Brussels, 11 March 2020
Case No: 84744
Document No: 1128750
Decision No 017/20/COL

Ministry of Trade, Industry and Fisheries
P.O. Box 8090
Dep 0032
Oslo
Norway

[Non-confidential version][*]

Subject: **The Hywind Tampen Project**

1 Summary

(1) The EFTA Surveillance Authority ("ESA") wishes to inform Norway that, having assessed the planned support measure for the realisation of the Hywind Tampen project ("the measure"), it considers that it constitutes state aid within the meaning of Article 61(1) of the EEA Agreement. ESA has decided not to raise objections to the measure,[1] as it is compatible with the functioning of the EEA Agreement, pursuant to Article 61(3)(c) of the EEA Agreement.

(2) ESA has based its decision on the following considerations.

2 Procedure

(3) Following pre-notification contacts, the Norwegian authorities notified the measure by letter received and registered by ESA on 31 January 2020.[2]

3 Description of the measure

3.1 Introduction

(4) The measure concerns individual investment aid in the form of a grant of NOK 2 229.6 million (discounted)[3] for the realization of the Hywind Tampen project ("the Hywind Tampen Project" or "the Project").

(5) The objective of the measure is to support generation of electricity from renewable energy sources ("RES electricity") for the oil and gas installations (separately "the Installation" and jointly "the Installations") at the Snorre and Gullfaks oil and gas fields (separately "the Field" and jointly "the Fields"), by partially replacing existing gas turbines, and thereby reducing CO_2 emissions. The measure also aims at facilitating cost and deployment optimisation of floating offshore wind ("FOW") technology, including maturing the supply chain for FOW in general. As the first medium-size FOW farm that is also for the first time connected directly to oil and

[*] The information in square brackets […] is covered by the obligation of professional secrecy.
[1] Reference is made to Article 4(3) of the Part II of Protocol 3 to the Agreement between the EFTA States on the Establishment of a Surveillance Authority and a Court of Justice.
[2] Document no 1111473 (notification form).
[3] See paragraph (55).

gas installations, the Project is a key intermediate step towards full utility scale floating wind farm projects.

3.2 The Hywind Technology

(6) Wind energy can be harvested for electricity generation on- and offshore. Offshore wind turbines are elevated over the sea level using either bottom-fixed or floating foundation technologies. FOW foundations have several design concepts.

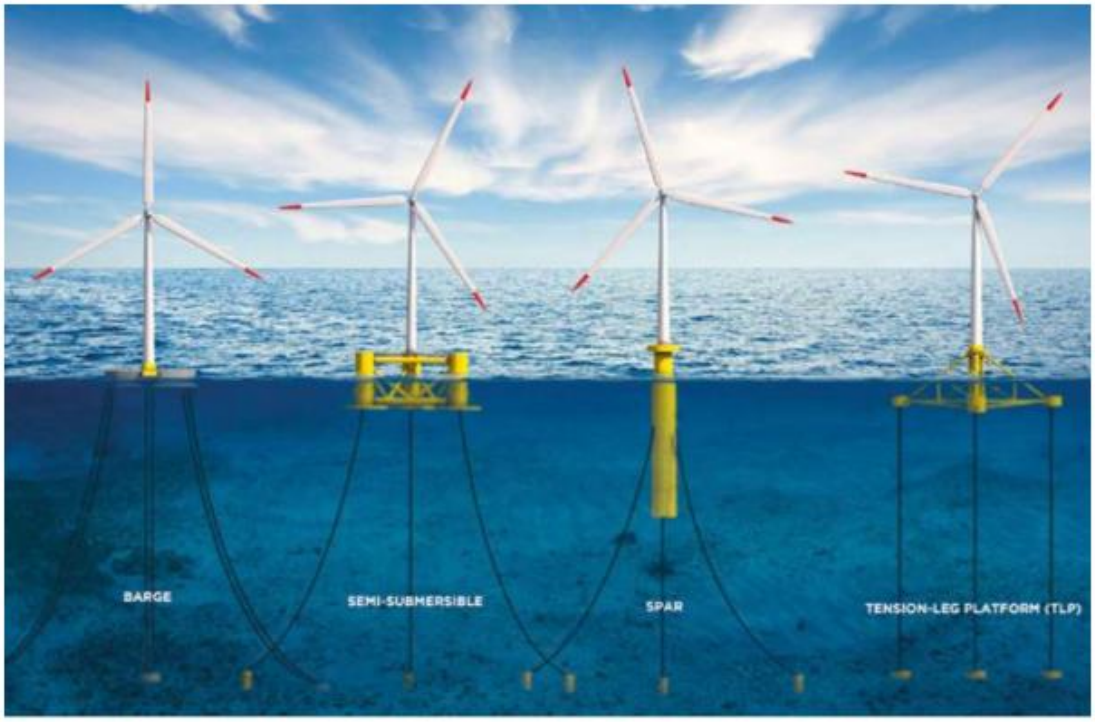


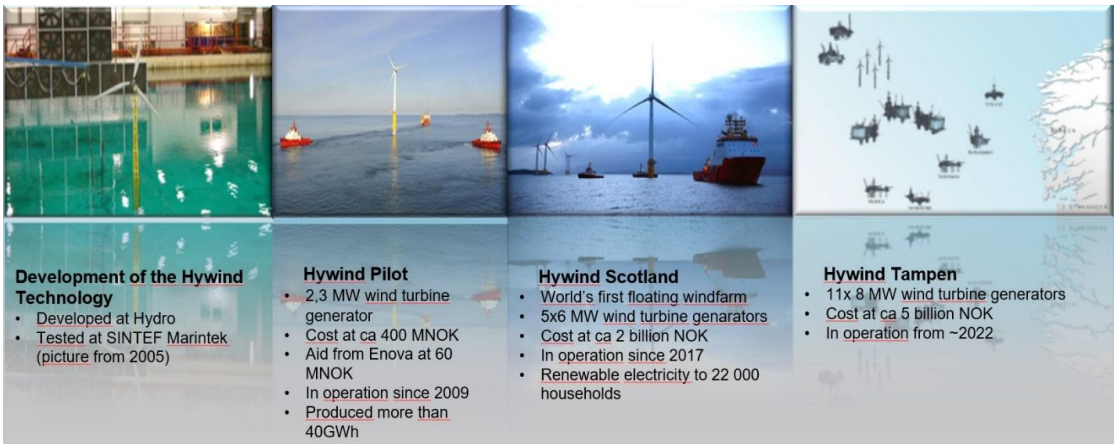
Figure 1. FOW design concepts.[4]

(7) Hywind technology ("the Technology") is an optimised concept for FOW power production. The Technology uses a floating wind turbine design based on a single floating cylindrical spar buoy moored by cables or chains to the sea bed[5] (see figure 1, third from left). The Technology is developed by Hywind AS, a fully owned subsidiary of Equinor ASA ("Equinor").

(8) The Technology is protected through a portfolio of 10 Equinor-owned patents. The patents mainly relate to methods and solutions for anchoring, installation and control algorithms. The patents date back to 2003–2009, when the Technology was in its early stage of development.

(9) The Technology is based on a viable FOW concept and has been tested and demonstrated through the Hywind Demo project at Karmøy, and the Hywind Scotland Pilot farm off the east coast of Scotland.

[4] WindEurope Position paper, 1 October 2018, "Floating Offshore Wind Energy: A Policy Blueprint For Europe", page 2.
[5] Equinor, How Hywind works.



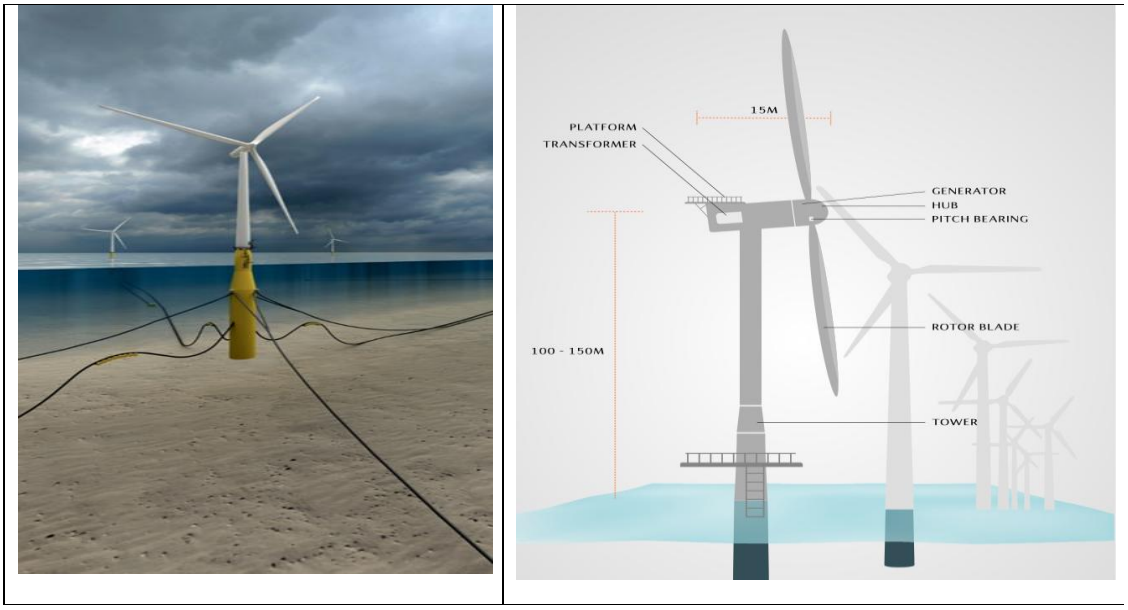


Figure 2. Illustration of the Hywind concept and the timeline of its development.

