

Framework for offshore wind power

A report by the Working Committee on Offshore
Renewable Energy (*“Fornybar energi til havs”*)



The Federation of Norwegian Industries

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Foreword

The world's energy systems are changing. How can Norway preserve its position as an energy-producing nation in a world whose demand for renewable energy and technology is constantly growing?

A broad national initiative in the field of offshore wind power could be one answer to this question. Offshore wind power has the potential to become the world's green energy source and help the world reach the aims of the Paris Agreement on climate change. Norway has the natural advantages, knowledge and expertise to play a leading role in this development. Offshore wind power represents an outstanding opportunity for Norway¹ that could, along with hydrogen production and carbon capture and storage (CCS), form three pillars of a larger ecosystem, thereby ensuring that Norway retains its position as a leading energy producer in the decades to come. A systematic initiative to boost offshore wind production will help maintain and, potentially, increase jobs in Norway, value creation and export revenues. Offshore wind power could also help to significantly reduce the EU's carbon emissions.

At a time when Norway is experiencing one of its biggest crises in modern times, due to the Covid-19 pandemic, it has been inspiring to see the substantial interest both member companies and others have shown in assisting the Working Committee's efforts. Starting up in April 2020, the Working Committee 2.0 has comprised representatives from Aker Solutions, ABB, TechnipFMC, Siemens, Kværner, Karsten Moholt, Kongsberg Maritime, Nexans, Aibel, GCE NODE, Norwegian Energy Partners and the Federation of Norwegian Industries. In addition, valuable contributions have been received from Arntzen de Besche, BAHR, Haavind, the Norwegian Offshore Wind Cluster, Wind Europe and many more.

We would like to extend our grateful thanks to everyone who has contributed to this joint endeavour.

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¹ Read more about the Federation of Norwegian Industries' Economic Analysis 2020

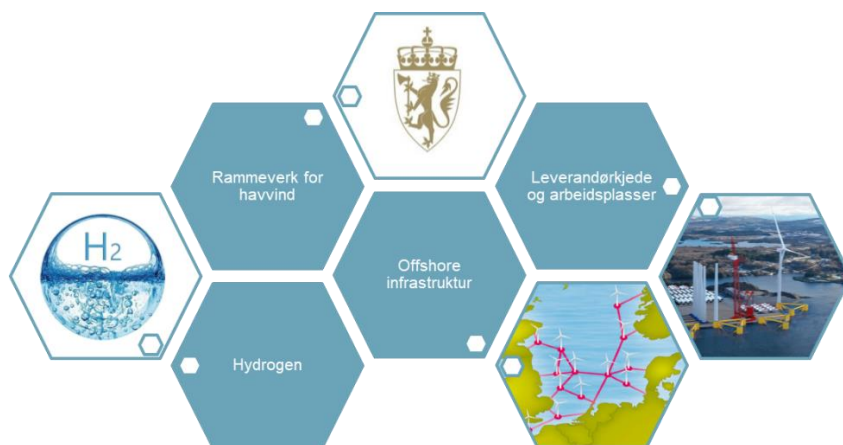
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Working Committee 2.0

The Working Committee 2.0 builds on the work and recommendations resulting from its first iteration, which were presented in the “*Konjunkturrapporten*” issued by the Federation of Norwegian Industries in January 2020. In that report, the Working Committee envisaged that electricity generated using offshore wind power and hydrogen could help Norway maintain its position as an energy exporter when the export of oil and gas tails off towards 2050. The Working Committee received its mandate from the Federation of Norwegian Industries, oil and gas branch, and started its work in April 2020. The committee’s efforts have been divided into four topic-specific subgroups:

- Framework and Regulatory Conditions for Offshore Wind Power
- Hydrogen
- Offshore Infrastructure
- Supply Chain and Employment



The Working Group on Framework and Regulatory Conditions for Offshore Wind Power was tasked with studying the measures implemented in other countries and proposing a package of specific financial initiatives for offshore wind power in Norway, with the emphasis on the main initiatives needed to trigger a new industry. This is the group’s final report.

