Financing Offshore Wind Power

Mortgages in Concessions and Windmills as an Instrument of Security in Loan Agreements

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1 Introduction

1.1 The Topic and Aim of the Thesis

Offshore wind power is a relatively new industry in Norway, but with considerable growth expectancy. That is due to an increased demand for energy globally as societies develop and populations expand. The International Energy Agency (IEA) has estimated that "the world's energy needs would be well over 50% higher in 2030 than today."[1] To meet these needs, new technology and innovative thinking is necessary in the search of viable energy sources. A greater focus on finding renewable and cleaner energy is moreover an important ambition to this end. The European Union (EU) has accordingly adopted the 2020 targets, which contain a goal to reduce greenhouse gas emissions by 20%, to increase the share of renewable energy to 20% and to improvement in energy efficiency by 20%.[2]

As part of the European Economic Area (EEA), Norway is committed to follow the European Directive and in that regard, Norway has adopted a target of 67,5% renewable energy production within 2020.[3] In addition, the Norwegian Government has stated that Norway aims to be world leading in developing environmental friendly energy.[4] To achieve these goals, developing production facilities will be important in the future. Offshore wind energy will be an important part of this goal and commitment.

Offshore wind power has yet to be built on a large scale in Norway.[5] As the onshore wind industry is currently significantly more economical to develop, Norwegian developers have focused more on onshore than offshore projects. However, by looking abroad, like in the UK, Denmark and the Netherlands, offshore wind power is a great

[1] http://www.iea.org/press/pressdetail.asp?PRESS_REL_ID=239
[2] Directive,2009/28/EC.
[3] http://www.regjeringen.no/nb/sub/europaportalen/nyheter-europaportalen.html?contentid=651715&id=449646
[4] http://www.regjeringen.no/nb/dep/oed/tema/forskning-innen-energi.html?id=86983
[5] Havsul I will be the first full scale offshore wind project on a commercially-level.

success and has become an important industry. It is thought that Norway, with its knowledge from the oil and gas industry, has good opportunities to use its know-how from this industry and be an important part of the development of offshore wind power. To achieve this it is important to have a proper regulatory framework making it profitable and practical to enter the industry.

The use of loan agreements will be a necessity when financing offshore wind projects in Norway. For financial institutions, it will be important to have proper security for their loans. This is feasible though with mortgages in connection with the loan agreement. To make this an attractive option it is important to have a legal framework that supports an efficient use of mortgages in this industry. The new *Offshore Energy Act*[6] (*hereinafter:* OEA), together with the older *Energy Act*[7] (*hereinafter:* EA), will be important elements in the regulatory framework for offshore wind power. However, some important regulatory aspects are lacking in order to simplify the financing of offshore wind power. In lack of better regulations, developers will most often fall back to solutions in the *Mortgage Act*[8] (*hereinafter:* MA), which may not provide a sufficient security for the financial institutions. For offshore wind industry to develop, it is therefore necessary with certain adjustments in the legal framework.

The aim of this thesis is to assess the legal problems of financing offshore wind power projects. It will specially be focused on the need for loan-agreements in financing projects and whether financial institutions, within the current legal framework, can use a mortgage in concessions or structures as an instrument to achieve security for the loans provided. Comparisons to windmills built within the private land property will be important, as there are significant differences in the legal framework, depending on the windmills being built inside or outside this boundary. Also comparisons to the petroleum and aquaculture industry will be important aspects in examining the legal framework. The thesis will disclose insufficiencies in the legal framework for securing mortgage agreements and hopefully provide potentially improvements.

[6] The Offshore Energy Act, 2010-06-04-21
[7] The Energy Act, 1990-06-29-50
[8] The Mortgage Act, 1980-02-08-2

1.2 Limitations

The main focus of the thesis is the use of mortgages in connection with loan agreements. Due to limitations in scope, only the most problematic mortgage-objects, i.e. the concession and the structures, will be assessed thoroughly. Other possible types of mortgage-objects, as mortgage of shares, factoring, el-certificates and cables, will not be assessed even though they all are possible objects to mortgage.

1.3 Outline

Part 2 sets out an introduction to the technical aspects of offshore wind projects. In Part 3, the importance of concessions and financial plans within project planning are treated. Part 4 will explain the need for loan agreements and the general conditions for providing the financial institutions with sufficient security in connection with a loan agreement. Part 5 and 6 will deal with concessions and the windmills as mortgage-objects and how a mortgage can be secured. Finally, Part 7 concludes as to the main aspects of the thesis.

2 Introduction to Offshore Wind Power

2.1 What is Wind Power?

Wind power is energy transformed from renewable kinetic wind energy into a useful source of energy, i.e. electricity, by the help of a wind turbine. Wind, as many other energy sources, originates from solar energy. Wind is airflows that are balancing differences in pressure in the atmosphere due to the sun heating up air mass differently between latitudes. This unequal heating causes cooler, dense air to circulate and replace warmer light air. It is estimated that 1-2 % of the solar radiation reaching Earth is transformed into wind energy.[9]

The speed of the wind varies a lot and the average speed on the coast of Norway varies from 6 m/s to 10 m/s (measured at 50 meters above ground level). When the wind reaches 3-4 m/s the modern wind turbines are turning towards the wind and start the production phase.[10] The conditions for wind production are thus good on the cost of Norway.

2.2 Advantages and Disadvantages in Offshore and Onshore Wind Projects

Offshore wind power is wind power production at sea. The advantages of placing the production at sea is better and more stable wind conditions, great areas of possible production locations and less conflicts of interests compared to land based wind farms, which often lead to conflicts with the local authorities. The disadvantages of the current technology are the costs. Both investment-costs and operation- and maintenance-costs are significantly higher offshore than for land-based wind farms.[11] However, the offshore wind industry is, at least in Norway, a new industry with great ambitions and potential to reduce costs by developing new technology.

[9] http://www.oceanenergycouncil.com/index.php/Offshore-Wind/Offshore-Wind-Energy.html; http://www.vindkraft.no/Default.aspx?ID=206.
[10] http://www.vindkraft.no/Default.aspx?ID=206
[11] http://www.vindkraft.no/Default.aspx?ID=204

2.3 The Construction of Windmills

This thesis is about the legal aspects behind financing windmills. Some of the problems will however be easier to understand with basic knowledge of how windmills are constructed. Other problems are moreover impossible to solve without these facts being cleared out. A basic presentation of how windmills are constructed, how they are mounted to the place of operation, and whether it is practical to move the windmill, or parts of it, is therefore important.

There are several ways of constructing a windmill, both on land and offshore. There are however some main features in all commercially used windmills, with the exception of some differences in technology and construction. The differences between offshore and onshore windmills are basically the components from the surface to the bottom of the construction. From the surface to the top of the construction, onshore and offshore windmills are more or less constructed in the same manner. Firstly, a general description of the windmill from sea level to the top will be provided.

There are four main parts to a wind turbine, the base (which could be different on an offshore windmill compared to an onshore windmill), nacelle, blades and a tower.[12] The nacelle rotates in order to exploit the wind in the best way. Inside the nacelle there is a generator and most often a gearbox. The blades are normally up to 90 meters in diameter and connected to the generator through a rotor. When the wind makes the blades turn, the generator transforms the kinetic energy into electricity. The nacelle is mounted to a tower. Because the wind increases with altitude, the towers are normally very high, often between 40 to 120 meters.[13]

[12] http://www.ecw.org/windpower/web/cat2a.html
[13] http://www.vindkraft.no/Default.aspx?ID=69

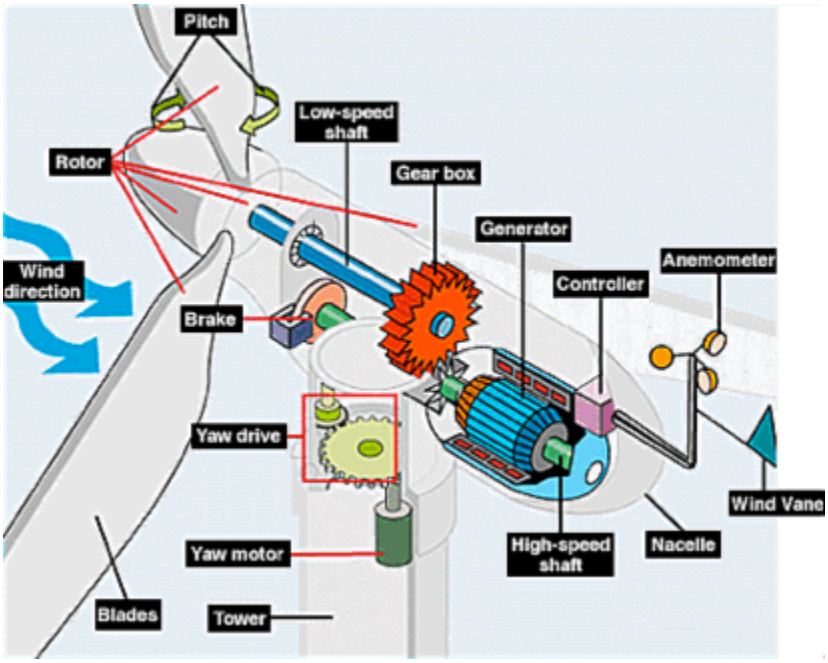

Figure 1: Source; WBDG

The differences between windmills are, as mentioned, how they are connected to the ground and how they are below sea level. With regard to subsequent discussions, three main types must be described, that is onshore windmills, offshore floating windmills and offshore windmills placed onto the seabed on poles.

In comparison, a land-based windmill is most often mounted to the ground through bases made of concrete reinforced with steel bars. There are mainly two basic designs on the market; one is a shallow flat disk, which is about 12 meters in diameter and 1 meter thick, while the other is a deeper cylinder, about 4,5 meters in diameter and 5 meters deep.[14] In Europe it is normal to remove soil before you cast a concrete foundation. In Norway, however, you normally have the possibility to cast a foundation directly on mountain. Grounding rods (*norwegian: forankringsstag*) are installed 10-20 meters into the mountain and a foundation of concrete with a ring of bolts is made.[15] The ring of bolts is important as it is the part that connects the windmill to the base, by placing the windmill onto the bolts. The ring and bolts are standardised in the windmill industry and most of the windmills produced are now standard windmills that fit onto

[14] http://www.ecw.org/windpower/web/cat2a.html
[15] http://www.vindkraft.no/Default.aspx?ID=69

this kind of "bolt-system". The concrete that surrounds the ring is however customised for each project.[16]

Offshore windmills on the other hand are currently offered in two different types, windmills built on poles onto the seabed and floating windmills. Windmills on poles are possible to install within shallow waters, at most down to 100 meters deep. There are several variations of this kind of windmills, based on a variation of concepts. The preferable connection technology used differs according to sub-surface conditions.

The use of "monopiles" has been the most preferable concept in offshore wind projects up until now. The concept of monopiles consists of a pole, either made of concrete or steel, tapped or drilled several meters into the sea-bed and is used both when the sub-surface conditions are loose soils and on mountain. Another concept is the use of gravity foundations. This was the first type of foundation used in the offshore wind-industry and is preferred when the sub-surface conditions are loose soils.[17] The foundation is a large base normally made of concrete, but can also consist of steel. The foundation is set directly onto the seabed and it must have enough weight to ensure that the wind turbine is held in place. It may therefore be necessary with ballast.