(10) The Norwegian authorities granted investment aid to the Hywind Pilot project (Hywind Demo project at Karmøy) under the Norwegian Energy Fund aid scheme, as support for new energy technology and as part of support for renewable energy production.[6] The Hywind Scotland project was granted aid under the Renewables Obligation scheme, as amended for offshore wind in Scotland,[7] a renewable electricity generation scheme in the United Kingdom.

3.3 The Hywind Tampen Project

3.3.1 Background information and technical overview of the Hywind Tampen Project

(11) Electricity currently used by the Snorre and Gullfaks Installations is generated by gas turbines. The Hywind Tampen Project aims at partially replacing gas turbines

[6] ESA's Decision No 125/06/COL (Norway) *regarding the Norwegian Energy Fund*, Article 4(a) and (c).

[7] Commission Decision in SA.37453 (2014/N) – United Kingdom. Amendment to SA.35565 – Renewables Obligation (RO) scheme for offshore wind in Scotland.

generated electricity with RES electricity and thereby reducing CO_2 emissions from the Installations.

(12) The Hywind Tampen Project introduces an innovative and fully integrated wind and gas turbine power generation system, with potential worldwide application, also outside the oil and gas sector. The Hywind concept combines both innovative and proven technologies for offshore wind production. Certain of these technologies are based on Equinor's Hywind Technology patents, while others are based on third parties' innovative and proven technologies for offshore wind production and the knowledge acquired from the oil and gas industry.

(13) The Norwegian authorities consider that the Hywind Tampen Project is of medium size (88 MW). The Norwegian authorities further consider that the Project is a fully-fledged wind farm for the purpose the Project aims to fulfil, i.e. supplying RES electricity to the Installations. The Norwegian authorities note that due to its size and purpose, the Hywind Tampen Project is not a full utility scale wind farm for the supply industry.[8] Rather, it is an intermediary project of a more limited scope and risk, which contributes to developing cost-efficient solutions to be deployed at a later stage, in a larger full utility scale FOW project.

(14) Connecting the wind farm to the Installations adds a new dimension to the Hywind Technology. The Project introduces an innovative and fully integrated wind and gas turbine power generation system with potential worldwide application for RES electricity production based on FOW. It will be the first FOW farm supplying power to oil and gas installations directly. The Project serves as a stepping stone in the cost and deployment optimization for FOW technologies, including maturing the generic supply chain. Hence, the Project is a key intermediate step facilitating full utility scale FOW farms development.

(15) A gradual process of increasing project size is necessary to further mature the FOW industry, develop industrial solutions and drive down costs.[9] For a given FOW concept, a typical pathway may start with a single turbine demonstrator (<10 MW), followed by a pilot farm (< 50 MW) and then projects of a growing size (80–300 MW) until utility scale (>300 MW) is reached.[10] Through this stepwise process, new technologies are taken in use and matured, learning effects are implemented, manufacturing processes are optimized within the supply chain and finally brought to an industrial level with assembly line production and efficient and lean operations and logistics. According to Equinor's own calculations, the investment costs (per MW installed) of the Hywind Tampen Project are reduced by 40% compared to Hywind Scotland. This cost reduction is due to design improvements and the size of the wind turbine generators.

(16) The Norwegian authorities have explained that the Project is considered to be past the stage of research and development. While the Project's successful

[8] The average size of utility scale bottom fixed offshore wind farms wind farms in construction was 493MW in 2017 and 561 MW in 2018. See WindEurope reports "Offshore Wind in Europe - Key Trends and statistics 2017", page 15 and "Offshore Wind in Europe - Key Trends and statistics 2018", page 21.

[9] International Renewable Energy Agency report "Future of Wind. Deployment, investment, technology, grid integration and socio-economic aspects" October 2019, page 28, figure 9 and page 33, figure 10.

[10] See also WindEurope report "Offshore Wind in Europe – Key Trends and statistics 2017", page 29, figure 24.

realisation and predetermined outcomes are uncertain, there is no intention to primarily acquire new knowledge or make improvements upon the existing stock of knowledge in a systematic manner. ESA notes that according to the industry, the technology readiness level related to semisubmersible and spar buoy substructures has entered a phase (>8) in which the technology is deemed appropriate for launch and operations.[11] The Project's primary risk is financial, linked to potential increase in operation costs and decrease in income. Further, a project of the size and nature of Hywind Tampen entails a technical risk linked to operation. Technical risks are present due to upscaling from the Hywind Scotland project and implementing new technologies in a new environment with challenging ocean conditions. It is also the first time that a FOW farm is directly connected to oil and gas installations.

(17) According to the Norwegian authorities, the economic lifetime of the Hywind Tampen Project is 19 years, based on the expected lifetime of the Snorre and Gullfaks Fields operations. The expected lifetime for Snorre operations is estimated to last until 2040 and for Gullfaks A until 2034, for B until 2030 and for C until 2032. When a wind turbine generator creates more value for Snorre than for Gullfaks, it will be phased over from Gullfaks to Snorre. The wind farm is expected to be abandoned in 2041. The abandonment phase costs will be shared among the Project's participants.

(18) The Project's wind farm will be situated 150 km from the shore and located between the Fields and the Visund field.

Figure 3. Location of the Snorre and Gullfaks Fields and the Project's wind farm.

(19) In total, 11 turbines will be connected to the Snorre and Gullfaks Installations. The turbines will be connected in a ring configuration and each turbine will be placed on a concrete substructure. The floating structure consists of a cylinder filled with

[11] WindEurope Floating Offshore Wind Vision Statement, June 2017, pages 5 and 6.

a ballast of water and a solid ballast. The draft is approx. 100 meters beneath the sea's surface and is attached to the seabed by a three-line mooring spread.

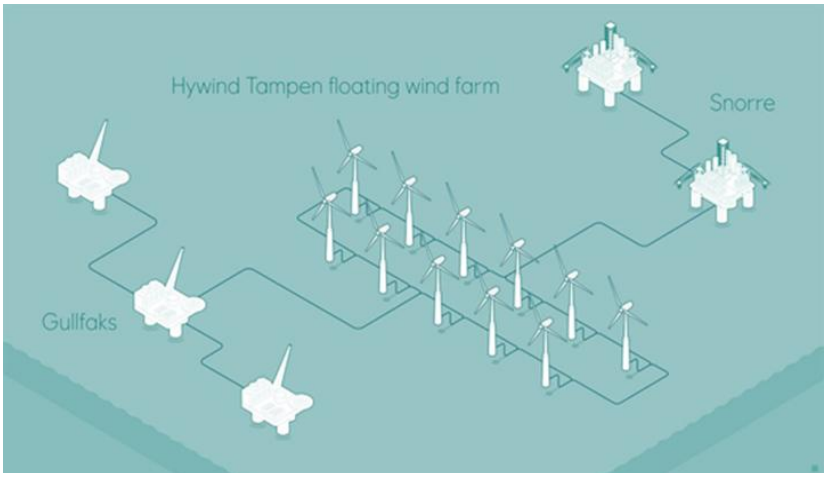


Figure 4. Illustration of the Project's wind farm.

(20) The Norwegian authorities summarize the technical elements of the Hywind Tampen Project as follows:

- 11 commercial size wind turbine generators of 8MW and 167m rotor diameter each, installed in a ring configuration;
- respectively 6 and 5 Hywind units[12] will be connected to the Snorre and Gullfaks Installation;
- substructure: new floating foundation design (concrete);
- in-harbour vertical assembly of substructure, tower and wind turbine generators by land-based ring-crane;
- new, simplified in-line tensioner for the mooring system;
- integration of gas power and wind power systems;
- cable concept connecting wind turbine generators to the Installations (cable tie-in and hang-off concepts);
- tie-in of 33 kilovolt Inter-array cables and export cables from the wind farm to the Installations;
- new anchoring solution where wind turbine generators share anchor;
- new simulation tools and power management systems; and
- topside modifications at the Installations.

(21) The number of FOW turbines to be connected to the Installations have been selected based on a technical assessment and economic analysis of 4–6 wind turbine generators to Snorre and 4–6 wind turbine generators to Gullfaks.[13] The chosen concept for Hywind Tampen is based on the case with the highest CO_2 emission reductions given the technical limitations mentioned above (6 and 5 wind turbine generators to Snorre and Gullfaks Installations, respectively).

[12] A Hywind unit is a complete wind turbine generator installation (substructure, tower, turbine, mooring, anchoring and power cables).

[13] The number of turbines is selected based on a technical-economic analysis, taking into consideration technical limitations, such as the capacity of the interfacing transformers and power cables, and the most balanced NPV calculation that gives the largest CO_2 reduction.

(22) Due to the intermittent nature of wind energy production, the existing gas turbines are necessary for back-up power and balancing the power fluctuations. Integration of gas turbines and wind turbine generators requires the development of new power management systems on the platforms, and new operational modes for the gas turbines. This means an increased load variation to balance out intermittent wind power and an increased number of starts/stops to minimize fuel gas consumption.

