). As pointed out in an earlier report in 2022 (Antolini 2022c), the European Parliament's own-initiative resolution saw the slow deployment of the offshore wind installations as a main problem with wind power generation in general and as part of the EU's offshore renewable energy strategy (European Parliament 2022a). The deployment is proceeding too slowly in particular against the backdrop of the need to increase the capacity of offshore wind power installations to between 240 and 450 GW by 2050 (European Commission n.d.b). To reach the 55% GHG emission reduction by 2030, the installed capacity of offshore wind should reach 70–79 GW to ensure a cost-competitive transition. The Parliament's resolution concluded that EU Member States are lagging behind in the deployment of renewable energy and the necessary infrastructure, including wind energy, and that more measures need to be taken to accelerate the deployment of the offshore renewable energy production (European Parliament 2022a).

Therefore, considering the sometimes lengthy and difficult permission process for installing wind farms in some EU Member States, which can represent an obstacle to renewable energy projects in general, the European Commission and the EU Member States need to simplify and streamline the relevant permission procedures, including the revision of the public procurement and state aid rules, and to coordinate their efforts to achieve the green transition (European Parliament 2022a). Accordingly, the revised Renewable Energy Directive (Directive 2018/2001/EU) also includes provisions that simplify the permitting processes to help setting in motion more renewable energy projects (European Commission n.d.b).

Most recently, the revised TEN-E Regulation on guidelines for trans-European energy infrastructure (Regulation (EU) 2022/869) required the set-up of non-binding agreements between the EU Member States to cooperate on goals for offshore renewable energy generation within their specific priority offshore grid corridors (Regulation (EU) 2022/869).

3. New ambitions for accelerating the expansion of offshore wind generation

On 19 January 2023, against the backdrop of the EU Offshore Renewable Energy Strategy, ORES (COM(2020)741 final) and the building on the TEN-E Regulation, the EU Member States agreed on non-binding goals for offshore renewable energy (ORE) generation by 2050, with intermediate goals for 2030 and 2040, in each of the EU's five sea basins. Whereas under the 2020 ORES strategy COM (2020) 741 final, the proposal contained an increase of Europe's offshore wind capacity from 12 GW to at least 60 GW by 2030 and 1 GW of ocean energy, the Member States agreed on an overall ambition of installing approximately 111 GW of offshore renewable generation capacity by 2030 (DG Energy 2023). This new ambitious target for the increase in

capacity of offshore wind farms would be nearly twice as much as the ORES' objective (DG Energy 2023). The target would then rise to around 317 GW by 2050, reaching slightly more than the ORES target (DG Energy 2023, COM (2020) 741 final). Considering the recent results of adding 1.2 GW of new offshore wind capacity to the grid, While the cumulative EU-27 offshore installed wind capacity amounted to 16.3 GW in 2022, and 1.2 GW of offshore capacity was newly installed in 2022, there remains a huge gap to bridge for reaching the 111 GW capacity committed by Member States for 2030 (COM(2023) 668 final). Considering the 1.2 GW of offshore installations added in 2022, the EU must install almost 12 GW/year on average to reach the Member States' committed target (COM(2023) 668 final, The Maritime Executive 2023).

The revised TEN-E Regulation introduces key provisions to upscale offshore renewable energy in Europe by means of coordinated long-term integrated offshore and onshore grid planning. To facilitate the development of offshore renewable energy, the revised TEN-E Regulation required that by 24 January 2023, and every two years thereafter, the EU Member States conclude a non-binding agreement to cooperate on goals for offshore renewable energy generation to be deployed by 2050 within their specific priority offshore grid corridors, considering the specificities and development in each region (NSOG 2023). The TEN-E rules also include guidance on cross-border cost-sharing for the deployment of the sea-basin offshore network development plans, among others (DG Energy 2023). The agreement between the EU Member States also defines some administrative terms, including the regions of the five different sea basins in which the offshore renewable energy grid is to be deployed (NSOG 2023). They include the Northern Seas Offshore Grids (NSOG), the Baltic Energy Market Interconnection Plan offshore grids (BEMIP offshore), South and West offshore grids

(SW offshore), Atlantic offshore grids and South and East offshore grids (SE offshore) (DG Energy 2023). In some cases, the national goals are expressed as ranges, reflecting on-going national discussions and/or a degree of uncertainty regarding the level of future offshore renewable energy development, especially after 2040. As a result, the EU offshore goals have ranges of 109–112 GW by 2030, 215–248 GW by 2040, and 281–354 GW by 2050 (DG Energy 2023). The first update of these offshore goals is required by December 2024 and every two years thereafter (DG Energy 2023).

By going beyond national approaches, the EU Member States are laying the framework for a trans-European approach incorporating the expected offshore renewable generation with least environmental impacts. Based on this approach, the European Network of Transmission System Operators for electricity (ENTSO-E) will combine this information with other information on maritime spatial planning and propose strategic integrated offshore network development plans (DG Energy 2023). ENTSO-E is now tasked with developing and publishing strategic integrated offshore network development plans, as part of the wider Ten-Year Network Development Plan (TYNDP). Considering the EU Member States' goal for the expansion of offshore wind capacity to approximately 111 GW capacity by 2030 and 317 GW by 2050, it would need an installation of capacity by 2030 nearly twice as high as the 60 GW envisaged in the 2020 ORE strategy (DG Energy 2023). Moreover, the wind industry sector is facing a mix of challenges. Firstly, the industry's manufacturing facilities are currently under-utilised due to slow deployment of wind energy, mostly caused by complex and slow permitting procedures. This creates uncertainty for manufacturers and complicates production and investment planning. Secondly, difficult access to raw materials, high inflation, and changes

in commodity prices, coupled with increasing interest rates and limited access to finance, have eroded the financial position of manufacturers (European Commission 2023c). Thirdly, the design of national tenders for the support of renewable energy is based almost exclusively on prices but does not appropriately reward the high environmental and social standards of European products (European Commission 2023c). In addition, pressure from international competitors such as Chinese producers also poses a growing challenge for the EU wind manufacturing industry (European Commission 2023c). Therefore, the Commission supports the offshore renewables sector specifically by taking additional actions (European Commission 2023b, 2023c).