The use of "tripodes" is another technology, consisting of three poles of steel drilled 10 to 20 meters into the seabed. The last concept to be mentioned is the use of "jackets". This technology has been used a lot in the oil and gas industry. The foundation consists of a steel lattice structure that is mounted to the ground by the help of four poles.[18]

[16] Discussions with Jacob Bull
[17] Report from Norway's first offshore wind project; Havsul I; http://www.radgivende-biologer.no/uploads/Rapporter/849.pdf
[18] http://www.vindkraft.no/Default.aspx?ID=204

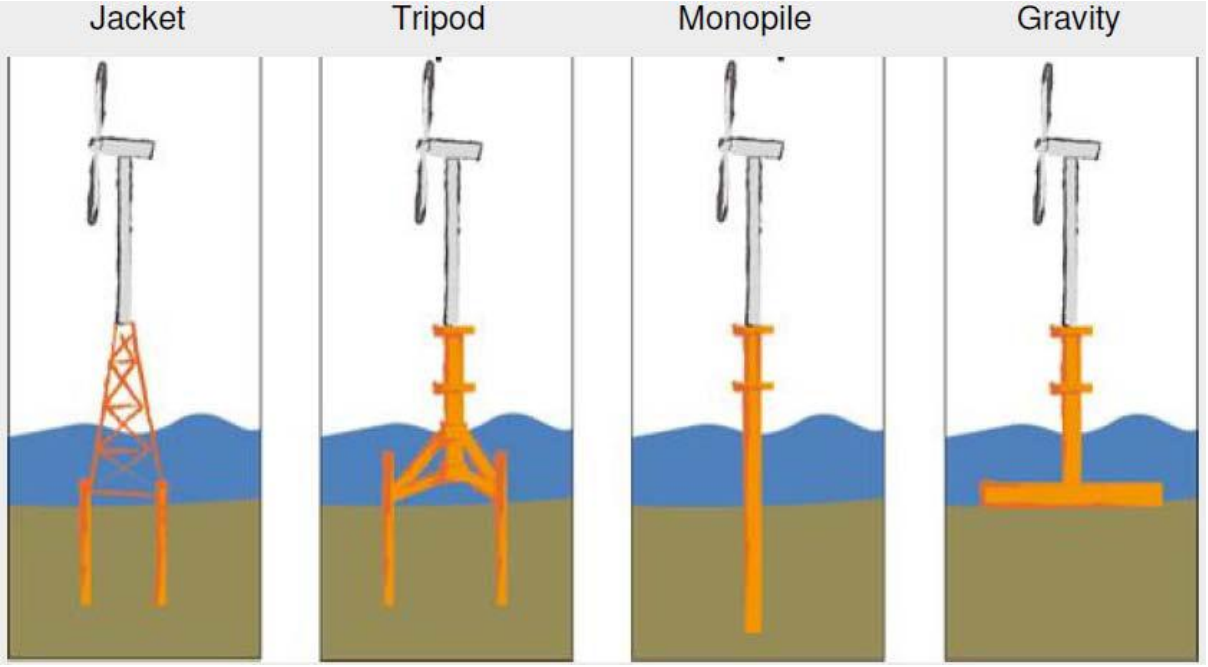

Figure 2: Source; University of Stavanger

The uses of monopiles or gravity foundations are the most commonly used foundation. In Norway, most of the sub-surface conditions consist of hard mountains and it is likely that the use of monopiles will be preferred. The use of monopiles is also the most tried concept from other projects abroad.[19] Both foundations will however create a strong and lasting connection to the seabed with the purpose of restraining heavy weather throughout the windmills' lifetime. To simplify the following discussions, it is presupposed that monopiles is used to connect the windmills to the seabed, both near shore and further out.

The second type of offshore windmills is floating windmills, which are first and foremost to be placed in deeper waters. Statoil's "Hywind"-project is the first full scale floating wind turbine in the world and can be placed in waters from 120 to 700 meters deep.[20] The turbine is connected to the seabed with three pre-installed mooring lines. It is installed one 60 ton plumb on each mooring line as a ballast to make the construction

[19] http://www.vindkraft.no/Default.aspx?ID=204
[20] http://www.statoil.com/no/TechnologyInnovation/NewEnergy/RenewablePowerProduction/Offshore/Hywind/Pages/HywindPuttingWindPowerToTheTest.aspx

more balanced.[21] The technology is taken from the petroleum industry and adapted to the special needs of windmills. Massive wires form the connection to the seabed and it is constructed to restrain heavy weather. The anchor used is formed like a cup upside down and placed onto the seabed. Water and mud is pumped out, creating a vacuum that makes the cup stick to the seabed. There are also other technologies in developing-stages without prototypes or full-scale turbines test-operating.[22]

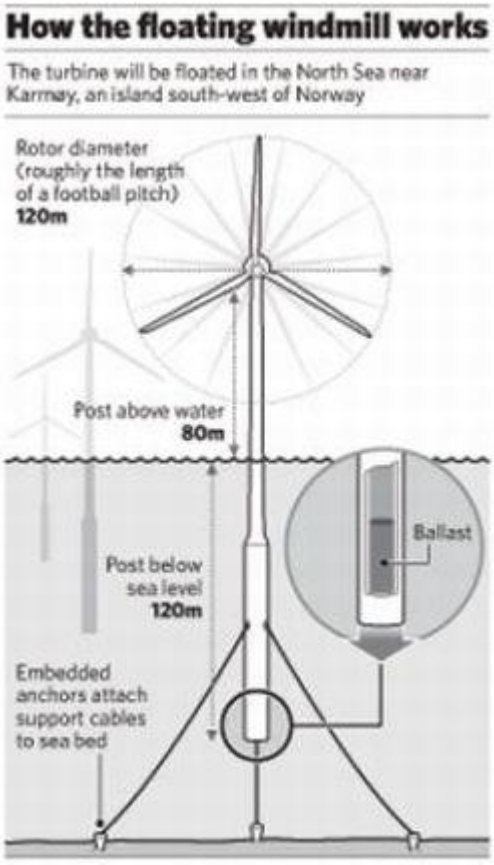

Figure 3: Source; EcoFriend

For the following discussions, the possibility of moving the windmills and to separate parts from it will be of importance. The windmills built on poles onto the seabed are strongly attached to the ground, but are not impossible to move. However, an operation like this will be very expensive and also impractical. That will also be the case for

[21] Video by Statoil, "Animasjon: Assembly and installation", http://www.statoil.com/no/TechnologyInnovation/NewEnergy/RenewablePowerProduction/Offshore/Hywind/Pages/HywindPuttingWindPowerToTheTest.aspx

[22] Sway AS has only made a prototype, but a full-scale turbine will be produced and set out in production in 2013.

floating windmills. However, to move a floating windmill could be easier and thus cheaper as it is likely that the wires will be cut and left behind. Hence, to move an offshore windmill is not impossible, but very expensive.

The turbines used in the offshore industry are, in lack of special offshore turbines, most often the same as on land. This is also the case for Statoil's floating turbine. The technique of attaching the windmills to the base is more or less the same as on land, by use of welding and the standardised bolt-system. The windmills are therefore strongly attached to the foundation and difficult to separate from the base. This is also the case for the tower, nacelle and rotor-blades. However, windmills also consist of several looser parts, as for example the generator, which could be possible to separate from the rest of the construction.[23]

2.4 Wind Farms

The windmills used for mass-production of electricity are normally linked together with other windmills in a power-system, referred to as a wind farm or wind park. In an ideal world, the windmills should be standing far away from each other in order to not intervene in each other's wind-source. However, the windmills need cables to transport electricity to shore and it is therefore considered much more economical to install the windmills in a system to avoid more cables than necessary. How the windmills are placed in relation to each other is carefully planned in relation to gain the most from the wind and to reduce construction costs.[24]

As mentioned, it is essential for the wind farms to lead the electricity to shore through cables. The wind farm is connected to shore through one massive sea-cable. In addition, there is an internal system of cables between the windmills themselves. On land there is a transformer that converts the energy into electricity suitable for the ground-net.[25] The cabling systems will not be further assessed in this thesis.

[23] Discussions with Jacob Bull
[24] http://www.sveinvalle.com/rapport.pdf
[25] http://www.nexans.no/eservice/Navigate.nx?navigationId=251125, Nexans has delivered sea-cable to Statoil's Hywind-project. The cable is of 15 MW and is connected to a transformer on land at Karmøy; How the system is constructed is described on: http://news.bbc.co.uk/2/hi/uk_news/6969865.stm

3 Project Planning: the Necessary Prerequisites

3.1 Concession

The right to explore and take advantage of natural resources is normally subject to a concession system to provide authorities control of energy exploitation. Offshore windmills are subject to this concession system. Offshore windmills are normally built on public land. It is therefore necessary with a concession from the authorities to build the windmills at these locations.[26]

Without a concession to build or operate windmills, the project will be valueless as a concession is essential to produce and sell energy. It is therefore important for developers to obtain concessions before commencing the project. The legal basis for the concessions will vary in accordance with the place of operation.

3.1.1 Legal basis: Difference between the Energy Act and the Ocean Energy Act

For land-based windmills, the applicable law is the EA. The scope of the law is specified in § 1-1 and accordingly applicable to "generation, conversion, transmission, trading and distribution of energy." In accordance with the preparatory works,[27] the law is applicable to all energy transported with cables and pipelines. "Energy" in this regard covers electric energy; hence, including energy produced from windmills.

The statutory basis for the concession-duty for land-based windmills is § 3-1 stating that "installations for the generation, conversion, transmission and distribution of high voltage electrical energy, may not be built or operated without a license." Hence, a windmill cannot be built and cannot be operated without a concession. Moreover, in order to "engage in the trade in electrical energy", everyone "but the State", is subject to

[26] Presentation of the rules below
[27] Ot.prp.nr.73(1988-1989),p.75

a duty to have a concession, cf. § 4-1. It follows that to be able to sell the energy produced from the windmills, a concession is needed. It is therefore necessary for the developer of a wind project to have a concession both in accordance with § 3-1 and also in accordance with § 4-1, to be able to build and operate the windmills, and also sell the energy produced. The authority to provide concession lies with "Noregs Vassdrags-og energidirektorat" (NVE),[28] delegated from the "Ministry of Petroleum and Energy" (OED).[29] The authority to treat appeals is still with OED as the superior authority.[30]

For offshore windmills it is, as a starting point, the OEA that is applicable for the developers' duty to obtain concession in order to have the right to install, operate and engage in trade of electricity produced from the windmills. According to the law, it follows that the state has the exclusive right to exploit such energy resources, cf. OEA § 1-3. However, the law opens for the possibility for private interests to involve in projects by having a system of applying for concessions. In § 3-1(1) it is stated that production facilities cannot be built, owned or operated without concession from the ministry. Also these concessions are in practice treated by NVE.[31]

3.1.2 Geographical Boundary between the Energy Act and the Ocean Energy Act

In EA § 1-1 (2) it is stated that the law is not applicable to the "territorial sea".[32] The "territorial sea" starts at the "baseline" (*Norwegian: grunnlinjen*), and the area outside this is subject to OEA, cf. OEA § 1-2 (2). Inside the baselines, EA will be applicable".[33] The "baseline" is defined as straight lines drawn between the outermost points on the headlands and reefs on the coast, measured when the sea level is at low tide.[34] This means that it is great areas inside the area of the baseline which could be positions for a possible wind farm regulated by EA. Within the Norwegian "territorial sea" and on the

[28] Ot.prp.nr.56(2000-2001),p.55
[29] Delegation: F23.08.2006 nr 993
[30] Article from the Norwegian government's webpage; "Det konsesjonsrettslige rammeverket", p.58; http://www.regjeringen.no/upload/kilde/oed/bro/2006/0003/ddd/pdfv/284611-ev_fakta_06_kap.04_no.pdf
[31] Ot.prp.nr.107(2008-2009),p.81
[32] Defined in the Norwegian Territorial Sea Act § 2, 2003-06-27-57
[33] Ot.Prp.nr.107(2008-2009,p.41-42
[34] United Nations Convention on the Law of The Sea, part 2, section 2: Limits of the territorial sea; http://www.statkart.no/nor/Land/Fagomrader/Grenser/Grunnlinjer/

"continental shelf", OEA will be applicable, cf. § 1-2 (2). Outside the continental shelf will hardly be relevant for building wind farms and will not be discussed in the followings.