3.3.2 Energy production and environmental benefits of the Hywind Tampen Project

(23) The Norwegian authorities have explained that under a conservative estimate, the Hywind Tampen Project (88 MW) would replace 30–35% of the gas turbine generated electricity with RES electricity.

(24) The Norwegian authorities also explain that a more significant replacement of gas turbine generated power with RES electricity would not be a feasible option. That is due to the intermittent nature of wind power and because the Hywind Tampen Project is considered to be commercially immature by the Project participants.

(25) While traditional bottom-fixed technology-based solutions are not economically attractive in waters of 60 metres and deeper, FOW is not limited by such constraints. FOW farms are less dependent on water depth and seabed soil properties and can be placed in larger areas and at locations further out in the sea with much higher average wind speed and a more consistent flow. That will also allow them to avoid wake effects[14] from nearby wind turbine generators or other wind farms. This FOW-offered resilience and flexibility would result in a significantly improved use of renewable energy resources.[15]

(26) As explained above, the primary expected environmental benefit of the Project is the replacement of 30–35% of the gas turbine generated electricity with RES electricity. The Norwegian authorities estimate that this entails a 384 GWh/year wind power production, which in turn will contribute to a significant reduction of CO_2 emissions (approximately 200 000 tons reduced per year on average).[16]

(27) Also, FOW projects in remote offshore marine areas have less impact on environmental surroundings. Such an impact of noise and visual pollution is less of a concern compared to installations closer to shore. Indicatively, due to the use

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[14] WindEnergyFacts. The wake effect is the aggregated influence on the energy production of the wind farm, which results from the changes in wind speed caused by the impact of the turbines on each other.

[15] According to the Norwegian authorities, the Hywind Tampen's hours of operation are estimated at 4 364 hours per year (capacity factor of 50%). By comparison, land-based wind turbines in Norway operated in 2017 for an average of 2 849 hours. The Norwegian authorities also refer to a report by the Norwegian Water Resources and Energy Directorate ("the NVE"), Vindkraft - produksjon i 2017. Rapport nr 10-2018, page 4, table 1. According to the data of the NVE, new land based wind turbines on using new and more efficient turbines, are expected to operate for 3 500 hours per year.

[16] The calculation of the reduction in CO_2 emissions is based on a wind power output of 384 GWh/year. Those 384 GWh could replace approximately 1.28 TWh of natural gas. The energy value of natural gas varies from 10.4 to 18.3 kWh/Sm^3 depending on the reservoir the gas comes from. The amount of CO_2 produced by the combustion of natural gas also varies with the gas's location. This ranges from 2.22 kg CO_2/Sm^3 to 2.66 kg CO_2/Sm3 gas. Therefore, the following calculation method was used to estimate the reduced CO_2 emissions:
1.28 * 109 kWh / (13.8 kWh / Sm^3) * 2.3 kg CO_2 / Sm^3 ~ 200 000 tons CO_2 per year reduced.

of suction anchors for the mooring, there is less noise during installation, compared to the noise from bottom-fixed foundations, where hammer piling is frequently used to drive the piles into the sea bottom.

3.4 The Hywind Tampen Project participants

(28) The Hywind Tampen Project is owned by the holders of the production licenses[17] of the Fields. Production licenses are issued by the Ministry of Petroleum and Energy ("the MPE") under the Petroleum Act[18] (Section 3-5). A production license gives an exclusive right to survey, exploration drill and produce petroleum in areas covered by the license (Section 3-3 of the Petroleum Act).

(29) The production licenses of the Fields are held as follows:

The Gullfaks Field: Equinor (51%), Petoro AS[19] (30%) and OMV AS[20] (19%).

The Snorre Field: Equinor (33.3%), Petoro AS (30%), Idemitsu Petroleum Norge AS[21] (9.6%), DEA Norge AS[22] (8.6%) and Vår Energi AS[23] (18.5%).

The Fields' production license holders, other than Equinor, are jointly referred to as "the other Project participants".

(30) Equinor is an international energy company with headquarters in Stavanger, Norway. The Norwegian state holds 67% of the shares in Equinor through the MPE.

(31) Equinor will develop the Hywind Tampen Project and acts as operator for both its construction and operation phase. Equinor is operationally and technically responsible for the systems used at Hywind Tampen, including floating substructure, mooring system, cables and topside integration at Snorre and Gullfaks. Equinor will also be responsible for all maintenance related to the wind farm, both scheduled and unscheduled.

(32) Equinor operates the Installations on behalf of the Snorre and Gullfaks Units. The Norwegian authorities have explained that a unit is a partnership of production license holders based on a joint operation agreement ("the JOA"), which is a standard partnership agreement. There are two JOAs, one concerning Gullfaks and the other concerning the Snorre Field. The Norwegian authorities compare a unit to a general partnership with shared liability[24] where each partner is

[17] In Norwegian: *utvinningstillatelse*.
[18] LOV-1996-11-29-72.
[19] A Norwegian fully state-owned company managing the Norwegian Government's portfolio – collectively called State's Direct Financial Interest – of exploration and production licenses for petroleum and natural gas on the Norwegian continental shelf.
[20] OMV Norge AS is a subsidiary of OMV Exploration & Production GMBH, a subsidiary of the OMV Group, an Austrian listed integrated oil and gas corporation.
[21] A Norwegian subsidiary of the Idemitsu group, a Japanese energy corporation.
[22] A Norwegian subsidiary of DEA Deutsche Erdoel AG, an international oil and gas company based in Hamburg, Germany. In turn, DEA Deutsche Erdoel AG is a part of L1 Energy, an oil and gas investment company.
[23] The largest independent exploration and production company on the Norwegian continental shelf. The Norwegian authorities have explained that on 26 September 2019, Vår Energi AS acquired 17.4% in the license from ExxonMobil Exploration and Production Norway AS. The latter is a Norwegian subsidiary of the Exxon Mobil Corporation, an American multinational oil and gas company.
[24] In Norwegian: *selskap med delt ansvar*.

responsible for costs and income based on their percentage share/ownership of the unit. For carrying out the Hywind Tampen Project, the Snorre and Gullfaks Units have also concluded a cooperation agreement.

(33) Equinor has a three-step approach for access to the Technology. First, Equinor grants royalty free licenses to the Hywind patents and know-how to the Gullfaks and Snorre Units.

(34) Second, Hywind AS and the other Project participants have concluded license agreements on the Project's intellectual property rights ("the License Agreements"). The Norwegian authorities provided one of the License Agreements as an example. Under the License Agreements, the Hywind Technology (Hywind patents and know–how) is initially to be spread via a non-exclusive royalty-free license to the Project participants for oil and gas projects and for a fixed fee per MW of actual installed capacity for other projects. In FOW farm projects, in which Equinor does not participate as the project's operator, licenses are offered to patents only and not to the know-how.

(35) Third, Equinor's ambition is to be an energy rather than technology company. Equinor seeks to contribute to the deployment of and cost reduction in the Technology and offshore floating wind in general. Accordingly, Equinor intends to grant licenses to patents and know-how and associated services to the industry on competitive terms. Equinor plans to make such offers available after the Technology has been proven economically feasible. Moreover, Equinor collaborates with suppliers. As regards the Hywind Tampen project, the suppliers can to a large extent re-use the developed competence in other projects.

(36) The Norwegian authorities confirm that neither Equinor nor the other Project participants are subject to an outstanding recovery order, and that they are not firms in difficulty, as defined in ESA's guidelines on state aid for rescuing and restructuring firms in difficulty.[25]

3.5 Market impact of the Hywind Tampen Project

3.5.1 Energy markets

(37) Equinor is active in worldwide exploration, production, transportation, refining and marketing of petroleum and petroleum derived products.[26] Equinor supplements its oil and gas portfolio with investments globally in renewable energy, such as offshore wind. The other Project participants are also internationally active oil and gas sector companies.[27]

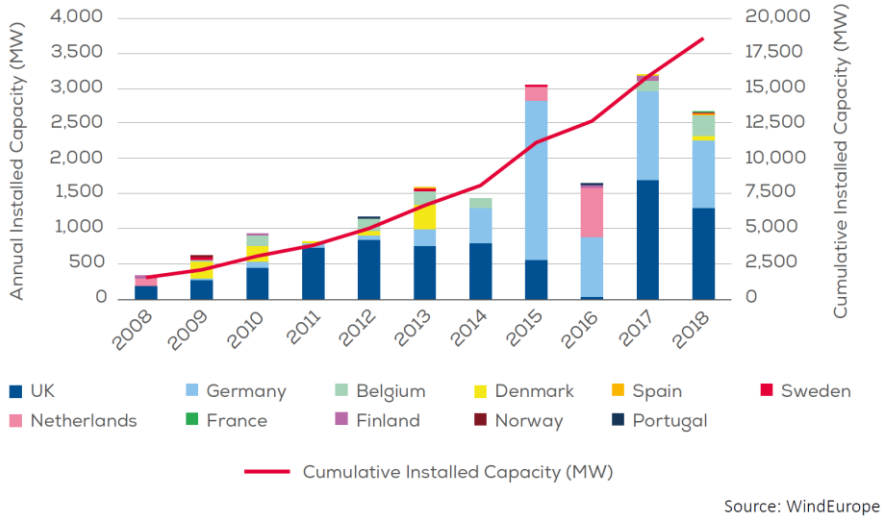
(38) The Project concerns generation of RES electricity for the Installations. The innovative technology can be licensed by the other Project participants and third parties for developing FOW farms, also outside the oil and gas sector.[28]

(39) Since 2010, the EEA countries investing the most in offshore wind (both FOW and bottom-fixed offshore wind) have been the UK and Germany.[29] Based on the

[25] OJ L 271, 16.10.2015, p. 35 and EEA supplement No 62, 15.10.2015, p. 1.
[26] See, for instance, Commission Decision in Case M.9067, C(2018) 8651 final – *Equinor Refining Norway / Danske Commodities*.
[27] See paragraph (29).
[28] See paragraphs (33) and (34).

latest available data, in 2018, the UK had the largest amount of offshore wind capacity in Europe with 44% of all installations in MW. Second was Germany with 34%, followed by Denmark (7%), Belgium (6.4%) and the Netherlands (6%).[30]

FIGURE A
Annual offshore wind installations by country and cumulative capacity (MW)



Source: WindEurope

Figure 5. Cumulative installed capacity (MW) of offshore wind installation in Europe.