1 Premise and objectives

The fundamental premise for the Working Committee's efforts has been that Norwegian offshore wind resources are national resources that must be managed with a long-term perspective, so that they benefit Norwegian society as a whole. This raises the question of how a framework for offshore wind power should be designed to ensure that the Norwegian supply industry can succeed in a fast-growing international market.

The Working Committee has chosen to approach this issue by first defining a clear set of objectives. Norway has drivers that differ from other countries', since our hydropower production covers our current domestic electricity requirement. For Norway, it is about investing in green industrial development and the export of renewable energy. On this basis, the Working Committee² has defined the following objectives for any framework for offshore wind power:

- In 2030, Norway will be a leading exporter of offshore wind power technology, products and services. Exports of offshore wind power from the Norwegian continental shelf will make a material contribution to Europe reaching its net-zero goals for 2050.
- Norway will have a wide range of different players along the entire offshore wind power value chain, from developers and operators to component and service suppliers.
- The framework must facilitate the creation of a domestic market for offshore wind power that is large enough and has sufficient continuity to trigger cost reductions and economies of scale, and stimulate the competitiveness the industry needs.
- The framework must have a long-term perspective and be foreseeable, so that all those engaged in the value chain can make the necessary investment decisions and optimise regional and national value creation.
- Initially, offshore wind power will contribute to the effective electrification of oil and gas installations on the Norwegian continental shelf, and thereby reduce the oil and gas industry's greenhouse gas emissions³.

The Working Committee takes the view that Norway possesses unique and directly transferable knowledge about the effective and sustainable management of offshore operations from our combined maritime, fisheries and petroleum sectors. By reusing regulatory competence and making adjustments to an already familiar, transparent and well-functioning

² The Economic Analysis 2020 contains recommendations stemming from the Working Committee's first iteration

³ KonKraft's climate goals for the Norwegian offshore oil and gas industry require a 40 per cent reduction by 2030 (increased to 50 per cent in connection with the "petroleum tax package")

regime, Norway will be able to move forward quickly. It will be important to ensure harmonious coexistence at sea by accommodating the interests of the fisheries, petroleum and shipping sectors, as well as protecting the environment and taking other aspects into account, right from the start.

Why not wait until offshore wind power has become competitive with other energy sources?

Experience from emerging markets and new technologies shows that those who had got underway before the cost curve fell have often acquired a leading position by the time the market matures. In other words, you can choose to participate actively at an early stage, win market share and influence developments, or wait until costs have fallen and positions have been established – and just be a buyer of offshore wind power. Norway lost out on the early industrial development of bottom-fixed offshore wind power installations to other countries around the North Sea basin, such as Denmark, the Netherlands, Belgium and Germany⁴. Floating offshore wind power has given us a new opportunity to take a leading position in a growing industry, which is much more relevant for Norway due to the competence we have built up along the entire coast within the offshore and maritime sectors.

2 Regulatory framework and licensing system

The type of licensing system chosen is extremely important for the development of a local supply industry.

Offshore wind power projects and the companies behind them must be provided with a long-term and foreseeable regulatory framework that secures competition and foreseeability with regard to the projects being considered and when a licence application will be processed. Deadlines and a systematic approach provide foreseeability and facilitate the rapid and holistic processing of applications.

Regular licence award rounds pave the way for long-term investment and industrial development. The framework should therefore provide for the regular opening up of locations and the awarding of licences to ensure access to new projects, combined with a policy statement by the government proclaiming its ambition for more offshore wind power generation going forward. This will ensure scale and a solid domestic market for the industry. It will also enable long-term investments in capacity, competence, technology and infrastructure. The

⁴ IEA: Offshore Wind Outlook 2019, executive summary: "Europe has fostered the technology's development, led by United Kingdom, Germany and Denmark."