Thus, the laws regulate different areas and will not overlap each other.[35]

3.1.3 Concession process

The question is what kind of assessments of the applications NVE/OED does and what is important in the evaluation regards to the question of providing license to the applicants.

When applying for concession, both onshore and offshore, NVE is the decision-taking body with OED as appeal-instance. The decision is taken on basis of a comprehensive assessment of advantages and disadvantages of the project.[36]

NVE is a State-administrated organ and is under instructive authority from OED, cf. above.[37] Other parties will however have the possibility to affect the concession application, as all parties concerned will be contacted as consultative bodies.[38] For cases treated within the EA this is regulated in § 2-1. EA § 2-1 (1), cf. § 2-2, states that the application shall be sent to the ministry (OED) and be delegated to NVE. "Public bodies and other to whom the measure directly applies" shall, however, have a copy of the application sent to them for comment, cf. § 2-1 (7).

Typical public bodies will be county or municipality administrations. However, also other parties "directly" affected will have this right. This can typically be neighbours and other concerned organisations etc. that are affected of the possible project.[39]

[35] Ot.Prp.nr.107(2008-2009p.75
[36] Seminar; AdeB, by Nils Henrik Johnson, NVE
[37] http://www.regjeringen.no/nb/dep/fad/dok/veiledninger_og_brosjyrer/1993/direktoratsboka/2.html?id=464832
[38] http://www.regjeringen.no/nb/dep/oed/dok/hoeringer.html?id=2048, cf. http://www.nve.no/Global/Konsesjoner/Vindkraft/Rapporter%20og%20veiledere/Veileder%20vindkraftverk%20tom%2010%20MW.pdf,p.7
[39] Ot.prp.nr.43(1989-1990),p.85

Also OEA contains provisions which give affected parties right to comment on the application. In § 3-3 it is stated that application for concession and a detail-plan shall be sent to the ministry (meaning OED, in practice NVE[40]). It is further stated that the ministry can issue regulations on requirements in relation to hearings. A separate regulation for this has not yet been given.[41] However, an administrative body is in general obliged to make sure that an application is as thoroughly outlined as possible. To achieve this, affected parties must be able to comment on the planned projects.[42] Typically affected parties within the offshore industry are protectors of bird life and the fishing industry.[43] Within OEA, the affected parties are moreover able to comment on the projects when areas are opened up for wind-production, cf. discussion below.

Most offshore projects will, in the future, be developed in areas applicable to OEA.[44] An important factor in NVE's assessment of the application for concession under OEA will be whether the place for application is part of an area "opened up" for this kind of energy production, cf. § 2-2. The State is, in accordance with § 2-2, required to dedicate certain areas especially to offshore wind production. Whether the area applied for is an area dedicated for wind production, will be an important factor in NVE's decision.

In second paragraph of § 2-2 it is stated that before opening up an area like this, a consequential report must be made. In a consequential report it shall be taken into consideration what effects energy production will have on the environment, societies, and other commercial interests. The purpose of opening up some areas for production is to have a thorough assessment of potential areas and to find the most suitable locations for wind production. The consequential report shall be sent on hearings and thus affected parties will have a possibility to be heard, cf. § 2-2 (3).

The starting point is that it is only possible to receive concession for these specific areas. It is, however, possible to make exceptions from the regulation and apply for locations outside these areas, cf. § 2-2 (4). Applications like these will most likely not

[40] Ot.prp.nr.107(2008-2009),p.81
[41] Most likely because the industry is relatively new and it has not been a need for it
[42] The Public Administration Act, 1967-02-10, § 17
[43] Seminar; AdeB, by Nils Henrik Johnson, NVE
[44] Seminar; AdeB, by Øyvind Leistad, ENOVA

be granted for production facilities of greater sizes. An application for building a wind farm outside these areas will not even have the right to be treated. It is therefore only minor pilot projects that in practice will be subject to this possible exception.[45]

Hence, in a concession process, both consequential reports and the dedicated areas will have great significance for NVE's decision.

It is currently work in progress with a consequential report, "Havvind-rapporten," for opening up the first areas for offshore wind farms in Norway. A group, including representatives from NVE, has performed this work and the work has resulted in 15 different areas subject to further investigations regarding a potential offshore wind production. Included are 11 potential areas for windmills standing on poles and 4 potential areas for floating windmills. The result shows that it is difficult to find suitable areas for potential production in narrow waters, due to many areas below sea level in Norway being steep downhill. The most suitable areas are therefore at about 70 meters deep. This will make it more expensive to build the windmills than if it was in more shallow waters.[46]

The report is expected to be finished in the first half of 2012 and will be essential for future concession applicants in Norway.[47]

3.2 Financial Plan

3.2.1 Important elements in the Financial Plan

In addition to concession, a proper financial plan must be made before commencing an offshore wind project.

All risks, costs and benefits must be taken into consideration to be sure that there is sufficient capital to complete the project even if unpredicted events occur. The financial

[45] Ot.prp.nr.107(2008-2009),p.80-81
[46] Seminar; AdeB, by Nils Henrik Johnson, NVE
[47] http://www.regjeringen.no/nb/dep/oed/pressesenter/pressemeldinger/2011/program-for-utredning-av-vindkraft-til-h.html?id=651269

plan must therefore be robust, taking into consideration the sensitivity to various risks. There are many factors influencing the evaluation of a financial plan, especially when financing offshore wind projects, because of the special type of environment these constructions are to be built in, with rough weather and the use of new technology.

The most important variable affecting the financial plan is the estimates of energy production and the possible incomes from selling energy. A power purchase agreement (PPA) gives the best predictability for the parties involved. This is an agreement between a producer and a buyer (supplier) of purchasing a certain quantity to a certain price over the next years. It is preferable that these agreements are long term, preferably the same duration as the project debt-term, i.e. 20-30 years, and agreed at fixed prices. If there are short-term contracts, the producer will need to negotiate new agreements within few years and there is thus a risk of unfavourable terms.[48]

Other important variables are capacity of the windmills, construction risks and possible financial benefits by support from the State, tax reduction or green certificates. More predictable, but still very important for the financial plan, is the costs of constructing the windmills and also operation- and maintenance-costs, including life expectancy of an offshore wind turbine. All these variables must be taken into careful consideration when making a financial plan.[49]

To give a better vision of what development of offshore wind project cost, the construction costs will be further analysed.

3.2.2 Costs Involved in Wind Projects

To develop windmills or wind farms take years; depending on whether the developer use already established technology and concepts, or if a new concept shall be formed. Before one can start a project it is important that the developer knows how each phase shall be financed. To develop new technology is expensive and it is difficult to calculate the total costs before starting the project. When using established technology, it is easier to calculate the costs of the project.

[48] Melnyk, p.330; Seminar; AdeB, by Fredrik Gustavsson, DnB NOR (Project Finance).
[49] Melnyk, p.329

On land there has been a major decrease in costs because of new technology. Between 1985 and 2004 the costs were more than halved. In the later years it has on the other hand increased, partly due to increased demand for wind turbines in the market, and partly due to increased costs of raw materials. Five years ago it was normal to say that windmills cost 8-10 mill. NOK per MWh. However, in the past years this has increased and in the support-applications sent to NVE in 2009, it was calculated that it would cost between 13-16 mill. NOK per Mwh.[50] The average windmill, with today's technology, built on land has a capacity of 2,3-3 MWh, meaning that it costs between 25-33 mill. NOK to build a windmill for production.[51]

Costs are normally higher offshore than on land. Currently, windmills built on poles are the only windmills built in full scale for commercially production.[52] The windmills are normally very similar to land-based windmills. However, offshore windmills have taller towers making the construction itself more expensive. The operation of connecting it to the ground, and also transport costs etc. are normally much higher than on land. The base placed on the seabed is also more expensive to construct because it has to be done in deep waters. Normally, costs increase with the depth of the waters the windmills are built in. Also the installation of cables from the windmills to shore is more expensive. It follows that an offshore project is a lot more expensive than a land-based project.[53]

In the UK it has been made reports of the costs involved in offshore wind, based on projects in Europe.[54] Results show that windmills costs 16-20 mill NOK per MWh within 30 metres deep. It is, however, expected that windmills built from now and in the nearest future will cost between 20-22 mill. NOK per MWh. In Norway, the NVE has estimated that offshore windmills will vary between 23-28 mill. NOK per MWh for windmills in shallow waters, near shore. In deeper waters, up to 60 metres, the costs can

[50] Ot.prp.nr.107(2008-2009),p.20
[51] Discussions with Jacob Bull
[52] Statoil's floating "Hywind" project is only a test project
[53] Discussions with Jacob Bull
[54] Performed by Department of Trade and Industry (DTI) in UK: "Study of cost of offshore wind generation" (2007)

reach up to 33 mill. NOK per Mwh. Costs involved in connecting the windmills are included in these numbers.[55]

Hence, the costs for offshore windmills built on poles onto the seabed are approximately 1,5 times more expensive than land-based windmills.

Floating windmills, on the other hand, are still on a developing scale and therefore even more costly. However, efforts have been made to estimating what a project will cost. Due to needs of a stronger structure for floating windmills, and the expensive "floater" and mounting to the ground, the costs of floating windmills are expected to be 25 % more than windmills built on poles onto the seabed.[56]

3.2.3 External Support

As one can see, wind power in itself is very costly and especially offshore wind power requires great investments. When planning to build wind farms with several windmills, it is often investments counted in billions instead of millions. Most of the players in the industry will not have sufficient funds to finance projects on this scale by themselves and by use of ordinary financing possibilities as loan-agreements. Hence, it will be necessary with additional support from external players to make the projects profitable. The question in this regard, is where it is possible to get financial-support for offshore wind projects.

3.2.3.1 Enova

One possibility is to apply for support from Enova. Enova is organised as a state-owned company, owned by the OED. Enova's purpose is to promote environmentally friendly conversion of energy use and energy production.[57] In the statutes[58], it is stated that Enova has the authority to grant funding, limited by the available assets in the Norwegian Energy Fund.[59]

[55] Ot.prp.nr.107(2008-2009),p.20
[56] Ot.prp.nr.107(2008-2009),p.20
[57] Memorandum of establishing Enova, by Royal Decree , 1st of June 2001, § 2,
[58] Statutes for the Norwegian Energy Fund, § 4;
http://www.enova.no/sitepageview.aspx?articleID=2223
[59] Available assets depend on how much is provided in the State budget by the Financial Ministry.

Enova is an important party for development of wind power and have supported a lot of the projects on land and offshore. In 2010, Enova provided financial support to four land based wind power projects, for about 1 billion NOK. During the yeras, Enova has supported 18 wind projects with 2,6 billion NOK, corresponding to 2,1 TWh.[60] In 2011, the State dedicated 1 billion for renewable energy production and development. This is performed by a total commitment between Enova, "Innovation Norway" and "The Research Council of Norway".[61] By this, both new developments and development of established projects will have an opportunity to get support from the State's Energy Fund.