(40) According to WindEurope, Equinor is not among the largest market players (see figure 6 below).

[29] Since 2010 the UK has attracted 48% of new investments, worth EUR 40 billion, making it the biggest offshore wind market over the last nine years. Germany follows with 34% or EUR 28 billion invested over the same period.
[30] WindEurope. Offshore Wind in Europe. Key trends and statistics 2018, February 2019.

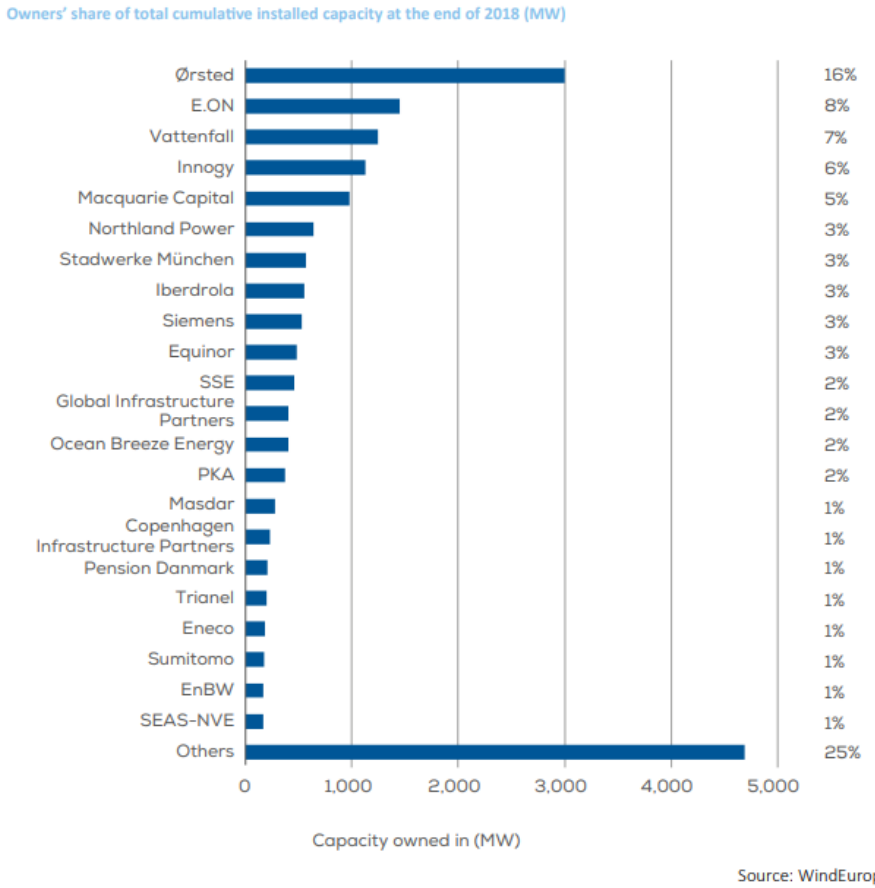


Figure 6. Owners' share of total cumulative installed offshore wind capacity in Europe at the end of 2018.[31]

(41) In 2018, the total capacity of global bottom-fixed offshore wind was 23 640 MW of which 18 500 MW have been realised in Europe.[32] FOW is a new sub-industry in wind power sector, which allows generation in deep water environment and adds value in the further development of the overall offshore wind industry.[33] According to the industry, FOW has the potential to further increase offshore wind power capacity, since deeper offshore areas represents 60–80% of the offshore wind potential in Europe. FOW can also be an alternative solution to bottom-fixed offshore wind, as it can be more easily installed in areas with poor seabed conditions and would also allow for the potential recycling of currently abandoned sites (initially surveyed for bottom-fixed offshore wind).[34]

(42) The main markets for FOW in Europe currently include France, Spain, Portugal, Ireland and the UK. These countries have large, deep territorial waters, significant wind resources offshore, high population and industrial activity near the coastline.[35] These conditions make them suitable to lead the development of FOW.

[31] WindEurope, Offshore Wind in Europe. Key trends and statistics 2018, February 2019, page 28.
[32] GWEC Global Wind Report 2018, historic development of total installations (MW, offshore), page 29.
[33] WindEurope Floating Offshore Wind Vision Statement, June 2017, page 9.
[34] Idem, pages 5 and 9.
[35] WindEurope Position paper, "Floating Offshore Wind Energy. A Policy Blueprint for Europe", section 1.1.

Wind Farm Name	Country	Capacity (MW)	Commissioning date
Hywind Scotland	United Kingdom	30	2017 (in operation)
Windfloat Atlantic	Portugal	25	2019
Flocan 5 Canary	Spain	25	2020
Nautilus	Spain	5	2020
SeaTwirl S2	Sweden	1	2020
Kincardine	United Kingdom	49	2020
Forthwind Project	United Kingdom	12	2020
EFGL	France	24	2021
Groix-Belle-Ile	France	24	2021
PGL Wind Farm	France	24	2021
EolMed	France	25	2021
Katanes Floating Energy Park -Array	United Kingdom	32	2022

Figure 7. Announced pre-commercial FOW projects in Europe.[36]

3.5.2 FOW supply chain

(43) With the Project, Equinor does not aim to develop proprietary technology or to establish its own supply operations. Equinor's strategic end is the production of energy and the development of a robust base of subcontractors for the industry.

(44) A FOW installation consists of several components that together make up a unit.[37] The components are supplied by different suppliers and must fit together according to a variety of installation-dependent conditions and specifications. Besides the geographical location, other elements such as wind conditions, height of waves, seabed conditions, depth, assembly possibilities, access, operating mode, as well as grid and outlets will be crucial for the realisation of the project.

(45) Due to the plethora of technology elements and market players involved, the Hywind Technology is not the sole basis for the future market development of FOW technology. The Project is one of many elements in the overall FOW technology development. FOW technology development requires not only the development of several individual components, but also the involvement of a range of different suppliers. Combined, this ensemble facilitates development FOW technology and the supply chain for all offshore wind market players. Following the realisation of the Hywind Tampen Project, new suppliers will also be mobilised, gaining experience, expertise and know-how with offshore wind and the Hywind Technology.

(46) There are typical technology hardware[38] and services[39] relevant for FOW spreading in general. Technology providers and market players that have engaged in floating offshore wind include, amongst others, MHI Vestas Offshore Wind, General Electric, Siemens Gamesa, ABB, Doosan Heavy Industries, Nexans and Adwen.

[36] WindEurope Position paper, "Floating Offshore Wind Energy. A Policy Blueprint for Europe", table 1.
[37] See paragraph (20).
[38] For instance, wind turbine generators, substructures, anchoring solutions, power cables, energy storage technology hardware (n/a for the Hywind Tampen Project as it relies on gas generators to stabilise the power production), automation and digitalisation technologies.
[39] For instance, vessels (access and service), installations, port areas (transport and logistics).

(47) The above technology hardware and services are examples of Equinor's purchases from subcontractors through its normal procurement process (competitive tendering on market terms).[40] Equinor first identifies potential suppliers that need to meet certain tailor-made pre-qualification requirements. Suppliers on the bidders list will receive Equinor's invitation to participate in a tender procedure. Pre-defined evaluation criteria will finally form the basis for the selection of the most advantageous bid.

3.6 The aid granting authority

(48) The aid is granted by Enova SF ("Enova"). Enova is a state enterprise fully owned by the Norwegian state via the Ministry of Climate and Environment.[41] Enova was established on 1 June 2001 for developing and managing various support programmes with the objective of energy saving and reduced climate gas emissions in Norway.[42] Enova became operational on 1 January 2002.

(49) Enova has the competence to grant aid on the basis of the Parliamentary Decision of 5 April 2001, amending the Energy Act of 29 June 1990 No 50 and the agreement between Enova and the MPE on the management of the funds derived from the Energy Fund during the period from 1 January 2017 to 1 December 2020 ("the Agreement").[43] As regards funding granted by Enova in 2019, relevant is also the Assignment Letter from the Ministry of Climate and Environment to Enova.[44]

3.7 Legal basis, budget, form of aid and selection process

(50) Following Equinor's 5 July 2018 application for aid, Enova awarded the aid to the Hywind Tampen Project by its board decision dated 12 August 2019.