Ministry can consider opening up new locations on a regular basis, i.e. annually, and perform impact assessments on an ongoing basis. Decisions to open up locations can be followed up by licence allocation rounds using the same format as that provided by the Petroleum Activities Act. The licensing terms and conditions should include a Non-Delivery Disincentive (NDD) to ensure projects are actually matured and realised. Actors should be permitted to nominate locations that should be opened up or whose suitability should be assessed. The UK authorities point to foreseeability with respect to future licence awards as extremely important for offshore wind power, given the massive investment and long time horizons for such projects⁵.

A study⁶ undertaken on behalf of the Working Committee shows that, internationally, offshore wind power development rights are awarded relatively often on the basis of an auction. In principle, an auction implies that the actor who submits the highest bid wins the right to develop the area. An auction ensures the government receives a revenue at an early stage in the development process. However, experience from the global petroleum industry and from the bottom-fixed offshore wind power industry shows that auctions have a negative impact on the development of local industrial players. This is particularly apparent in immature markets. These disadvantages may be partially offset by introducing requirements for local content where this is possible under competition law. Nevertheless, the evidence from auction systems is that developers do not invest sufficiently in the development of a local supply industry, since they often look to established supply chains to reduce their own risk and cover the auction costs. A consequence is that the development of knowledge, competence and IP is retained by the foreign development companies and their established supply chains. New industrial clusters are not established. Local industry therefore misses out on opportunities for restructuring, lasting economic growth and the exploitation of future export opportunities.

On this basis, the Working Committee recommends a qualitative licensing system for offshore wind power on the Norwegian continental shelf, rather than an auction-based system.

The Norwegian system used in the petroleum sector, where licences are awarded on the basis of objective and qualitative criteria, combined with sector-oriented R&D and restructuring funds, has ensured the development of a national, export-oriented oil and gas supplier industry that is internationally renowned. The Working Committee desires such a development for the offshore wind power supply industry too.

⁵ Contracts for Difference for Low Carbon Electricity Generation: Consultation on proposed amendments to the scheme. British Department for Business, Energy and Industrial Strategy (p. 20). Downloaded 14 September 2020 from: <https://www.gov.uk/government/consultations/contracts-for-difference-cfd-proposed-amendments-to-the-scheme-2020>

⁶ The study was performed by Arntzen de Besche

Qualitative award criteria may include:

- Quality of the planned project, including national ripple effects and employment
- How the project strengthens Norwegian and industrial development
- The extent of the project's climate and environmental benefits weighed against the extent of its impact on local ecosystems
- The project's CO₂ footprint
- The applicant's technical competence and experience
- Regional policy considerations and impact on other sectors
- The applicant's financial capacity

In the Working Committee's opinion, the use of qualitative criteria, along with an emphasis on contract strategies, security of supply, time to completion, HSE standards and use of skilled personnel etc., will help to strengthen Norway's industrial development and competitiveness.

Open platforms for the sharing of offshore wind power data, combined with relevant, currently available data sets on the Norwegian continental shelf, could help ensure that a broader supplier base gains access to information that can accelerate learning and open the way for innovation.

3 Ordinary financial framework conditions

No dedicated financial framework conditions for wind power located on the Norwegian continental shelf currently exist. Among other things, this means that there are no tax regulations tailored to offshore wind power production, as there are for onshore wind power, hydropower and petroleum production (see table below). In principle, the Norwegian Tax Act does not apply outside the sea boundary ("*grunnlinjen*"). This means that Norwegian companies that want to develop, build and operate offshore wind power facilities in Norway are liable for tax on their global revenues pursuant to the Tax Act's ordinary provisions, while foreign companies are not liable for tax in Norway.

The Working Committee proposes the introduction of a general tax liability for offshore wind production on the Norwegian continental shelf, so that Norwegian and foreign companies compete on a level playing field.