Enova gives priority to the most economically efficient projects and where funding from Enova results in an investment by other players too. Projects that are already profitable or realizable, cannot collect funding since the main purpose is to contribute to projects that, as a starting point, are not profitable without this support. The support has a limit of funding up to 25 % of approved investment costs. The costs are calculated on basis of the project's anticipated cash flow and current value.[62] The funding is given on condition that the project follows a detailed plan and if this plan is breached, Enova can claim for repayments.

3.2.3.2 El-Certificates

On the 8th of December 2010, Norway and Sweden entered into an agreement of a joint commercial market of el-certificates (Sweden have had an el-certificate market since 2003). This agreement led to "Act relating to Green Certificates",[63] which will enter into force when the joint market starts in January 2012.[64] The law will be applicable on Norwegian territory, comprising both land and ocean areas, cf. § 2. The "King" can also decide to make the law applicable on the continental shelf or in the economic zone.[65]

[60] Report of results, Enova 2010; http://www.enova.no/sitepageview.aspx?sitePageID=1170
[61] http://www.enova.no/sitepageview.aspx?articleID=4214
[62] http://www.enova.no/sitepageview.aspx?articleID=372
[63] Act relating to green certificates, 2011-06-24-39
[64] Cf, § 31 cf. Prop.101 L (2010-2011),p.57
[65] Act relating to the economic zone of Norway, 1976-12-17-91

The purpose of the law is to contribute to an increased production of renewable energy, cf. § 1. The goal is that the joint market will provide 26,4 TWh based on renewable energy-sources in Norway and Sweden within 2020. The agreement of a joint market between Norway and Sweden lasts to year 2036.[66]

An el-certificate market is a constructed market in the sense that the market is based on a statutory obligation for electricity-buyers, i.e. the electricity-suppliers, to buy a certain number of el-certificates from the producers of renewable energy. The State will decide where renewable production shall take place and also who will participate in it. However, the market will decide the price of the el-certificates. A common market between Norway and Sweden means that the market will have greater volume and thus more players than in a national market. More players will lead to better competition and this will influence prices.[67] The market will regulate the price for certificates and the investors will get incomes from both selling certificates and electricity.[68]

Since electricity will be more expensive to buy for suppliers, the consumer must pay more as well. Hence the consumer must take the bill for more expensive renewable energy production.[69] The positive side is however that the el-certificate market makes it more profitable to invest in renewable energy.

Until now, Enova has provided financial support to wind projects in Norway. This will be partly ended when the el-certificate market comes into force.[70] The el-certificate market is from 2012 given the same function as Enova had for the production phase of wind power. El-certificates will therefore take over the function Enova had for financial support to the production phase. Projects that already have received support from Enova

[66] Prop.101 L (2010-2011),p.5
[67] http://www.regjeringen.no/nb/dep/oed/tema/fornybar-energi/hva-er-gronne-sertifikater.html?id=517462
[68] Prop.101 L (2010-2011),p.5
[69] "Senter for klimaforskning":http://www.cicero.uio.no/fulltext/index.aspx?id=3527
[70] Prop.101 L (2010-2011),p.6

must pay back the funding, included interests, if they want to be part of the el-certificate market.[71]

Although the joint el-certificate market will take over Enova's position in making production of wind power profitable for developers, it will still be need for financial support in phases before a wind project is ready to produce and sell certificates and electricity.

Research and development of new production-technology will often be more profitable for society compared to the benefits of the developer. Information from a project does easily spread to competitors and society in general, making it more attractive to "sit on the fence" and wait for others to spend their money on the improvements of technology. To be the person that invests in a project is therefore a risky business, since you will have to split the results and technology with other companies. Because of the importance of development within energy-technology, the State should still have an important role in financing development of renewable energy production. Enova will therefore, together with "Innovation Norway" and "The Research Council of Norway", still have an important role in the developing and planning phase, especially when setting out full sized test models.[72]

3.2.3.3 EU-Funding

As part of the EU's commitment to the "2020-goals", the EU has committed to cut greenhouse gases by 20%, reduce energy consumption by 20% through increased energy efficiency and meet 20% of our energy needs from renewable sources.[73] To achieve these goals, it is possible for EU-members to apply for funding from the EU-Commission when developing projects. Also Norwegian players that are developing projects in EU will have the opportunity to apply for this support.[74]

[71] Act relating to green certificates § 8 (4); Applicable for projects that has started construction phase after 7th of September 2009. Must repay funding before 30th of April 2012
[72] Prop.101 L (2010-2011),p.25-27, cf. p.19
[73] http://ec.europa.eu/climateaction/eu_action/index_en.htm
[74] http://ec.europa.eu/environment/funding/intro_en.htm

3.2.4 Loan-Agreements

As developing offshore wind projects is very costly, financial support from the above mentioned possibilities will rarely be enough to finance the projects. It will only cover parts of the total costs; hence, developers, without sufficient equity, must furthermore enter into loan-agreements with financial institutions in order to finance the projects.[75]

Smaller developers will rarely have sufficient financial strength. As the market grows, one must make room for smaller developers in order to improve competition in the market. This is also one of the main reasons why we have financial institutions with the possibilities of providing financial support. It will have a positive influence on prosperity in the financial community.[76]

Loan agreements are therefore a necessity in future projects.

[75] Statoil's "Hywind" project is self-financed, except from 59 mill NOK supported by Enova, cf. http://www.statoil.com/no/TechnologyInnovation/NewEnergy/RenewablePowerProduction/Offshore/Hywind/Pages/HywindPuttingWindPowerToTheTest.aspx

[76] Comparison to thoughts brought up during beginning of the petroleum industry; NOU-1973-43,p.39

4 The mortgage as an instrument to achieve sufficient security for the loan provided

4.1 The necessity of a mortgage in a loan-agreement

Developing offshore wind projects is a long-term process. It takes several years from the planning phase to the start of construction. During this period a lot of unforeseeable events can occur, making the projects more expensive than expected. The windmills consists of complicated technology and several components which all, in itself and also cumulatively, contains a risk of not functioning etc. In addition, the windmills are to be placed offshore, exposed to rough and unpredictable weather, which can delay the construction phase and also damage already finished structures. The risk of a project not going financially as planned is therefore great.[77] For a financial institution it is therefore important to ensure repayment if the borrowers suddenly are in a position in which they cannot pay back the loan, included interests. This is why the financial institution needs security for the loan in order to provide it in the first place. This can either be made by guarantees in personal assets or other companies etc, but the best possible security is normally to have a mortgage in connection with the loan agreement.

4.2 What is a mortgage?

A mortgage is described in the MA § 1-1. The first paragraph states, "a lien means a special right to seek fulfilment of a claim in specific property (the attached property)".[78] The wording reflects that a mortgage is a prioritised right. It is an "interest in property created as a form of security for a loan or payment of a debt and terminated on payment of the loan or debt"[79]. The privileged person is called a "mortgagee".[80]

[77] Melnyk, p.329
[78] The English term for "lien" arising from an agreement is "mortgage", cf. Åge Lind,p.154 for the definition of "kontraktspant". In the followings, the term "mortgage" will be used.
[79] Oxford Dictionary of Law,p.347: Definition of "mortgage"
[80] Oxford Dictionary of Law,p.347: Definition of "mortgage"

The mortgage in itself has no value; it must be connected to a claim. If the secured claim is breached the mortgagee can seek cover in the objects value, either by compulsory assignment of the object or through forced sale. In relation to other creditors, the mortgage provides a priority to seek coverage in the object for the mortgagee in priority before other unsecured creditors[81]. This is why a mortgage is a privilege for the mortgagee and this characterises the rights of mortgagees. In most of the cases where the banks need to perform a forced intervention, the "mortgagor"[82], i.e. the one who borrows the money, will be bankrupt or near to bankrupt. In these cases, the mortgagor will most likely not have sufficient capital to provide all his creditors with sufficient capital. In most of these cases an unsecured lender will only get "dividends" of his claim, i.e. he has to split the rest of the money with all other unsecured creditors that remain after all the secured creditors have got their part.[83] This will in most cases be equal to zero as normally almost all assets are mortgaged.

Therefore, in most cases, it is important to have a secured mortgage in connection with the loan agreement in order to be sure to get some money back from the bankrupt borrower.

There are different types of mortgage; mortgage created by agreement, mortgage created by distress/execution lien and statutory lien.[84] In this thesis, it will only be focused on the financial institutions' possibility to arrange mortgage agreements with the borrower. It is therefore only mortgage created by agreement that will be treated.

4.3 Three conditions to be fulfilled

In the literature, there has been drawn up three conditions to be fulfilled before a lender has a secured mortgage arising from an agreement; the object must have an economic

[81] Skoghøy, p.23
[82] Oxford Dictionary of Law, p.347: Definition of "mortgage"
[83] Gisle, p.64: Definition of "dividende"
[84] Skoghøy,p.33-34

value, there must be a legal basis for the mortgage [85] and the mortgage must have protection accorded by law (*norwegian: rettsvern*).[86]

4.3.1 Economic value

If the financial institution are taking over the mortgage-object, it is vital that the object has a value, i.e. can be sold, rented out or in some way be transformed into capital.[87] Without an economic value, the object will not be a security for the lender.

4.3.2 Legal basis: "principle of legality for mortgage"

In the Mortgage Act § 1-2 (2) it says that "by agreement a lien may be validly created only where authorized by this Act or by other statute". This is what is called the principle of legality for mortgage[88]. From this statute and principle one can say that it has to be a statutory basis for the object to be mortgaged by agreement, if not, the mortgage agreement will not only loose its protection against third parties, but also be invalid between the parties. In the following it will therefore be important to state the statutory basis for the mortgage agreement to be valid.

4.3.3 Protection accorded by law

Even if the parties have agreed to a mortgage agreement, the bank must be sure that this mortgage also is enforceable towards third parties or other creditors. This is done by having protection accorded by law. This will secure the mortgagee from younger legal acquisitions in the object, i.e. secure priority in the object, and prevent extinction. This is necessary because other creditors will have the same possibility to obtain mortgages in the same objects, either by mortgage-agreements or by taking an execution lien in debtor's properties, cf. The Mortgage Act Chapter 5. The first mortgage which obtained protection accorded by law is given best priority, cf. the principle of "first in time, best in right". Hence, if a mortgagee has not secured his mortgage, the "younger" legal

[85] Skoghøy, p.38
[86] The mortgage can be valid between the parties without protection accorded by law, but to be secured against other creditors and third parties it is important with protection accorded by law, cf. Skoghøy, p.36-37.
[87] Skoghøy, p.38
[88] Skoghøy, p.38

acquisition in the object could erase his priority by obtaining protection accorded by law first. It is therefore necessary to obtain protection accorded by law to secure its position and priority in the object in relation to other creditors. [89]

A mortgage, with protection accorded by law, is the safest way of providing the financial institutions with sufficient security for repayment. The rest of this thesis will examine how financial institutions can use mortgage in concessions or structures to gain sufficient security for their funding.

[89] Skoghøy, p.197

5 Mortgaging the concession

The concession is of great value as it is the concession that gives right to operate the windmills, and thus earn money on production. The concession is often provided for a period, at least as long as the lifetime of a windmill.[90] A windmill will, as will be discussed in point 6.1, be valueless without a concession to operate it. Hence, the concession has a twofold relevance; as an asset in itself, and, sometimes, as a precondition for the mortgage in equipment to be of economic interest. Hence, the concession is of significant value and therefore attractive for the financial institutions to have a mortgage in.