(51) Enova awarded the aid under its "Full scale innovative energy and climate technology" programme ("the Programme").[45] The Programme description sets out, amongst other things, the eligibility terms for investment aid.

(52) As explained in the Enova board decision, the Programme aims to increase and accelerate commercial use of new and particularly innovative technology, which provides significant reductions in climate gas emissions, power output, or specific energy use, or increases production of energy from renewable sources. The full-scale innovative energy- and climate technology shall moreover contribute to reducing cost and risk for businesses wishing to make use of innovative technology or innovative system solutions. The technology must be better than the best commercially available technology and the innovation must involve a considerable improvement beyond what is common in the industry.

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[40] Equinor's procurement process.
[41] Prior to 1 May 2018, Enova was owned by the MPE.
[42] See, for instance, ESA's Decisions No 125/06/COL (Norway) *the Norwegian Energy Fund*, section 2.3 of part I, 248/11/COL (Norway) *Energy Fund scheme*, paragraph 13, and No 233/16 (Norway) *Enova's Eco-Inn scheme 2017–2022*, paragraphs 4–6.
[43] Available at: https://www.enova.no/om-enova/om-organisasjonen/oppdragsbrev-og-avtaler/. On 1 May 2018 the ownership of Enova (and the Agreement) was transferred from the MPE to the Ministry of Climate and Environment.
[44] In Norwegian: *oppdragsbrev*. In 2019, the total disposable budget for Enova was approximately NOK 6 500 million. See Oppdragsbrev 2019 for Enova SF, section 5.1.
[45] The version of the programme as adopted by Enova's board on 5 December 2017.

(53) When deciding to grant the aid to the Hywind Tampen Project, Enova considered, *inter alia*, that there are currently no wind parks in the EEA of similar scale and capacity. The Project will contribute to the development of FOW and there are several projects in both Europe and other places, which can make use of the technology, once it has been matured through the realisation of the Project. The Project is also expected to mature the supply-chain so that costs can be brought down. Best available technology for electricity supply for oil and gas installations today are gas turbines. The Project will lead to an annual electricity production of 384 GWh, which will contribute to a reduction in climate gas emissions of 200 000 tons CO_2 equivalents per year. This is a considerable number compared to other climate projects and investments in renewable energy. It is further demonstrated that the technology has a realistic market potential and that the technology can be diffused after the realisation of the Project.

(54) Enova grants funding from the Programme under the "Promotion of energy from renewable sources" aid scheme. The aid scheme falls under Article 41 of the General Block Exemption Regulation ("the GBER") under which investment aid can be granted for the promotion of energy from renewable energy sources.[46] The Norwegian authorities have transmitted to ESA the summary information about the aid scheme under Article 11(a) of the GBER.[47] The Norwegian authorities notify the aid award as it exceeds the notification threshold of EUR 15 million per undertaking per investment project (Article 4(1)(s) of the GBER).

(55) The aid is a direct grant of NOK 2 329.8 million[48] (NOK 2 229.6 million in discounted value[49]). The Norwegian authorities have confirmed that the implementation of the Project has not started; the aid award is conditioned on ESA's approval and no disbursements will be made before that.

(56) The Norwegian authorities have also explained that Enova chose the Hywind Tampen Project under the Programme in a non-discriminatory, open and transparent selection process.[50] All undertakings falling under the Programme are eligible to apply, including new entrants.[51] Competing projects are given priority according to the level of innovation of the technology versus state-of-the-art technologies, as well as their potential to contribute to increased environmental protection.

[46] Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (OJ L 187, 26.6.2014, p.1), referred to at point 1j of Annex XV to the EEA Agreement, see Joint Committee Decision No 152/2014 (OJ L 342, 27.11.2014, p. 63; EEA Supplement No 71, 27.11.2014, p. 61).
[47] GBER 25/2016/ENV
[48] The aid amount in constant 2019 prices.
[49] Discounted using ESA's reference rate for Norway of 1.47 percent + 100 basis points margin, applicable from 1 June 2019 to 30 September 2019, available at www.eftasurv.int/state-aid/rates. The interest rate used for discounting is in accordance with paragraph 14(20) of ESA's guidelines on state aid for environmental protection and energy 2014–2020.
[50] Enova published the "Full scale innovative energy and climate technology" programme on its website, describing all the requirements, criteria and guidelines for applicants.
[51] Idem.

3.8 The investment costs and aid calculation

3.8.1 Eligible costs and aid intensity

(57) The Project's total investment costs are NOK 5 126.8 million (discounted),[52] divided as follows:

	Investment, MNOK	Share
Company cost[53]	569.0	11.1%
Wind turbine generators	1281.4	25.0%
Substructure[54]	1326.6	25.9%
Cables	440.2	8.6%
Mooring and anchoring	367.4	7.2%
Marine operations[55]	743.5	14.5%
Topside modifications[56]	398.7	7.8%
Total investment	**5126.8**	**100.0%**

Table 1. Total investment costs (discounted).

(58) The Norwegian authorities have explained that a credible counterfactual scenario is not to invest in the Project, and have provided evidence in that regard. In particular, the Gullfaks and Snorre Fields have robust gas-powered generation facilities, with good capacity and redundancy. According to the information provided by the Norwegian authorities, without the aid, Equinor would have continued using the existing gas turbines for the Installations' energy needs with no foreseeable investment needs during the lifetime of the Project. Furthermore, the onshore supply of RES electricity would not be economically feasible.

(59) The envisaged aid of NOK 2 229.6 million[57] for the eligible costs of NOK 5 126.8 million (figures in discounted value) corresponds to an aid intensity of 43.5%, as follows:

	MNOK
A: Investment costs of the project	5 126.8
B: Alternative investment	0.00
C: Eligible costs (=A-B)	**5 126.8**
Aid amount	2 229.6
Aid intensity	**43.5%**

Table 2. Eligible costs and aid intensity (discounted).

(60) The Norwegian authorities have also explained that in case the incurred investment costs are lower than budgeted or realised savings, the aid amount will be reduced accordingly. The adjustment is facilitated by holding back the last 20%

[52] See footnote 49 for the discount rate.
[53] Internal cost for commissioning and preparation for operations including personnel cost (no research personnel).
[54] The carrying element of the wind turbine generator. In the Project, a floating concrete spar buoy.
[55] Inshore and onshore assembly cost, cable installations, including survey and protection, tow and hook of operations at site, mooring system installation.
[56] Modification and installation of new equipment on the oil and gas platforms.
[57] See paragraph (55).

of the aid until the project is completed. Enova will only disburse the remaining aid when it has approved an audited final project report with audited final project accounts.

3.8.2 Net extra cost calculation

(61) The economic life of the Project is 19 years.[58] According to the Norwegian authorities, the investment costs discounted for the purposes of calculating net extra cost amount to NOK 4 505.5 million. As explained in paragraph (58) above, there is no counterfactual investment.

(62) In calculating the net extra cost of the Project, the Norwegian authorities have used a discount rate of 8% (real). As explained by the Norwegian authorities and according to a third-party expert report,[59] the chosen discount rate is the standard requirement in the petroleum industry and is […]. It is also used by investment banks and market analysts and has been stable over time. Moreover, according to the report, a similar discount rate would be applicable if the Project was classified as a RES investment rather than a petroleum investment. This is because different energy projects have similar relevant risk profiles, i.e. the non-diversifiable risk as measured by beta-values, and thus there is little reason to use lower required rates of return for RES projects. The exception would be if energy prices were fixed over a long time-period.

(63) As summarised in the table below, the discounted net extra cost of the aided investment amount to NOK -2 676.7 million (without the aid).

	Hywind Tampen, MNOK	Counterfactual, MNOK
Investment costs	4 505.5	0.0
Operating benefits over the lifetime	1 610.3	
Operating costs over the lifetime	-218.5	
Operating benefits net of operating costs	1 828.8	
Net operating benefit minus investment costs	-2 676.7	
Net extra cost	**-2 676.7**	

Table 3. Net extra cost (discounted, real, before tax).

(64) The net extra cost calculation takes into account additional gas and LNG sale revenues and savings on EU Emissions Trading System allowances costs, national CO_2 and NOx taxes. An independent third-party report[60] confirms the underlying assumptions of price developments.

(65) The Project has also received financing from the NOx Fund[61] in the amount of NOK 567 million (nominal). The Norwegian authorities have taken this funding into account as an operating benefit in the net extra cost calculation.

[58] See paragraph (17).
[59] Document No 1111455.
[60] Idem.
[61] As regards the NOx Fund, see ESA's Decisions No 501/08/COL (Norway) *Temporary exemption in relation to an environmental agreement between fourteen business organisations and the Norwegian State relating to reduction of Nitrogen Oxide ("NOx") emissions*; No

(66) The Norwegian authorities have also explained that even though the Project falls under the Petroleum Tax Act, it does not benefit from the cash refund of the tax value of petroleum exploration costs.[62] Furthermore, under the applicable Norwegian tax rules, Enova's support must be deducted from the assets value for tax depreciation purposes.

3.9 Incentive effect

(67) The Norwegian authorities have confirmed that the beneficiary submitted the aid application before the start of works on the investment.