Table 1: Overview of the financial framework conditions for business in Norway. Offshore wind power production is currently classified as an ordinary business activity⁷.

	Ordinary business	Onshore wind power	Hydropower	Petroleum
Corporate income tax	22%	22%	22%	22%
Employer's National Insurance Contributions (Southern Norway)	14.1%	14.1%	14.1%	14.1%
Depreciation rules	Balance principle, varying rates	20% straight-line depreciation (5 years)	Balance principle, varying rates (primarily)	16.7% straight-line depreciation (6 years)
Surtaxes (economic rent)	No	No	37%	56%
Royalty/industry-specific charges	No	No	Licence fee + variable natural resources tax	Area fee
Can local councils impose a property tax?	Yes	Yes	Yes	Yes, within the sea boundary
Green certificates	N/A	Yes	Yes	No
Contracts for Difference	N/A	No	No	No
Cash grants	No	No	No	Exploration cost refund
Carbon tax	Carbon tax levied in some sectors, obligatory EU emission quotas in others	N/A	N/A	Carbon tax and obligatory EU emission quotas (double taxation)

The Working Group takes the view that a framework should be established to promote both early-phase investments (costs decrease as the number of MW produced increases) and the development of a competitive supplier industry for projects both on the Norwegian continental shelf and worldwide.

Offshore wind power facilities use society's energy resources at sea, and may in the longer term produce profits on which an economic rent tax may be levied. Economic rent is a way for society to share in the value created by granting a protected right to commercial activity in a favourable geographic area⁸. However, there are many considerations to take into account. Reference is here made to the recent debate concerning the aquaculture sector. Taxation of economic rent from the "outset" could ensure consistently foreseeable tax conditions, avoiding a situation in which the introduction of an economic rent tax at a later date causes substantial uncertainty and value impairment for existing actors⁹. In any case, the various aspects of economic rent taxation must be thoroughly analysed before its potential introduction. This applies especially to offshore infrastructure and export systems to Europe (offshore energy

⁷ The overview has been prepared by Arntzen de Besche

⁸ Licence, see Norway's Offshore Energy Act, section 1-3

⁹ Report No. 28 to the Norwegian Storting on onshore wind power

system with generators, facilities generating balancing power and associated transmission radials).

Access to a wide range of capital sources presumes the right to mortgage assets. It is currently not permitted to offer offshore wind power licences, wind turbines or other associated infrastructure installations as security. For the petroleum sector, the ability to use licences as security for loan financing has been a precondition for the development of diversity in the market, independent of capital structure. A similar arrangement for offshore wind power will therefore facilitate a broader diversity of actors, more favourable financing, accelerated investment and thereby faster upscaling and commercialisation. The Working Committee therefore proposes that the right to mortgage assets be granted, and that an asset register be established, parallel with the system for production licences, through an amendment to the Offshore Energy Act.

4 Time-limited incentive schemes

Companies based in Norway will need investment and restructuring support for the changeover from the oil and gas sector to value creation within offshore wind power. A domestic market of sufficient scale and continuity will be important for the industrialisation (standardisation and cost reduction) of the offshore wind power sector. A domestic market will also provide important learning and competence development opportunities to Norwegian companies and technology environments, with all the positive consequences that will have for jobs and value creation within the Norwegian industrial sector.

Policy instruments could play an important and necessary role by contributing to R&D and the upscaling of technology, combined with specific support schemes for the build-up and reorientation of the maritime industry, infrastructure and dock facilities, and the restructuring of shipyards and onshore production facilities. This could enhance the Norwegian supply industry's competitive edge with respect to offshore wind power, and facilitate the transfer of competence from oil and gas. It will, moreover, increase Norway's research and innovation capability, and result in more industrialised production methods. The Working Committee therefore proposes the reinforcement of policy instruments (Enova, Innovation Norway, Research Council of Norway, Export Credit Norway, Norwegian Export Credit Guarantee Agency (GIEK), Norwegian Energy Partners (Norwep) etc.), as well as the targeting and coordination of offshore wind power support measures. Without a domestic market, however, there is a real risk of a unidirectional leakage of knowledge to other continental shelves, at the

same time as expertise acquired by other countries on their own continental shelves gradually weakens Norwegian industry's current competitive edge. The Working Committee was pleased to note the announcement that GIEK (in conjunction with commercial banks) is now able to help finance floating wind power facilities in the North Sea.