The concession is given on strict terms and the purpose of the concession-process is the authorities' control of energy-exploiting activities and the parties involved. The concession is given individually and the holder of a concession thus cannot, without a legal basis, transfer the concession and let it be performed by others. For a mortgage to have a value, it is important that the mortgagee can take over the mortgage object. For the concession to have a value, it is therefore important that the financial institutions have the right to take over the concession without problems from the authorities. This problem, when discussing mortgage in concessions, is however only relevant if there is a legal basis for mortgaging the concession in the first place.

The problem to be solved is therefore to examine whether there is a legal basis for mortgaging the concession. There is no explicit legal basis in the Mortgage Act to this end. Hence, this must be based on other statutory rules, cf. MA § 1-2 (2).

A comparison to the oil industry may be relevant. There is today a legal basis for mortgaging the concession in itself in the *Petroleum Act* (*hereinafter:* PA).[91] The interest for this thesis is therefore how the legislative situation was during the 70's and

[90] EA § 2-2(2), OEA § 3-5(2)
[91] The Petroleum Act, 1996-11-29-72, § 6-2

80's, before the PA and the petroleum register came. At that time, mortgage of concessions had to be based on other rules.

The 1972- resolution[92], applicable before PA came, did not contain a legal basis for mortgaging the concession or the structures. However, in lack of any better security, it did contain a provision to obtain pre-consent from the ministry to transfer the concession in case of breach of contract from the loaner, cf. § 49. The regulation about pre-consent made it easier for the financial institutions to follow their claims. However, this solution was not a mortgage-agreement with the possibility to get protection accorded by law.[93] In lack of a proper mortgage-basis, the developers therefore had to use the agreement with the authorities to obtain the concession.[94]

Another comparison of interest could be the aquaculture industry. Also in this industry it is essential to have a concession to operate the fish farms. Currently it is, as with the petroleum industry, provided a register where it is possible to register the concession and the mortgage in it, the "aquaculture-register".[95] Again, the situation before the register came, which was later than the petroleum-register, can be of importance. With no legal basis in the old Fish Farming Act,[96] and with the clear principle of legality in the MA § 1-2 (2), the opinions in the preparatory works of the Aquaculture Act,[97] together with literature,[98] is that there was no legal basis for having mortgage in the concession for operating fish farms. Significant value was therefore prevented from being mortgaged in this industry until the register came in 2006.

The principle of legality in the MA § 1-2 (2) is strong and cannot be voided. Since there is no statutory basis for mortgaging the concession, either in the EA, OEA or MA, an

[92] "kgl.resolusjon av 8.desember 1972"
[93] Hagen, p.332-333; Marius,nr.79(1983),p.19-20 which refers to MA § 1-2(2)
[94] More of agreements with authorities in point 6.1
[95] The Aquaculture Act, 2005-06-17-79, cf. § 18 and § 20; A difference compared to the Petroleum Act is that in the Aquaculture Act, just the concession itself is subject to mortgages, whilst under the Petroleum Act, the mortgage will also include the assets, cf. The Aquaculture Act § 20, cf. PA §§ 6-3, cf. 6-2; Hammer, p.516
[96] My translation; Fish Farming Act, 1985-06-14-68
[97] Ot.prp.nr.61(2004-2005),p.35-36
[98] Gjelsvik, p.109.

agreement of mortgaging the concession will be in lack of a legal basis and thus invalid between the parties.[99]

It is therefore not possible to have a mortgage in the concession as an asset in itself, cf. MA § 1-2 (2). However, as will be discussed below in point 6.1, the concession, most often, needs to be part of any arrangement, in order to be able to benefit from mortgages in the physical assets. How to perform this will be further described below.

[99] Since an agreement in violation of this principle is not only lacking security towards other third parties, but is also invalid between the contracting parties, Skoghøy, p.38.

6 Mortgaging the windmills

6.1 Economic value

6.1.1 The Windmills' value considering it as one unit; the problem of concession

Permanent structures are the most common property to mortgage, as it is often a safe value with few risks involved regarding the existence of the object and fluctuations in value. It is also often of great value, which makes it a safe security for the lender. However, even if they are of significantly value in themselves, it is not always practical to convert the structures into money.

As an example, one can look at offshore platforms in the oil and gas industry. These are often of significant value, but the objects are usually not moveable because they are mounted to the seabed. Even if it could be physically possible to move them, most times it will not be economically favourable, and this makes the structures more or less non-negotiable for the market. [100]

Windmills are probably easier to move than an oil-platform. As seen above, windmills are complicated to move but not impossible. This makes them more negotiable and possible to sell for operation on a different site. However, it is possible that the financial institutions find this transportation unlikely and too expensive.

If it is not possible to move the structures, the mortgagee is depended on the possibility to convert the structures into money without moving them. This can either be done by selling, renting out or operate the windmills themselves, on the same location. However, to be able to operate the windmills at the same location, it is also necessary to have a concession to do so. The mortgagee, or the buyer of the windmills, must

[100] Marius 1983.nr.79,p.30.

therefore be able to obtain the concession-right to be able to operate and earn money from the mortgaged structures.

The question is therefore how the financial institution can obtain the concession.

One opportunity is to have a mortgage in the concession with the right to enter into the concession if necessary. This is normal in the petroleum industry.[101] For windmills however, it is not possible to have a mortgage in the concession. Hence, the financial institution cannot use mortgage as an instrument to obtain concession-rights.

Another possibility is if the "concession-law" itself opens up for transferring the concession. In the EA § 2-2 it is stated that the concession is given to a "decisive person, company […]", i.e. the right is personal, not general.[102] In the preparatory works it is moreover stated that a new owner of the structures will be in need of a new concession.[103] Hence, the EA do not support a transfer of the concession.

In the OEA § 3-5 it is stated that the concession is given to a "legal personality". Even though the wording does not contain the word "decisive", the wording could seem to make sure that the concession is provided only to the "legal personality" that is applying. However, in the preparatory works it is stated that in a possible transfer of the facility, a new owner "enters into the current license" and the time limitation that follows from the concession.[104] This sentence can, if read separately, be taken in favour of stating that the financial institutions can take over the concession in certain situations. However, the next sentence in the preparatory works; "A new owner must have a concession pursuant to § § 3-1 or 3-2", leaves the question of transfer more open. Read in accordance with the context, it could seem like the preparatory works in the first sentence has meant to regulate the time limit of the potentially new owner's concession, i.e. the concession's time limit follows the structures, not the owner. A new owner must in any case apply for a new concession, even though the time limit is decided already. This makes more sense as there must be

[101] PA,§ 6-2
[102] Bibow,p.51
[103] Ot.prp.nr.43(1989-1990),p.87, commentaries to § 2-3 (§ 2-3 was amended to § 2-2 in 2001)
[104] Ot.prp.nr.107(2008-2009),p.82

the same reasons behind the legislation in the EA as in the OEA. The preparatory works of the OEA are relatively new and could be misleading in its wording. Due to the similar areas of applicability, unifying the two laws should be an important factor when elaborating the laws. Since the EA is an older and more established law, and preparatory works of the OEA is unclear and could be misleading, a new concession is also needed under the OEA. Hence, it is not possible to transfer the concession on basis of the OEA or the EA.

An alternative option to obtain concession is to apply for a new concession. Concession-processes are normally strict when applying for exploitation of energy-sources. It is therefore a risk of having the application turned down. However, in these cases, it is a matter of applying for concession to operate already installed windmills. The windmills do not disappear and are already located at the site, with its potentially negative functions to the area. Operating a windmill, which is already installed, has very small impacts on the environment. An evaluation of the area has also, most likely, been performed in relation to the "opening-up" of the area for wind-production.[105] The area is then considered suitable for production. The chances for NVE turning down an application for a new concession are therefore quite low.[106]

On the other hand, there is a small risk of getting the application turned down. This risk can be negated by making arrangements with the authorities before entering into a mortgage agreement of the structures. If the financial institution can have an agreement with the authorities that they will be able to take over the concession in certain situations, they will have a proper security for being able to operate the windmills. The question is therefore if the financial institutions can enter into an agreement and obtain a pre-consent from NVE allowing them to take over the concession in certain situations.

The starting point in the literature is that the authorities need a clear legislative basis to enter into agreements about future problems. This is because, by pre-consenting to a future potentially problem, the authorities are inhibiting the future authorities to decide

[105] Point 3.1.3

[106] In lack of regulations, the authorities in the fish-farm industry used to approve applications for already existing fish farms, on condition that the same terms as the old concession is applicable for the new one, cf. Ot.prp.nr.61(2004-2005),p.35

the question that would otherwise have been within their power.[107] It is no such clear legal basis in the OEA or in the EA. This could be an argument in favour of not allowing pre-consent from the authorities.

However, in case law it has been accepted that the authorities enters into agreements about pre-consent without a clear legal basis if it is considered as necessary or preferably to promote the purpose of the law.[108] Both the OEA and the EA has the purpose of providing a rational energy production.[109] Providing the financial institutions a secure agreement with the possibility to enter into the concession is necessary in order to involve financial institutions in the projects and thus to be able to finance the projects. An agreement with pre-consent to transferring the concession in certain situations must thus be valid.

Hence, it is possible for the financial institutions to be sure they can obtain the concession and thus have a potential interest in the physical assets.[110]

A problem could be whether an agreement with the authorities is sufficient security for the financial institutions. Although it will provide a right for the financial institutions to take over the concession, it will not, opposed to a registered mortgage, have security provided by law in relation to other creditors.[111] However, the security must lie in that the authorities indirectly, by the pre-consent, have taken the responsibility of making sure no others obtain the concession. This must also be applicable in relation to other

[107] Eckhoff, p.443
[108] Rt.1992 s.1235; Also supported in literature, Eckhoff, p. 447-448.
[109] OEA § 1-1, EA § 1-2
[110] It could be questioned if there is any difference to an agreement with the authorities, with possibility to enter into the concession, and a mortgage in the concession. This question was brought up by Arvid Frihagen in relation to the oil industry during the 80's. As said, the 1972-resolution did not contain a mortgage basis. However, it did provide a legal basis to obtain pre-consent from the ministry to transfer the concession in certain situations, cf. §49. In his opinion, a concession, in addition to a public aspect, also contains a private aspect due to its great value and importance for the benefiter of the concession. If a private right could be transferred, the starting point should be that they also could be mortgaged as an asset in itself. The reality of an agreement with the authorities is that the financial institution can use the agreement as security in order to obtain concession; hence it should not be any problem to call this a mortgage, cf. Frihagen p.56-57.
[111] Hagen, p.333

right-holders with regard to the assets in bankruptcy.[112] Hence, the holder of an agreement with the authorities will have a prioritised right to take over the concession.

An agreement with the authorities will however not protect the financial institutions from the authorities' future right to withdraw the concession in certain situations.[113]

6.1.2 Windmills' value considering it as several parts

If it is difficult to sell and convert the structure as one unit into money, it is possible to sell only parts of it. As an example, oil-platforms will be difficult to sell as one unit because of its individual adaptions and its connection to the place of operation. However, the platforms exist of many parts and some of these can be sold separately. On the other side, costs involved in splitting platforms into several parts are extensive, and the parts can often not realistically be used elsewhere. Therefore, for oil-platforms, not all parts have value if sold separately.