(68) Furthermore, according to the Norwegian authorities, due to the unprofitability of the investment, Equinor would not undertake the investment without the aid. The Norwegian authorities have shown that the net present value[63] ("NPV") and the internal rate of return[64] ("IRR") of the Project are, with and without the notified aid, as follows:

	Without aid	With aid
NPV (MNOK)	-2 676.7	-716
IRR	-5%	3%

Table 4. NPV[65] and IRR of the project (real, before tax).

3.10 Cumulation and transparency

(69) The Norwegian authorities have confirmed that no cumulation with other types of aid will take place and that they will comply with the transparency requirements set out in section 3.2.7 of ESA's guidelines on state aid for environmental protection and energy 2014–2020 ("EEAG").[66]

4 Presence of state aid

(70) Article 61(1) of the EEA Agreement reads as follows:

"Save as otherwise provided in this Agreement, any aid granted by EC Member States, EFTA States or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the

144/11/COL (Norway) *Temporary NOx tax exemption for undertakings encompassed by an environmental agreement with the State on the implementation of measures to reduce emissions of NOx in accordance with a predetermined environmental target*; and No 027/18/COL (Norway) *NOx tax exemption for 2018–2025*.

[62] That tax rule was the subject matter of ESA's Decision No 018/19/COL (Norway) *Cash refund of the tax value of petroleum exploration costs*.

[63] The net present value of a project is the difference between the positive and negative cash flows over the lifetime of the investment, discounted to their current value (typically using the cost of capital), that is to say the normal rates of return applied by the undertaking concerned in other investment projects of a similar kind. When this benchmark is not available, the cost of capital of the company as a whole or rates of return commonly observed in the industry concerned may be used for this purpose.

[64] The internal rate of return is not based on accounting earnings in a given year, but takes into account the stream of future cash flows that the investor expects to receive over the entire lifetime of the investment. It is defined as the discount rate for which the NPV of a stream of cash flows equals zero.

[65] See paragraph (62) for the discount rate used to calculate NPV.

[66] Guidelines on state aid for environmental protection and energy 2014-2020 ("EEAG"). OJ L 131, 28.5.2015, p. 1, and EEA supplement No 30, 28.5.2015, p.1.

production of certain goods shall, in so far as it affects trade between Contracting Parties, be incompatible with the functioning of this Agreement."

(71) The qualification of a measure as aid within the meaning of this provision therefore requires the following cumulative conditions to be met: (i) the measure must be granted by the state or through state resources; (ii) it must confer an advantage on an undertaking; (iii) favour certain undertakings (selectivity); and (iv) threaten to distort competition and affect trade.

(72) Enova is a fully state-owned enterprise managing various support programmes.[67] Enova granted the aid in question from a budget based on the 2019 Assignment Letter from the Ministry of Climate and Environment.[68] ESA considers that the measure is financed from state-controlled funds that constitute state resources within the meaning of Article 61(1) of the EEA Agreement.

(73) The aid is granted for the realisation of the Hywind Tampen Project and would not be available under normal market conditions. ESA therefore considers that the measure gives a selective advantage to Equinor and the other Project participants.

(74) As regards the Project's suppliers, ESA considers that since Equinor organises the purchases on commercial terms on the basis of competitive tendering, as described by the Norwegian authorities,[69] and in the absence of any evidence to the contrary, aid to the Project does not result in an advantage to the suppliers.

(75) Equinor and the other Project participants are internationally active oil and gas sector undertakings competing with each other and other undertakings on open markets in the EEA and other countries. Further, all the Hywind Tampen Project participants have access to the Hywind Technology and could thereby develop FOW farms that generate electricity sold on liberalised markets.[70] The measure is therefore liable to distort competition and affect trade between the Contracting Parties to the EEA Agreement.

(76) For the reasons above, ESA concludes that the measure constitutes state aid within the meaning of Article 61(1) of the EEA Agreement.

5 Procedural requirements

(77) Pursuant to Article 1(3) of Part I of Protocol 3 to the Agreement between the EFTA States on the Establishment of a Surveillance Authority and a Court of Justice ("Protocol 3"): "The EFTA Surveillance Authority shall be informed, in sufficient time to enable it to submit its comments, of any plans to grant or alter aid. … The State concerned shall not put its proposed measures into effect until the procedure has resulted in a final decision."

(78) The Norwegian authorities have fulfilled their obligation, according to Article 1(3) of Part I of Protocol 3, by notifying the investment aid before putting it into effect.[71]

[67] See section 3.6.
[68] Idem.
[69] See paragraph (47).
[70] See paragraphs (33) and (34).
[71] See paragraph (55).

6 Compatibility of the aid measure

(79) The aid will be granted under Enova's "Promotion of energy from renewable sources" aid scheme that falls under Article 41 of the GBER.[72] The Norwegian authorities have notified the aid as it exceeds the relevant notification threshold in the GBER.[73] The Norwegian authorities notified the measure under the EEAG.

(80) The measure constitutes investment aid in support of electricity production based on wind, a renewable energy source,[74] and it further contributes to a significant reduction of CO_2 emissions in the offshore sector. Therefore, ESA considers that the measure falls within the scope of the EEAG.[75] ESA has assessed the measure on the basis of the compatibility provisions for individually notified aid to RES energy, as set out in sections 3.2 and 3.3 of the EEAG.

6.1 Objective of common interest

(81) The Norwegian authorities have a dual aim in supporting the Project. First, the objective of the measure is to support production of RES electricity for supplying the Installations. The Project is estimated to generate 384 GWh wind energy per year, contributing to a significant reduction of CO_2 emissions (approximately 200 000 tons reduced CO_2 per year on average).[76]

(82) Second, supporting the Project allows to develop industrial solutions and drive down costs for the whole of the FOW industry. The necessity of a gradual process of increasing project size is already demonstrated by onshore wind power.[77] Moreover, Equinor's own experience shows that compared to the Hywind Scotland Pilot FOW farm, the investment costs of the Hywind Tampen Project are reduced by 40%. The cost reduction is due to design improvements and the size of the wind turbine generators.

(83) Furthermore, Equinor aims to spread the Hywind Technology. The other Project participants are granted licenses for Hywind patents and know-how for oil and gas and other projects. To contribute to deployment and cost reduction of the Technology and FOW in general, Equinor intends to grant licenses to patents and know-how and associated services to the industry on competitive terms. As regards the Hywind Tampen Project, the suppliers can to a large extent re-use the developed competence in other projects.[78] Hence, the technology and information from the Hywind Tampen Project is available to the market players and facilitates full utility scale FOW technologies deployment.

(84) Therefore, ESA agrees with the Norwegian authorities that the Project serves as a key intermediate step towards full utility scale FOW farms that are not limited to supplying electricity to the oil and gas sector and would lead to more renewable energy supplied to the market.

(85) A more general environmental protection objective is established in the EEA Agreement. In particular, Article 73(1) of the EEA Agreement states that "action by

[72] See paragraph (54).
[73] Idem.
[74] Paragraph 14(5) of the EEAG.
[75] Paragraphs 9 and 13(e) of the EEAG
[76] See paragraph (26).
[77] See paragraph (15).
[78] See paragraphs (33) to (35).

the Contracting Parties relating to the environment shall have the following objectives: (a) to preserve, protect and improve the quality of the environment".[79]

(86) ESA considers that protection of the environment by means of promoting RES energy is in line with the general environmental objective as set out in Article 73 of the EEA Agreement. It is also an objective of common interest under the EEAG.[80] ESA notes that the European Green Deal considers further decarbonisation of the energy system critical in reaching climate objectives in 2030 and 2050. According to the European Green Deal, "a power sector must be developed that is based largely on renewable sources". The European Green Deal also considers that an increase in offshore wind production is essential for the clean energy transition.[81] Facilitating electrification is important for reaching the 2030 climate goals of the Norwegian authorities.[82] Also, according to the industry, FOW has an important role to play in reaching the 2030 targets.[83]

(87) According to the Norwegian authorities, greenhouse gas emissions from petroleum activities corresponded to about 13.4 million tonnes CO_2 equivalent in 2018, which is about one quarter of Norway's aggregate greenhouse gas emissions.[84] As explained by the Norwegian authorities, the oil and gas sector industry related CO_2 emissions are intended to be curbed over the next decade by 40% relative to the 2005 level, to achieve near climate neutrality by 2050.[85] Electrification of the platform operations with offshore wind power forms part of the strategy to reach these aims.[86] ESA reiterates that the Project contributes to a significant reduction of CO_2 emissions from the Installations (approximately 200 000 tons reduced CO_2 per year on average). Moreover, the Project introduces for the first time a fully integrated wind and gas turbine power generation system. Hence, the measure makes a significant contribution to environmental protection. As the Technology can be used in other projects and sectors, the positive impact of the measure is not limited to the Installations.

(88) ESA notes that the Project delivers RES electricity to the Installations rather than to the market. Under paragraph 118 of the EEAG, "aid to electricity from renewable energy sources should in principle contribute to integrating renewable electricity in the market. However, for certain small types of installations, this may not be feasible or appropriate".