A review of offshore wind power regulations in the Netherlands, Germany, Belgium, France, the UK and Denmark¹⁰ shows that they have all implemented support schemes for the development of offshore wind power. These arrangements encompass various fixed-price and subsidy schemes, such as feed-in tariffs, contracts for difference (CfD) and green certificates. Several countries also use their tax systems to incentivise activity, by offering favourable depreciation rules, as is the case in the USA, for example. So-called "subsidy-free" projects may also contain elements of risk alleviation in the planning phase, or other cost alleviation. Examples of this include grid expansion and connection costs being paid by the government¹¹.

According to the European wind power industry special interest group Wind Europe¹², the trend in European countries seems to be moving in the direction of varying types of contracts for difference (CfD).

A CfD is a price guarantee contract that directly protects the energy producer from volatile market prices by ensuring a flat (indexed) rate for electricity sold in a particular period. CfDs are normally awarded by means of a reverse auction, where the party who bids the lowest price for the power is awarded the contract. In the UK, CfDs awarded at auction have proved an effective means of driving down costs and promoting rapidly increasing energy production. In the Working Committee's view, some form of price guarantee scheme will probably also initially be needed in Norway too. However, the use of auctions here has the same negative consequences on the development of a local supply chain¹³ as in connection with the award of licences. The Working Committee therefore recommends that auctions be avoided here as well. Given that electricity prices in Norway are already low and that the bulk of the power generated will eventually be exported, it is not obvious how such an arrangement can be established in Norway.

The Norwegian state has a number of policy instruments at its disposal to trigger large-scale construction of offshore wind power facilities on the Norwegian continental shelf. Key

¹⁰ PWC (2018), Unlocking Europe's offshore wind potential

¹¹ Hanson and Normann (2019), Conditions for growth in the Norwegian offshore wind industry

¹² According to Giles Dickson at a meeting with the Working Committee on 15 June 2020

¹³ Draft Offshore Wind Policy Statement, Scottish Government (2019)

mechanisms may combine tax exemption, investment-friendly tax and depreciation rules and price guarantee contracts.

Tax and depreciation rules could be an effective instrument to stimulate activity, as has been the case for the temporary tax changes that were recently announced for the petroleum industry in the wake of the Covid-19 pandemic. The adjustment of tax and depreciation rules can reduce the need for direct state support because, over time, a number of measures implemented via the tax system will be more or less neutral for the state. Examples of such measures include shorter depreciation periods, direct expense recognition, tax-free income, the equal treatment of companies with taxable income and those without, and opportunities for the taxable value of losses to be paid out as and when they arise.

The Working Committee has previously pointed out that consideration should be given to the establishment of arrangements that can pave the way for oil and gas companies to become important customers for Norwegian offshore wind power during a start-up period. One specific proposal to achieve this is to change the tax rules so that the purchase of offshore wind power from new wind farms is treated in the same way as the construction of small-scale facilities under their own auspices. This could contribute to larger and more socially profitable installations, and help achieve the Norwegian government's national emission reduction targets and KonKraft's climate goals for the Norwegian continental shelf¹⁴.

A "tax package" for offshore wind power, inspired by the petroleum industry's temporary changes in taxes, facilitation of electrification on the Norwegian continental shelf using offshore wind power, and price guarantees for that portion of the power sent ashore, could together constitute a suite of policy instruments that provide the necessary reduction in carbon emissions and stimulus for offshore wind power in Norway.