Windmills, compared to oil-platforms, consist of less complicated constructions and are more standardised. It is therefore easier to split the windmills into separate parts and it is thus possible to sell separate parts. An example of a part, which is of great value, and which relatively easily could be separated and thus sold separately, is the generator. Although there is no "second-hand" market today, it is not unlikely that this kind of market will grow together with the development of the industry.[114]

If the financial institutions find that it is too risky to rely on that they will obtain concession for the windmill, it will be possible to sell parts of it and the parts will therefore be negotiable objects with a certain value for the financial institutions. This can make it attractive for the financial institutions to have a mortgage in the structures.

[112] Frihagen, p.57
[113] The concession will be taken over on same terms and conditions. Breach of these could lead to withdrawal of concession. Moreover, it is, as a starting point, not possible for NVE to agree to not use their power to withdraw the concession in the future, cf. Eckhoff, p.448-449
[114] Discussions with Jacob Bull

6.2 Legal basis for mortgaging

Provided that the structures will have an economical value for the financial institutions, either because they obtain a concession, or the windmills are considered possible to sell for operation on other sites, either as a unit or as several parts, the question to be raised is whether there is a legal basis for mortgaging the structure itself, cf. the MA § 1-2 (2).

The legal basis to mortgage the windmills and how to secure it will depend on where the windmills are located.

6.2.1 Boundary between the private land property and the state-owned seabed

Windmills built on land are, as a starting point, based on different rules compared to the windmills built in sea due to land properties being subject to private property rules. Windmills built on land are as a starting point outside the scope of this thesis. However, the legal boundary between land properties and state-owned seabed lies in the sea, near shore, meaning that some parts of the seabed is part of the land properties.[115] If windmills are built inside the legal boundaries for land-based properties, the rules applicable will be the same rules as for land-based windmills, even though they are actually built in water. This will probably be rare, but is a theoretical possibility and thus some value for this thesis. More important value for this thesis has the land-based rules as a comparison to windmills built in the ocean. Because of its comparative importance to windmills built outside the boundary of private land properties, the rules applicable for land-based windmills will be assessed in point 6.2.2

6.2.2 Legal basis for windmills built within the boundary of land properties

The question is if there is any legal basis either in the MA, or in "other statute", cf. the MA § 1-2 (2). Firstly, the question if any "other statute" regulates mortgages will be assessed.

[115] Normally where the shore-slope begins or at water depth of 2 meters, measured at middle water level, Falkanger, p.90-91

For locations subject to private property regulation, the EA contains the regulatory framework for energy exploitation, cf. § 1-1 (1). However, the EA does not include regulations about mortgage in windmills.

Since there is no "other statute" regulating mortgage in windmills, the question is whether the MA includes a statutory basis for mortgaging the structures.

In the MA there is a clear difference between mortgaging real property and mortgaging moveable property. It will be different rules covering the mortgage possibilities considering the windmills as real property or as moveable property. If the windmills are considered to be real property, the windmills can be mortgaged and registered in the real property register cf. the MA § 2-1, cf. The Norwegian Land Registration Act § 12.[116] Because of the possibility to register the mortgage in the real property register, this is considered as a good security for the mortgagee.

However, if the windmills are considered as moveable property, it is not possible to register the mortgage in a property register. The starting point for mortgage in moveable property is that the mortgagee has to take possession in the mortgaged object in order to have a mortgage in it, cf. the MA § 3-1 cf. § 3-2.[117] For practical reasons, some exceptions from this starting point have been made. The ones of interest for this thesis is mortgage in operational accessories, cf. the MA § 3-4 and sales mortgage cf. the MA § 3-14.

6.2.2.1 Mortgaging windmills as real property

The question is if the windmills can be mortgaged as real property. In accordance with the MA § 2-1, "ownership in real property" or "special rights in real property" may be mortgaged. Hence, a developer of a project has two choices. If the developer becomes owner of the land property, he will have the right to mortgage the property. Most of the developers will, instead of buying the land, enter into a long-term leasing agreement, either of the whole property or just parts of it. Long-term leasing agreements are typical "special rights in real property" which is possible to mortgage in accordance with the

[116] The Norwegian land registration Act, 1935-06-07-2
[117] Brækhus, p.68

law.[118] The legal basis for mortgaging is therefore the same for owners of the property and for long-term leases. Before mortgaging a "special right" in part of a real property, i.e. a long-term leasing agreement, the authorities have to grant permission for the splitting or establishing of an area for lease, cf. § 2-1 (2).

The extent of the mortgage is regulated in the MA § 2-2 and § 2-3. For a mortgage in leasing agreements § 2-3 will be applicable, but the rules are more or less the same as for mortgage in ownership regulated in § 2-2. The rules will therefore be jointly treated with a starting point in § 2-2.

It is undisputable that the "land" itself is included in the mortgage, cf. § 2-2 (1) letter a). The question is if also the windmills on the property are included.

In § 2-2 (1) b), it is stated that mortgage in real property comprises, if not otherwise is agreed, "[…] other buildings and plants on the land". Hence, if windmills are considered as part of this provision, windmills are part of the mortgage of real property. If the windmills are not included, they will be deemed as moveable property with different mortgage-regulations, cf. the basic difference between moveable- and real property in the MA.[119]

The problem of the windmills' character will vary based on how the windmills are constructed. Windmills built on land are today constructed on large poles on the ground. However, in the sea, there are currently two concepts, floating windmills and windmills built on poles. Within the boundary for land property, which is considered in this part of the thesis, it will not be practical to build floating windmills, since these are constructed to be operating from 120 meters deep.[120] Therefore the only practical windmills to build within this boundary are those built on large poles onto the seabed.

[118] Skoghøy, p.50
[119] Skoghøy, p. 113
[120] http://www.statoil.com/no/TechnologyInnovation/NewEnergy/RenewablePowerProduction/Offshore/Hywind/Pages/HywindPuttingWindPowerToTheTest.aspx

The question is therefore if windmills built on large poles onto the seabed will be characterised as "other buildings and plants on the land", and thus part of the real property, cf. the MA § 2-2 (1) b), cf. § 2-1.

The natural wording of "buildings and plant" seems to comprise all larger constructions on the property, hence, windmills seems covered by the wording. However, case law and the preparatory works seem to demand a certain physical and lasting connection to the ground, made by human effort, to be part of the real property. The physical connection to the ground cannot be too week and thus entailing that the object is easy to move.[121]

The windmills in sea are mounted to the ground by the use of massive monopiles tapped into the seabed.[122] Connections like these are meant to resist heavy weather conditions and must be considered as strongly connected to the seabed. The windmills also has a lasting connection as the windmills are supposed to be standing at the same location for at least 20-30 years, i.e. the lifetime of the windmill. It is also possible that only parts of it will be changed and the structures will thus be standing even longer. The energy source is consistent and will not, as in the oil industry, become empty after a certain period. It is therefore possible that a new concession will be given for the same site. Hence, the windmills have a strong and permanent connection to the ground and this can be an argument in favour of stating that windmills are part of real property.

In the preparatory works they use mobile objects, as normal caravans, as an example of moveable property. But also more permanent structures, as for example barracks, will in accordance with the preparatory works, be considered as moveable property as long as it is practically and economically feasible to move them.[123] Although it is theoretically possible to move windmills from their location, it will be very costly and not very practical. Hence, the economic aspect of it will be a further argument in favour of classifying the towers as part of real property instead of moveable property.

[121] Ot.prp.nr.39(1977-1978)p.103; Skoghøy, p.51; Skoghøy (Commentary edition 2003), p.192
[122] It is possible that land-based concrete concepts will be used at these locations aswell
[123] Ot.prp.nr.66(1990-91) p.61-62 has relevance in this question, cf. Skoghøy, p.51

Since offshore windmills are located at sea, a comparison to petroleum industry will be natural. Although offshore petroleum platforms often are larger constructions and more expensive to move, they are often connected to the seabed in a similar way as the windmills, i.e. on poles. The question is therefore if the platforms are deemed to be movable- or part of real property?

This was a topic when the Petroleum Act of 1985 was drafted.[124] In § 33, cf. § 32 the new law gave new registration- and mortgage-opportunities for developers in addition to the possibilities offered in the ship register.[125] It follows from the preparatory works that the platforms, even though they technically could be moved, should be considered as real property if the platforms were meant to be placed and in service at a certain site throughout the whole or most of its lifetime.[126] The decisive factor was not necessarily the platforms physical connection to the ground, but the time-aspect and the functional connection to the site.[127] The reasoning behind this was that it was reasonable that the platforms operating on the same site throughout its lifetime was registered in connection with the concession and thus part of the total mortgage of the concession, cf. § 34, cf. § 33. They were considered as accessories to the concession.[128]

Windmills do not have the possibility to mortgage the concession. Hence, the same reasoning as in the petroleum industry, of having a connection between the concession and structure, lacks. However, the purpose behind the structures must have some importance in the decision. Structures supposed to be replaced will often not be considered permanent enough to be real property.[129] It is the purpose that reflects what permanency the structures will have at a particular time. If the structures later are moved, that should not affect the possibility to mortgage a structure where the structure is new.[130]

[124] The Petroleum Act, LOV-1985-03-22-11
[125] Maritime Act, § 371, 1893-07-20-1, cf. the new Norwegian Maritime Code § 39, 1994-06-24-39
[126] Ot.prp.nr.72(1982-1983),p.68.
[127] Hagen, p.341
[128] Hagen, p.340
[129] Case nr. 99/85, hl. nr. 167/85: Demonstration house, used as office for a building company, was seemed as moveable structure because it was supposed to be replaced with a new house every third year.
[130] The purpose is also given weight in Ot.prp.nr.66(1990-91),p.61

With decisive weight on the windmills' strong connection to the ground, its performance and purpose of standing at the same place for a long period of time, the windmills will be characterised as "other buildings and plant on the land", hence, part of real property as opposed to moveable property. It is therefore possible to mortgage the towers under the provision for real property, cf. the Mortgage Act § 2-1 (1), cf. § 2-2 (1) b).

If, however, the windmills are not supposed to be standing at the same spot for a long period of time, the argument of the purpose of permanence behind the structures will be lacking. In these situations it could be possible to state that the windmills are deemed as moveable property. If so, the windmills cannot be mortgaged as part of real property, cf. § 2-1 (1), cf. § 2-2 (1) b). The question whether the windmills are considered as moveable or not is a difficult question, and in lack of relevant case law this could lead to conflicts in the future.

Presupposing that the windmills are considered as part of the real property, the question is what parts of the windmills that will be part of "other buildings and plants on the land".

This must be decided in an interpretation of what naturally is part of "other buildings and plants on the land", i.e. the structure. The system of the law is further built up around the objects being divided into main parts and accessories. The looser moveable objects must be deemed as accessories in this regard.

The base, tower and nacelle with rotor-blades are all part of the total construction. They are connected to each other with bolts and welding and are therefore connected in a way that it is natural to see them as one unit and construction. They are incorporated into each other and the total construction must therefore be the main part that is connected to the ground in a way that makes it part of the real property, cf. § 2-2 (1) b).[131]

[131] Brækhus, p.215

However, looser objects in the windmill might be deemed as separate moveable objects. This may be the case with regard to the generator, which relatively easily could be separated from the rest of the structures and thus be deemed as a separate moveable object instead of part of the real property itself.[132] Also other looser objects are in the same situation, but to simplify the problem, only the generator will be used as an example of a moveable object that is part of the windmill. If the generator is not deemed as part of the structures in § 2-2 (1) b), the question will be if the generator can be considered to be "accessories" to the real property, cf. Act relating to Sale of Properties (from now; ASP)[133] §§ 3-4 to 3-6, cf. the MA§ 2-2 (1) c).