(89) Paragraph 118 of the EEAG is part of section 3.3.1 that sets out general conditions for both investment and operating aid to RES energy. Section 3.3.1 of the EEAG does not provide for an explicit obligation to supply RES electricity to

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[79] See also ESA's Decision No 150/16/COL, paragraph 40.
[80] See, for instance, ESA's Decision No 150/16/COL (Norway) *Amendment to the Norwegian Tax Act concerning changes in the depreciation rules for wind power plants*, paragraph 39.
[81] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: "The European Green Deal", Brussels, 11.12.2019 COM(2019) 640 final, section 2.1.2, page 6.
[82] Innstilling fra energi- og miljøkomiteen om Kraft til endring – Energipolitikken mot 2030, sections 16.1 and 16.2.
[83] WindEurope Position paper, 1 October 2018, "Floating Offshore Wind Energy. A Policy Blueprint for Europe", section 2.1.
[84] Emissions to air. The Ministry of Petroleum and Energy and the Norwegian Petroleum Directorate.
[85] KonKraftrapport 2020-1. Fremtidens energinæring på norsk sokkel. Klimastrategi mot 2030 og 2050, page 6.
[86] Idem, page 48.

the market nor does set out exceptions therefrom. An explicit obligation to sell RES electricity directly in the market together with exceptions therefrom is set out in section 3.3.2.1 of the EEAG that concerns operating aid to RES electricity (paragraphs 119 and 120 of the EEAG). ESA takes the view that differently from operating aid, direct supply to the market is not always mandatory in case of investment aid to RES electricity under section 3.3.1 of the EEAG. This reading of the EEAG is supported by Articles 41 and 42 of the GBER. Article 41 of the GBER concerns investment aid to RES energy. Granting investment aid to RES energy is not conditioned on RES energy (including electricity) being supplied to the market. However, under Article 42(5) of the GBER, operating aid has to be granted as a premium in addition to the market price whereby the generators sell their electricity directly in the market. Article 42(9) of the GBER sets out exceptions from paragraph 5 for certain types of installations. Based on the above, ESA considers that RES electricity investment aid can be granted to a project such as Hywind Tampen that generates RES electricity for own use.

(90) In view of the above, ESA considers that the measure seeks to achieve an objective of common interest, in accordance with Article 61(3)(c) of the EEA Agreement.

6.2 Need for state intervention

(91) With reference to paragraphs 29 and 33 of the EEAG in particular, state aid should be targeted towards situations where aid can bring a material improvement that the market cannot alone deliver. State aid should address market failures that remain unaddressed by other policies and measures already in place, and – in case of individual aid – targeted to the case at hand.

(92) Under paragraph 110 of the EEAG, ESA in principle presumes the existence of a residual market failure which can render state aid necessary to encourage investments in RES energy, including RES electricity.

(93) FOW technology deployment carries a risk. The technology needs to be implemented under real and relevant to end-use operating conditions as an integral part of oil and gas installations.[87] Given the Project's innovative character and financial and technical risks,[88] it does not appear realistic that this type of projects could be carried out with private funding alone. ESA also notes that the Project has a substantial funding gap (negative NPV) and a low IRR even with aid, which further indicates that executing the Project on a purely commercial basis is not feasible.[89]

(94) According to the information provided by the Norwegian authorities, without the aid Equinor would have continued using the existing gas turbines for the Installations' energy needs.[90] Moreover, as demonstrated by the Project's negative NPV (NOK -2 676.7 million without the proposed aid),[91] the savings on EU Emissions Trading System allowances costs, national CO_2 and NOx taxes are not sufficient to render the investment profitable.

[87] See paragraph (14).
[88] See paragraph (16).
[89] See paragraph (68).
[90] See paragraph (58).
[91] See paragraph (68).

(95) ESA also notes that no medium or full utility scale FOW farms currently exist in Norway or elsewhere in Europe, no FOW farms have yet been connected directly to oil and gas installations, and it does not appear to be profitable to invest in and develop such projects. Norway has identified the uncompetitive cost level of floating offshore wind energy as an obstacle to its further adoption by the market.[92] Based on the information of the Norwegian authorities, the levelized costs of producing energy is estimated to be NOK 1.38/kWh for the Project.[93] In comparison, the corresponding cost of new land-based wind power is estimated to be NOK 0.36/kWh and NOK 0.47/kWh for bottom-fixed wind power. At this price level, no rational investor would invest in supplying FOW energy. Therefore, ESA concludes that there is a need for the measure in order to boost investment in FOW energy.

(96) Based on the above, ESA does not see any reasons to depart in in this case from the presumption set out in paragraph 110 of the EEAG, and concludes that the notified measure is needed to address a market failure.

6.3 Appropriateness of the aid

(97) According to paragraph 35 of the EEAG, an aid measure will not be considered compatible with the functioning of the EEA Agreement, if the same positive contribution to the common objective is achievable through other less distortive policy instruments or other less distortive types of aid instruments.

(98) Under paragraph 111 of the EEAG, the appropriateness of aid to energy from renewable sources and the limited distortive effects of such aid can be presumed, provided all other conditions are met. ESA does not see any reasons to depart from this presumption in this case, and concludes that the notified measure is an appropriate instrument.

(99) There is no general obligation on using RES energy in Norway and such an obligation would not necessarily lead to the implementation of innovative and high-risk RES technologies. Regulatory intervention would also not solve the problem of a substantial funding gap (negative NPV) and an IRR that is considerably lower than the rate of return required by investors for oil and gas investment or for investment in RES projects.[94] Consequently, ESA considers that an alternative policy (e.g., regulation) or aid instrument (e.g., a loan or a guarantee) would not be suitable to trigger investment in the Project.

6.4 Incentive effect

(100) State aid is only compatible with the functioning of the EEA Agreement if it has an incentive effect. An incentive effect occurs when the aid induces the beneficiary to change its behaviour to further the identified objective of common interest, a change in behaviour which it would not undertake without the aid.

[92] Innstilling fra energi- og miljøkomiteen om Kraft til endring – Energipolitikken mot 2030, section 12.1.3.
[93] Given the estimated 384 GWh wind energy production by the Hywind Tampen Project and a discount rate of 6%. As regards the discount rate established by the Norwegian Water Resources and Energy Directorate, see https://www.nve.no/Media/6950/nasjonal-ramme-for-vindkraft-lcoe-kart.pdf.
[94] See paragraphs (62), (68) and (103).

(101) Paragraph 55 of the EEAG states that the incentive effect is to be identified through the counterfactual scenario analysis, comparing the levels of intended activity with aid and without aid.

(102) For the assessment of the financial profitability of an investment, two main financial performance indicators are calculated: (I) NPV, and (ii) IRR. The required rate of return used by the Norwegian authorities in the NPV analysis is 8% (real). It is also used by investment banks and market analysts, and has been stable over time.[95] In light of the explanations and documentation submitted by the Norwegian authorities confirming the market required rate of return, ESA can accept that the rate of return used by Enova in assessing the profitability of the Project does not exceed, and is even below, market level return requirements.

(103) Without the notified aid, the Project generates a negative NPV (NOK -2 676.7 million) and a negative IRR (-5%). With the aid, the Project generates NPV that is still negative (NOK -716 million) and an IRR (3%) that is below market required rates of return (see the previous paragraph). According to the information submitted by the Norwegian authorities, the industry's internal hurdle rates[96] for the petroleum sectors varies between 14–21% and between 10–12.5% for renewable energy.[97] Since the IRR for the Project is considerably lower than industry requirements for both the oil and gas sector and for renewable energy investments, ESA considers that market players would not want to invest in the Project unless the project receives aid.

(104) It is the first ever medium-size (88MW) FOW farm to be directly connected to oil and gas installations. Therefore, the Project is not a "conventional" renewable energy project and entails a higher risk level. ESA also notes that the IRR of the Project is far below the hurdle rate of 11.6% that the Commission considered to be acceptable in a decision concerning aid to the Hywind Scotland project.[98] Moreover, the Norwegian authorities submitted internal company documentation showing that investment in the Project is conditioned on receiving aid. ESA considers this as further proof that the aid has effectively brought about a change in deciding whether to invest in the Project.

(105) ESA therefore considers that while not being excessive, the aid increases both the NPV and the IRR to the level that the beneficiary is incentivised to invest. The aid therefore would change the beneficiary's behaviour.

(106) As confirmed by the Norwegian authorities, Equinor applied for aid before work on the Project commenced.

(107) Based on the above, ESA considers that the measure has an incentive effect.

6.5 Proportionality

(108) According to paragraph 64 of the EEAG, "environmental and energy aid is considered to be proportionate if the aid amount per beneficiary is limited to the minimum needed to achieve the environmental protection objective aimed for". According to paragraph 67 of the EEAG, the costs eligible for environmental aid

[95] See paragraph (62).
[96] A hurdle rate is the minimum rate of return on a project or investment required by a manager or investor.
[97] Document No 1111455.
[98] See paragraph (10).

are the extra investment costs in tangible and/or in intangible assets which are directly linked to the achievement of the common objective.

(109) In line with paragraph 68(b) of the EEAG, Norway has provided calculations to establish the extra investment costs based on a counterfactual situation in the absence of state aid. In the case at hand, and as confirmed by the evidence submitted by the Norwegian authorities, there would be no alternative investment. ESA therefore accepts that the eligible costs amount to NOK 5 126.8 million (discounted).[99]

(110) According to paragraph 72 of the EEAG, ESA applies the maximum aid intensities set out in Annex 1 of the EEAG. Paragraph 74 of the EEAG provides that ESA will consider aid to be compatible if the eligible costs are correctly calculated and the maximum aid intensities set out in Annex 1 of the EEAG are respected. Moreover, as confirmed by the Norwegian authorities, the aid amount will be reduced in case the incurred investment costs are lower than budgeted.[100]

(111) According to Annex I of the EEAG, the allowable aid intensity for investment in renewable energies by a large enterprise is 45% of the eligible costs. As explained in paragraph (59), the aid amount of the notified measure is NOK 2 229.6 million (discounted) and the aid intensity is 43.5%. In line with paragraph 76 of the EEAG, the Norwegian authorities have confirmed that the aid in question cannot be cumulated with other aid.