4. The Commission's European Wind Power Action Plan

The new offshore objectives of installing 111 GW of wind power capacity by 2030, as put forward by Member States, and considering the challenges for the EU's wind manufacturing industry require swift action at all national and regional levels. Against this backdrop, on 24 October 2023, the European Commission launched its Wind Power Package, aiming to accelerate the deployment of wind energy in Europe and to strengthen the competitiveness of European wind energy manufacturing. The Wind Power action plan implementation by the EU, Member States and industry is expected to support the European wind manufacturing sector in overcoming the difficulties and improving its competitiveness (European Commission 2023c).

Regarding the achievement of the EU's offshore wind ambitions, the communication (COM (2023) 668 final) entitled "Delivering on the EU offshore renewable energy ambitions" identifies six areas where progress would help speeding up the roll out of offshore capacity, including strengthening grid infrastructure and regional

cooperation, accelerating permitting, ensuring integrated maritime spatial planning, strengthening resilience of infrastructure, sustaining research and innovation to supporting offshore renewable energy, among others (European Commission n.d.c, 2023b, COM(2023) 668 final). The wind power action plan (COM (2023) 669 final), adopted together with the communication COM (2023) 668 final, includes several actions that can help accelerate the deployment of wind energy in particular and strengthen the European wind industry (COM (2023) 668 final). The European Wind Power Action Plan (COM (2023) 669 final) aims to ensure the clean energy transition and the wind power industry and energy supply chain's competitiveness (European Commission 2023b). The Plan (COM (2023) 669 final) suggests some immediate actions against the backdrop of existing measures and legislation, undertaken by the key public and private actors involved (European Commission 2023b). These actions include acceleration of deployment through faster permitting and increased predictability, improved auction design, access to finance, creating a fair and competitive international environment, skills as well as industry engagement and EU country's commitments (European Commission 2023 n.d.c).

Regarding the acceleration of deployment through increased predictability and faster permitting, the Commission is launching the "Accele-RES" initiative with Member States to ensure swift implementation of the revised EU renewable energy rules, putting more focus on the digitalisation of permitting processes and technical assistance to Member States (European Commission 2023b). Member States are encouraged to enhance the visibility of the project pipeline and the Commission will support the necessary expansion of electricity grids with a Grids Action Plan. Regarding an improved auction design, the Commission will support Member

States in improving auctions with well-designed and objective criteria which reward higher value-added equipment and ensure that projects are realised fully and on time (European Commission 2023b).

Regarding a better access to financing for wind energy manufacturing, the Commission will facilitate access to EU financing, notably through the Innovation Fund, while the European Investment Bank (EIB) will make de-risking guarantees available, among others (European Commission 2023b). To ensure that the wind sector operates in a fair and competitive international environment, in close cooperation with the Member States and industry, the Commission will closely monitor possible unfair trade practices, will make full use of trade defence instruments as well as the international Procurement Instrument to ensure a level playing field for EU manufacturers' access to foreign markets. The Commission will also ensure vigilance against foreign direct investment threatening security and public order (European Commission 2023c).

The Commission will continue to use trade agreements to facilitate access to foreign markets (European Commission 2023b).

Moreover, the Large-Scale Skills Partnerships for Renewable Energy will be a forum of skills development projects. Under the Net-Zero Industry Act (COM(2023) 161 final), the Commission will also facilitate the launch of net-zero industry skills academies including the wind sector (European Commission 2023b).

Finally, the Commission will work with Member States and the wind industry on improving the European wind industry's conditions to remain competitive (European Commission 2023b).

5. Conclusion

In the EU, the utilisation of wind power as renewable energy source is increasing and so far, more than 200 GW of wind energy has been installed in the EU, providing 16% of the EU's

electricity generated in 2022. The deployment of offshore renewable resources, especially offshore wind generation will play an important role in reaching the European Green Deal's 2050 carbon neutrality goal. The Member States are committed to install 111 GW of offshore renewable generation capacity by 2030, nearly twice as much as the initial objective of at least 60 GW of offshore wind capacity set out in the 2020 Offshore Renewable Energy Strategy. These new offshore objectives set by the EU Member States, and the challenges within the European wind energy manufacturing industry, require swift action at all levels.

The Commission's European Wind Power Action Plan suggests some immediate actions focusing on the acceleration of deployment, and a faster permission process, improved auction design, better access to financing for wind energy manufacturing, to ensure a fair and competitive international environment, and to improve skills in skills development projects of the Large-Scale Skills Partnerships for Renewable Energy forum, among others. However, it remains to be seen if these measures will sufficiently accelerate the deployment of offshore wind generation facilities in the EU.

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