In ASP § 3-4 (1) it is stated that a property shall contain such accessories as mentioned in the second paragraph. When there is doubt with regard to whether something is an accessory, decisive weight shall be put on whether it is something that is "difficult to move", "necessary for the use of the property", or that "best can be used there".[134]

Originally, the text of the MA § 2-2 (1) c) stated that mortgage of real property also contains the moveable objects that "normally follows this kind of property".[135] This was amended in 1992 with the reference to ASP §§ 3-4 to 3-6. Although it is not stated explicitly anymore, the starting point must still be the same. This can be supported by the wording in § 3-4 (1). For the first paragraph to have a purpose, the word "accessories" must be given a separate meaning.[136] The "doubt" must apply to whether a moveable object is part of a generally accessory concept.[137]

"Accessories" is then natural to elaborate in connection with the earlier wording, i.e. what normally follows this kind of property. When selling a windmill as a unit, the generator seems like a natural part of the windmill even though its connection to the structure is not as permanent as other parts. This can be an argument in favour of considering it as "normal" accessory to the windmill.

[132] Point 2.3
[133] My translation; "avhendingslova", 1992-07-03-93
[134] My translation
[135] Ot.prp.nr.39(1977-1978),p.104
[136] Presumably of; Ot.prp.nr.66(1990-1991),p.83
[137] Brækhus, p.216

However, in the literature, it has been stated that there is a difference between accessories in narrow and wider terms. Accessories in narrow terms are typical, normal accessories that automatically follow the main part, if not otherwise agreed. Accessories in wider terms however, are not automatically part of the accessories to the real property. The "narrow" accessory concept is defined downwards to what is part of the "main part" and upwards to what seems as "wider" accessories.[138]

The terminological borderline upwards, towards the wider accessories is, as a starting point, defined through customary practice in relation to sale and purchase of the main part, in this case windmills. When there is lack of customary practice, as in this case, the decision must be built on whether the moveable object is specially adapted into the main part and necessary for the main part to function, and whether a separation will lead to loss of value for the main part.[139] If there is doubt, decisive weight shall be put on whether it is something that is "difficult to move, necessary for the use of the property, or that best can be used there", cf. ASP § 3-4 (1).

Machinery is often an example of accessories in the wide sense.[140] However, this will typically be machinery that in itself can produce something. A generator is only a small part of the windmill. Windmills are not able to produce power without the generator and all other loose components. Although it is possible to collect a new generator, it will be costly and it is not without problems to move a generator since the generator is adapted to the windmill. Separation of the generator will further lead to loss of value of the windmill since it will not function without it. The generator must therefore be deemed as a natural accessory to the windmill and thus part of accessories in the narrow sense. Hence the generator, and possibly other loose parts, will be part of the accessory of the windmills, cf. ASP § 3-4 (1) cf. the MA § 2-2 (1) c).

If a conclusion was drawn to the opposite results, and the windmills are not to be considered as part of areal property mortgage, or, the looser objects are not found to be

[138] Brækhus, p.219, cf. p.215-217
[139] Brækhus, p.217-218
[140] Brækhus, p.217

part of the accessories to the windmills, special rules can apply for projects supported by Enova, making the windmills part of the mortgage of a real property.[141]

In ASP § 3-4 (2) b), it is stated that "things" financed by "public support", especially dedicated to the property, will be deemed as accessory to the real property, cf. the MA § 2-2 (1) c). Financing provided by Enova is regarded as public financial support to be used at a specific location. Hence, projects financed by Enova could fall within this regulation, and thus be part of a mortgage of real property. The question could be posed as to whether el-certificates are part of this same regulation. El-certificates is however financed by private players within the market and thus not part of the wording in § 3-4 (2) b).

For some of the Enova-supported projects, the new Act relating to green certificates is of importance for the applicability of the ASP § 3-4 (2) b). Projects subject to the el-certificate market and which have been given financial support from the State, i.e. Enova, and which started the construction phase after 7th of September 2009, must repay the support from Enova before they are entitled to receive el-certificates, cf. the Act relating to green certificates § 8 (4). El-certificates are, as said, not financed by the State and is thus not included in ASP § 3-4 (2) b). Hence, if a project-developer pays back the Enova-support in order to be part of the el-certificate market, the project will not be considered to have received financial support from the State and will not be included in § 3-4 (2) b). If however the financial support from Enova is not paid back, the project will be subject to § 3-4 (2) b) and thus part of the mortgage of real property cf. the MA § 2-2 c), cf. § 2-1.

6.2.2.2 Mortgage in operating accessories

The question is if the windmill, or parts of it, can be subject to a mortgage in operating accessories. MA § 3-4 contains the legal basis for mortgaging operating accessories as a non-possessory mortgage. The question is whether windmills could be characterised as "operating accessories", cf. the MA § 3-4 (1).

[141] Article by Grette;http://www.grette.no/no/Medarbeidere/Torgeir-Myrstad/Lanefinansiering-av-vindkraftprosjekter---uklare-grensesnitt-for-bankens-sikkerhet/

"Operating accessories" are further described in § 3-4 (2) a) as "machinery, tools, furnishings and other equipment". The wording seems to comprise looser objects used in the business. § 3-4 is moreover found in chapter 3 of the law which is named "Contractual mortgages on moveable property". The wording of § 3-4, read in that context, thus gives indication that only moveable objects can be part of operating accessories. This is also reflected by the system in the MA. Moveable objects are physical things which are not deemed as "real property".[142] The construction itself, i.e. the base, tower and nacelle with the rotor-blades, which is deemed as part of the "real property", thus cannot be considered as operating accessories. The question is therefore if the looser objects, like the generator, will be considered as "operating accessories", as the generator is not part of the "real property" itself, but moveable accessory of the real property.

The wording "other equipment" normally comprises machinery, tools and furnishings. The wording is wide because it is meant to comprise all looser objects, which do not fall naturally within "machinery, tools [and] furnishings". All moveable objects used as operating accessory in the business is presupposed to be possible to mortgage as operating accessories.[143] The decisive factor is that the equipment is used in the business without being consumed. Hence, if some of the other parts in the discussion above were deemed as part of real property, were instead considered as separate moveable objects of real property, a possible solution could be to mortgage the parts as "other equipment" used in the "business operation", i.e. part of operating accessories.[144]

Although "other equipment" normally comprises "machinery, tools and furnishings", the other explicitly mentioned categories illustrate important sides of the term "other equipment" and should therefore be used if possible. "Machinery", in this context, will in its wording comprise technical objects that are "used" as part of production. Generators that convert and produce energy will typically be machines that are comprised.[145]

[142] Skoghøy, p.113
[143] Skoghøy (Commentary edition 2003), p.236-237
[144] Further discussed under point 6.2.3.3
[145] Brækhus, p.80

The generator and other moveable objects "used in or […] designed for" the business operation of the windmill will thus be considered as "other equipment" and part of the mortgage of operating accessories, cf. § 3-4 (2), cf. § 3-4 (1).

6.2.2.3 Sales mortgage

To have a non-possessory sales mortgage in the windmill is dependent on the windmills being considered as "moveable objects", cf. the MA § 3-14. With reference to above, the windmills built on poles will most likely be characterised as part of "real property" and thus not possible to have sales mortgage in. However, looser parts of the windmill, as the generator, could be deemed as moveable objects and thus possible to have a non-possessory security in. The arrangement of sales mortgage in separate parts will however be the same for floating windmills and will be treated in connection with these, as it is also a question whether floating windmills in itself could be deemed as moveable objects and thus be subject to sales mortgage.

6.2.2.4 The conflict between the holder of a mortgage in real property and the holder of a mortgage in operating accessories

The legislation leads to the situation that parts of the windmills, like the generator, could be falling within the mortgage of operating accessories in accordance with § 3-4 (2) a), and also fall within accessories of a mortgage in real property, cf. §§ 2-1, cf. 2-2 (1) c). This leads to the question of which mortgagee gets the right of the relevant parts in a conflict situation where the real property mortgagee is a different person than the mortgagee of the operating accessories, and both has protection accorded by law (point 6.4).

In § 3-4 (4) one can find a special provision regulating the relationship between mortgage holders of operating accessories and real property. The provision states that if the windmills are considered as being part of the real estate accessories mentioned in § 2-2 (1) c), they will not be part of the mortgage of operating accessories.

Hence, § 3-4 (4) includes a negative definition of the mortgage of operating accessories and solves the situation. If the windmill as such is mortgaged as real property, the mortgagee of the real property will have the right of the generator and other moveable

accessories. A mortgage in the operating accessories can thus be valueless for a financial institution not aware of another real property mortgagee.

6.2.3 Windmills built outside the boundary of private land property

6.2.3.1 Mortgage as real property

The question is whether there is any legal basis governing the right to mortgage the windmills outside the boundaries for land-based property, cf. MA § 1-2 (2).

As seen above, the regulatory framework can be different with regard to the location of the windmills. However, neither EA nor OEA regulates the question of mortgage and the regulations will therefore be the same whether the windmills are built inside the baseline, within the territorial sea or at the continental shelf. The problem will therefore be outlined for all areas in one elaboration.

Since there is no other potential regulation, the question is therefore whether the MA contains regulation for mortgaging structures outside land-based property.

Mortgaging real property has its legal basis in the MA § 2-1. It is stated that "ownership" in real property can be mortgaged. Outside land-property, the right to exploit the natural resources is given to the State. However, the "ownership" of the seabed is not regulated. Since no one has "ownership" of the seabed, it is not possible to mortgage it. On the other hand, also "special rights" in real property can be mortgaged. This could have been a possibility when the developer has been given a concession to exploit energy resources. However, a condition is that the "special right" has been registered in the register for real properties. In that regard, a "property-number"[146] is needed as the register is based on each real property given a number. Outside land-property, there is no "property-number" and it is therefore not possible to register the special right in the register for real property.

It is therefore not possible to mortgage the windmills as real property. The result is the same whether the windmills are floating or standing on poles.

[146] *Norwegian:*"Matrikkelnummer"

6.2.3.2 Sales mortgage

The question is if the windmills can be subject to a sales mortgage.

In MA § 3-14 (1) b) it is stated that in connection with "the sale of moveable objects" the lender can have a mortgage in the "said objects" as security for "loans" which a "third party", i.e. the financial institution, has granted to the buyer for full or partial payment of claims as mentioned in letter a), i.e. the purchase sum. If a project developer has bought a "moveable object" from a supplier, in this case a windmill, by using financing from a loan agreement with a financial institution, the financial institution can thus have a mortgage in the windmill. It is a condition that the financial institution, i.e. the "lender", pays directly to the seller of the windmill.

However, this solution is dependent on the objects sold being considered as "moveable objects".

It is clear that before the windmills are connected to the ground, they will be considered as moveable objects, regardless if it being floating- or built on poles. The question is whether the sales mortgage is still intact when the windmills are connected to the ground at the operation site. This depends on whether the windmills connected to the seabed are considered as "moveable objects".

For windmills standing on poles, it will not be significantly difference from the same types of windmills standing on private land-properties. Moreover, it could be stated that windmills built further from land are even more complicated and expensive to move from its location, hence, the windmills would most likely be considered as non-moveable objects, cf. argumentation in relation to windmills built within the boundary of private land-properties.

However, in the future, outside the boundaries to private land-properties, it is more likely that floating windmills are built, as these are suitable for deeper waters. As these have a different connection to the ground, the argumentation could be different from windmills built on poles. The question to be raised is therefore whether windmills built

as floating structures, mounted to the ground with wires, will be considered as "moveable objects", cf. MA § 3-14 (1) b).