(112) ESA notes that the Project was chosen in a non-discriminatory, open and transparent selection process.[101] Under paragraph 104 of the EEAG, "Market instruments, such as auctioning or competitive bidding process … should normally ensure that subsidies are reduced to a minimum in view of their complete phasing out".

(113) As explained in paragraph (89) above, EEAG sections 3.3.1 and 3.3.2.1 set out different conditions for investment and operating aid to RES electricity. Whereas section 3.3.2.1 of the EEAG sets out particular requirements for granting operating aid to RES electricity in a competitive bidding process and exceptions therefrom (paragraphs 121 and 122 of the EEAG), section 3.3.1 of the EEAG does not set out corresponding obligations and exceptions for investment aid. This reading of the EEAG is supported by Articles 41 and 42 of the GBER. Differently from Article 42(2) of the GBER, which concerns operating aid, granting of investment aid to RES electricity under Article 41 is not conditioned on a competitive bidding process. At the same time, ESA notes that the Project was chosen in a non-discriminatory, open and transparent selection process[102] that allows to address the environmental objectives that the measure aims to address in a cost-effective way. ESA therefore considers that the measure complies with paragraph 104 of the EEAG by minimising the aid for the objective it pursues to achieve.

(114) ESA also notes that even if the Project falls under the Petroleum Tax Act, the Norwegian authorities have confirmed that the Project does not benefit from the

[99] See paragraphs (57) and (59).
[100] See paragraph (60).
[101] See paragraph (56).
[102] See paragraph (56).

cash refund of the tax value of petroleum exploration costs. Further, Enova's support must be deducted from the assets value for tax depreciation purposes.[103]

(115) According to paragraph 78 of the EEAG, compliance with the aid intensities in Annex 1 is not sufficient alone and these maximum aid intensities are used as a cap for individually notifiable aid. The aid for these projects also needs to correspond to the net extra costs of the aided investment, as compared to a counterfactual scenario (paragraph 79 of the EEAG).

(116) The net extra cost of the aided investment amounts to NOK 2 676.7 million.[104] The aid amount of NOK 2 229.6 million can therefore be considered to be limited to the minimum.

(117) Based on the above, ESA concludes that the notified measure is proportional.

6.6 Avoidance of undue negative effects on competition and trade and balancing test

6.6.1 General conditions

(118) According to paragraph 83 of the EEAG, ESA considers that for the aid to be compatible with the internal market, the negative effects of the aid measure in terms of distortions of competition and impact on trade between the Contracting Parties must be limited and outweighed by the positive effects in terms of contribution to the objective of common interest.

(119) The measure supports partial replacement of gas turbines generated electricity with RES electricity. Absent the aid, the gas turbines would continue to supply electricity to the Installations.[105] The distortive effect of the aid is therefore limited as it aims to partially replace fossil with RES electricity using an innovative FOW technology.

(120) At the beginning of 2018, the installed capacity of the Norwegian power supply system was 33 755 MW, and normal annual production was 141 TWh.[106] ESA considers that without physical connections to the mainland, the Project – that itself is also not of significant size (88MW) in this context[107] – does not have a noticeable effect on the Norwegian electricity market. ESA also notes that, in line with paragraph 93 of the EEAG, if the aid is proportionate and limited to the extra investment costs, the negative impact of the aid is in principle softened (see also paragraph 111 of the EEAG). Further, as explained by the Norwegian authorities, Enova chose the Project in a non-discriminatory, open and transparent selection process under its "Full scale innovative energy and climate technology" programme.[108] ESA considers that following such a procedure further limits any potential undue distortive effects on competition and trade.

(121) In the following, ESA assesses the distortions resulting from the aid under section 3.2.6.3 of the EEAG.

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[103] See paragraph (66).
[104] See paragraph (63).
[105] See paragraph (58).
[106] About Energy Facts Norway.
[107] See paragraph (13).
[108] See paragraph (56).

6.6.2 Support to inefficient production

(122) ESA considers that the aid will not serve to keep an inefficient firm afloat. Equinor is one of the largest energy groups in Europe, with a strong focus on oil and gas exploration and production. Also, the other Project participants are well established and internationally active oil and gas sector companies. The Norwegian authorities have confirmed that neither Equinor nor the other Project participants experience financial difficulties.[109]

(123) Moreover, Enova chose the Project in a non-discriminatory, open and transparent selection process that allows to address the environmental objective in a cost-effective way.[110]

6.6.3 Distortion of dynamic incentives

(124) ESA cannot exclude that the Project gives Equinor and the other Project participants a first mover advantage with FOW technology. However, ESA considers that this is an inherent feature of funding a project such as Hywind Tampen, involving innovative technology.

(125) Further, any potential first mover advantage is mitigated and outweighed by the positive spill-over effects of the Project. The Norwegian authorities have explained that Equinor's core strategy is not to develop proprietary technology. Instead, Equinor aims to develop technology solutions together with suppliers and other technology owners. Equinor spreads the Hywind Technology initially via royalty free licenses (Hywind patents and know-how) to the other Project participants. The latter can thereby develop FOW farms in other locations, either integrated to oil and gas installations or not. In the longer run, Equinor plans to license the Hywind Technology to other third parties/project developers.[111]

(126) The know-how resulting from the Project can also be used by Equinor's current and new suppliers in other projects, and to convince the market in general of the effectiveness and reliability of FOW technology. As explained by the Norwegian authorities, there are several pre-commercial FOW projects in Europe.[112] Hence, the technology and information from the Hywind Tampen Project is available to the market players and facilitates FOW technology deployment. ESA also notes that according to the Commission, there are credible competitors in the markets for manufacturing and supply of wind turbines.[113]

(127) Based on the above, ESA considers that the aid will not unduly crowd out investments in other Contracting Parties or distort dynamic incentives for investing in electricity generation and FOW technology supply.

6.6.4 Creation or enhancement of market power or exclusionary practices

(128) ESA reiterates that it does not consider the Project to have any noticeable effect on the Norwegian electricity market.[114]

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[109] See paragraph (36).
[110] See paragraph (56).
[111] See paragraphs (33) to (35).
[112] See figure 7.
[113] The Commission's decision in Case M.8134 – Siemens/Gamesa.
[114] See paragraph (120).

(129) In the oil and gas sector, there are several strong international market players with major investment capacities, proprietary innovation activities and large market shares.

(130) As regards the Hywind Technology, it can only compete on the market if and when the Project proves successful. ESA reiterates that the know-how resulting from the Project can be used by the Project's participants and suppliers and may convince the market in general of the effectiveness and reliability of FOW technology.[115] Hence, the technology and information of the Hywind Tampen Project is available to the market and facilitates FOW technology deployment.

(131) Based on the above, ESA considers that the aid will not significantly strengthen or maintain market power of either Equinor or the other Project participants.

6.6.5 Artificially altering trade flows or the location of production

(132) ESA considers that the aid will not have a significant effect on trade and location. The aid is only granted to Equinor and the other Project participants. All the electricity generated is supplied to the Installations and the Project is not of a significant size in this context.[116] Also, seeing that the wind farm will be built to deliver electricity only to the Installations, it must be located in their vicinity.

(133) Based on the above, ESA considers it unlikely that the aid will attract more investments in the region where the Project is located.

(134) ESA's conclusion is that the measure does not have any undue distortive effects on competition and trade that would outweigh the positive effects of the measure. Therefore, the overall balance is positive.

6.7 Transparency

(135) ESA finally notes the Norwegian authorities' commitment to meet the transparency obligation laid down in Section 3.2.7 of the EEAG.

7 Conclusion

(136) On the basis of the foregoing assessment, ESA considers that the notified individual aid for the realisation of the Hywind Tampen Project constitutes state aid with the meaning of Article 61(1) of the EEA Agreement. Since ESA has no doubts that this aid is compatible with the functioning of the EEA Agreement pursuant to its Article 61(3)(c), it has no objections to the implementation of the measure.

(137) If this letter contains confidential information which should not be disclosed to third parties, please inform ESA **by 2 April 2020**, identifying the confidential elements and the reasons why the information is considered to be confidential. In doing so, please consult ESA's Guidelines on Professional Secrecy in State Aid Decisions.[117] If ESA does not receive a reasoned request by that deadline, you will be deemed to agree to the disclosure to third parties and to the publication of the full text of the letter on ESA's website: http://www.eftasurv.int/state-aid/state-aid-register/.

[115] See paragraphs (33) to (35) and (126).
[116] See paragraph (13).
[117] OJ L 154, 8.6.2006, p. 27, and EEA Supplement No 29, 8.6.2006, p. 1.

For the EFTA Surveillance Authority, acting under Delegation Decision No 068/17/COL,

Yours faithfully,

Bente Angell-Hansen
President
Responsible College Member

Carsten Zatschler
Countersigning as Director,
Legal and Executive Affairs

[Status]