5 Export of electricity to the continent

Clarification of the regulatory framework for an offshore grid infrastructure is required. It is recommended that the Norwegian government work actively to secure Norwegian producers access to the market by establishing a comprehensive and standardised regulatory framework in conjunction with the other North Sea countries. It should also strive to conclude agreements

¹⁴ KonKraft's climate goals for the Norwegian offshore oil and gas industry require a 40 per cent reduction by 2030 (increased to 50 per cent in connection with the "petroleum tax package")

that enable the large-scale export of electricity from the Norwegian continental shelf to customers in Europe.

6 “Petoro for offshore wind power”

The Working Group has also discussed the consequences of establishing a “Petoro for offshore wind power” – an idea put forward by several parties – and recommends this notion be assessed in further detail. However, the industry’s access to capital should not be seen as a rationale for the establishment of such a scheme. Rather, co-investment could provide the state with direct revenues, risk exposure and liability for costs, in the same way as for private investors. Even a small co-investment could, with regulatory requirements, provide the state with insight into project execution and operational matters, which could be extremely useful in an early phase of the industry’s development. This would be particularly relevant in the event of a large number of foreign actors who are less used to the Norwegian culture of transparency, and who may not provide the desired ripple effect among Norwegian business enterprises.

7 Recommendations

The studies that underpin this report have shown that the countries which have come furthest in the development of offshore wind power are those which have concrete strategies and clear objectives for both volume and timelines. Without a long-term plan, there will be greater dependence on major foreign developers who, perhaps on spec, can assume liabilities without the security provided by a long-term domestic market¹⁵. A national development strategy and vision increases foreseeability, sets a clear course and paves the way for long-term investments in wind parks on the Norwegian continental shelf, in the Norwegian maritime sector and in the development of an onshore supply industry.

The Working Committee considers it necessary to establish a comprehensive regulatory framework and financial framework conditions that can trigger the construction of at least 3 GW of offshore wind power by 2030. Norway needs framework conditions that quickly mobilise Norwegian industry to engage in the “green shift” and that can attract investment to the Norwegian continental shelf in competition with other countries worldwide.

The Working Committee’s specific recommendations are as follows:

¹⁵ The UK offshore wind industry: Supply Chain Review. Martin Whitmarsh (2019)

- **Consider the introduction of a mission statement in the preamble to Norway's Offshore Energy Act, modelled on section 1-2 of the Petroleum Activities Act:** Management of Norway's offshore wind resources shall be carried out in a long-term perspective for the benefit of Norwegian society as a whole. In this regard, resource management shall provide revenues to the country and shall contribute to ensuring welfare, employment, an improved environment and sustainability, as well as to the strengthening of Norwegian trade and industry and industrial development, and at the same time pay due regard to regional and local policy considerations and other activities.
- **Establish a regulatory framework for offshore wind power, modelled on that described in the Petroleum Activities Act.** The Petroleum Activities Act and its associated statutory regulations are well known and effective. They are well suited as a starting point for the regulation of offshore wind power.
- **Introduce a general tax liability for offshore wind power** on the Norwegian continental shelf
- **Grant the right to mortgage assets** by introducing an appropriate amendment in the Offshore Energy Act and ensuring the establishment of an asset register, modelled on the system for exploration licences.
- **Strengthen generally applicable public policy instruments.** A coordinated and targeted effort by the major instruments of public policy will be a key factor in reorienting the industry, reducing costs and building up the competitiveness of Norwegian suppliers of products and services.
- **Introduce time-limited measures to trigger the early construction of offshore wind power installations.** Provide restructuring support to the industry, including the build-up and reorienting of onshore industry and infrastructure. Through a dialogue between the government and industry players, quickly arrive at a "package of measures" that can trigger the construction of offshore wind power installations in Norway.
- **Facilitate the effective electrification of the Norwegian continental shelf using offshore wind power** in such a way that the oil and gas companies become important customers of Norwegian offshore wind power in the start-up phase.