"Moveable objects" are physical things which are not deemed as "real property".[147] Hence, the same legal sources as when assessing whether a windmill is real property will be relevant.[148] As a starting point, as seen above, it is required a physical connection of a certain degree in order to characterise the structures as real property.[149]

Floating windmills are mounted to the ground with strong wires. The connection is constructed to restrain heavy weather and is supposed to be standing at the same location for 25-30 years. The connection is therefore strong and to some extent permanent. This can be an argument in favour of stating that the windmills are non-moveable objects. On the other hand, floating windmills do not have the same connection to the ground as windmills built on poles. Only the cables are connected to the ground, whilst for the windmills built on poles; the tower is physically standing on the ground. The part physically connected to the ground is thus greater for windmills built on poles.

An important question when deciding if mobile structures are strongly and permanently enough attached to the ground, is whether it is practical or economically efficient to move the windmill from its location.[150] To move a floating windmill is not practical, but is possible. The wires that connect the windmills to the seabed will, if necessary, be cut and the windmills will be moved by special boats to another location. However, this is a difficult and costly operation, as it is a time consuming and in need of special gear. However, compared to the value of the windmills and the possible production incomes, moving a floating windmill could be economically favourable in certain situations. Because it is easier to separate the windmills from the seabed, it will also be cheaper than to move windmills built on poles.[151] As the economic aspect of moving the

[147] Skoghøy, p.113
[148] Also structures at the sea bottom can be deemed as real property although it is not subject to private property regulation, cf. Ot.prp.nr.66(1990-1991)p.62
[149] Skoghøy, p.51
[150] Ot.prp.nr.66(1990-1991)p.61-62 has relevance in this question as it gives guidelines for what is part of a sale of "real property", cf. Skoghøy, p.51
[151] Discussions with Sway

windmill shall be part of the assessment, the fact that it, in some situations, can be economically favourable to move them, can be an argument in favour of stating that the wired windmills are moveable objects.

However, even if the structures seem to be practically or economically favourable to move, the period of time the windmills are supposed to be standing on the same location is also important in this argumentation. If a structure is supposed to be standing on the same spot for a long period of time, this has importance in the decision, cf. discussion above in point 6.2.2.1.

The windmills are built with the intention to be standing on the same location for at least throughout its lifetime, i.e. 25-30 years, and it is also possible that they will be intact even longer. Hence, it has the same permanence as windmills on poles. This could be an argument in favour of stating that windmills are non-moveable objects.

To illustrate this problem even further, a comparison to the fish farm industry could be interesting. The fish farms are, as floating windmills, floating in the sea connected to the seabed by wires to maintain its position.

The fish farms themselves have now been given a special regulation in the MA § 3-9. In this law, the cages used for fish farms and other equipment, will be possible to mortgage as non-possessory moveable property, cf. § 3-9 (2) b).[152] The cages and the equipment are therefore considered to be moveable property.

Before this provision came in 1999 the fish farm structures had to be mortgaged under "other equipment" in the MA § 3-9 (2) a).[153] Although it was in practice treated as moveable property, it was necessary to express this and the fish farm structures were therefore given the provision in § 3-9 (2) and thus a special provision for mortgaging the fish farm structures. Due to the fish farms comparable value, this could be an argument in favour of stating that the windmills are deemed as moveable property. On

[152] Gjelsvik, p.110; The MA § 3-9 do not regulate mortgage in concessions. Mortgage in concession is regulated in the Aquaculture Act § 20
[153] Ot.prp.nr.26(1998-1999)p.200, cf. NOU 1993:16 p.157; Skoghøy (Commentary Edition 2003), p.282

the other hand, the fish farms' connection to the ground is less technical and not as strong and massive as the windmills. This makes the comparison less valuable.

The decisive factor in this problem must be that although the windmills are possible to move, the wires to the ground will be of such a strong nature that it is similar to windmills built on poles. It is also a very costly operation to move them. A unified regulatory framework is important and it is therefore difficult to see why it should be any difference in terminology with regards to whether the windmill floats or not, when the connection is as strong as for windmills built on poles and with the same permanence of 25-30 years.

Floating windmills are therefore permanently and strongly enough connected to the ground and should therefore be characterised as non-moveable objects. The windmills will therefore not be subject to a sales mortgage when it is connected to the seabed, cf. MA § 3-14. The borderline between moveable and non-moveable objects in this context is hard to define and it must be stressed that the conclusion could be different from other points of view.

Looser parts, as the generator, could, as seen above, be deemed as moveable objects. It is therefore possible to have a sales mortgage in looser parts of the windmill, cf. § 3-14. This can be relevant both for the seller of the generator and for the financial institution that pays directly to the seller, cf. § 3-14 (1) a) and b). However, problems related to incorporation in the main part can occur, cf. below in point 6.2.3.4

6.2.3.3 Mortgage in operating accessories

It is no difference in the legal basis for mortgaging the structures as operating equipment, whether the structures are built inside or outside the boundary for private land-property. With reference to above, the solution is therefore, as a starting point, the same as for windmills built within private land-property. Only the looser objects, like the generator, can be part of a mortgage of operating accessories, cf. MA § 3-4.

However, if the floating windmills are in the alternative deemed as moveable object, the question whether the windmill structures could be part of the mortgage as operating accessories is relevant.

The question is than whether the floating windmills are characterised as "machinery, tools, furnishings and other equipment" that is "used in or […] designed for" business operation, cf. § 3-4 (1), cf. § 3-4 (2). Although only parts of the windmill will be falling under the narrow interpretation of "machinery" that produces electricity, typically the generator, it is possible to state that the windmills themselves are the "machines" in a wider sense and thus the "equipment" that produces the electricity. "Other equipment" is supposed to be interpreted widely and is assumed to comprise all moveable objects that are directly "used in" the business operation, and which do not fall directly within the wording of "machinery, tools and furnishings."[154] The generator in itself does not produce anything without the other parts in the windmill. Hence, the structure with all its components is necessary to produce energy. Turbines, which comprise greater parts of the windmill construction and components, are also mentioned in the literature as an example of "machinery" and thus part of operating accessories.[155] The windmill is therefore deemed as "equipment" "used in or […] designed for" business operation. If a floating windmill is considered as a moveable object, the whole structure could be part of a mortgage in operating accessories, cf. MA § 3-4.

6.2.3.4 Conflict between holder of sales mortgage and holder of mortgage in operating accessories

If the generator or other moveable objects in the windmill is part of a mortgage in operating accessories and also part of a sales mortgage, this could lead to conflict of interest between the mortgage holders if these are different persons, and both has protection accorded by law. This conflict is also relevant if the windmill in itself would have been deemed to be "moveable objects". The mortgage holder of the seller's "stock-in-trade" will not be involved in the conflict after the buyer has become the owner of the windmill, i.e. when the financial institution has paid the seller or when the

[154] Skoghøy (Commentary edition 2003)p.236-237
[155] Brækhus, p.80

windmills are delivered. This will not be further interpreted. After this point in time, the windmills are either part of a sales mortgage or mortgage of operating accessories.

The conflict is regulated in the MA § 3-4 (3) where it is stated that mortgage of operating accessories, which are attached with a sales mortgage, "comprise the rights of the mortgagee at any time in those accessories". Hence, if the object is part of a sales mortgage, it cannot be part of the mortgage of operating accessories.[156] A problem in this regard could be to determine when the sales mortgage becomes inoperative.

The obvious is that it becomes inoperative when the financial institution has received full payment from the borrower. Moreover, the sales mortgage only lasts until the goods are incorporated in another main-structure cf. the MA § 3-19. From that point in time, it could be part of the operating accessories. If a windmill is deemed to be a "moveable object" in itself, the windmill will be the main structure and is thus not incorporated into another main part. Hence, the sales mortgage is intact. The sales mortgage then lasts until the financial institution has received payment for the windmill, which in practice will be a long period.

However, with regard to separate moveable parts of the windmill, subject to sales mortgage, the problem of incorporation into the main structure will occur. The sales mortgage will then be lost if it seems "disproportionally costly" or it involves an "unreasonable loss of value" to separate it from the windmill, cf. MA§ 3-19. This will not be further described in detail but could be a practical issue both for floating windmils and windmills built on poles.

6.3 Security provided by law

To secure a mortgage in real property against other third parties and creditors, the mortgage must be subject to "registration in the land register", cf. MA § 2-5. This is done pursuant to the Norwegian Land Registration Act. A mortgage in operating accessories is secured by registering the mortgage in the moveable property register, cf. the MA § 3-6. Sales mortgage are secured by the agreement, cf. the MA § 3-17 (2).

[156] Skoghøy (Commentary edition 2003), p.244

The process of securing the mortgage will not be thoroughly discussed in this thesis

7 Conclusion

Financing offshore wind power is currently very expensive. The authorities are however encouraging the industry, as it is an important part of increasing renewable energy production in Norway. To be able to finance the projects, use of loan-agreements will be important for the players and developers in the industry. For the financial institutions it is however important with sufficient security for the loans provided. It is possible to have security in some of the project's assets, like the shares, cash flow, el-certificates and cables. However, the more valuable parts, as the structures and the concessions, leads to uncertainty with regards to possibilities of mortgaging.

The concession is not possible to mortgage at all within the current legal framework. The financial institutions can however obtain the concession by the use of agreements with the authorities. Mortgage in the structures however, depend on the place of operation. Within the boundary to private land property, it is possible to mortgage the structures as part of the real property and thus possible to register the mortgage in the land property register. This will be a proper security for financial institutions. However, outside this boundary, this is not possible. The only possibility is then to mortgage the structures as operating accessories or sales mortgage. However, this will, as a starting point, only be possible for looser parts of the windmill, not the whole windmill as a unit. Hence, only minor parts of the windmills' value will be subject to the mortgage. Moreover, mortgage in operating accessories or sales mortgage will not be as secured as having the mortgage registered in a register.

Hence, the mortgage possibilities are better within the boundary to land property compared to offshore locations. However, also within the boundary of land properties the mortgage solutions are dependent on undecided terminologies as to what is part of the mortgage. It can be questioned whether these solutions are sufficient enough for a financial institution when entering into loan-agreements for multiple of millions. This can reduce the credit value of the developers and thus slow down the process of getting access to sufficient financing for the projects.

Hence, for the industry to develop it will be important with a proper solution for the financial institutions to secure the loan-agreements in the future. The best way is

arguably to have a register where it is possible to register the concession, the assets and mortgages in these. This will lead to foreseeability and a proper regulatory framework for the involved parties.[157]

In this regard, a factor to be taken into consideration is that a mortgage in a concession will reduce the authorities' control of who is the holder of the concession. The mortgagee will, if necessary, be able to enter into the concession. This is an important aspect behind the concession process. However, this aspect was also considered when the aquaculture register was made. It was concluded that the positive outcomes of a possibility to mortgage the concession was more important than partly losing control of the concession process. On the other hand, the control of the situation was considered sufficient since the conditions and duties included in the concession would still be applicable for the new holder. Hence, the only difference would be the holder of the concession.[158]

It is also possible to make a mortgage subject to pre-consent from the authorities. Mortgage of the concession in the PA is subject to a pre-consent from the ministry, cf. § 6-2. The authorities can in this way still have control of the parties involved. Moreover, the approval of the mortgage is subject to discretionary power and the ministry can thus give approval subject to different conditions, cf. PA § 10-18. In that way, they can control the mortgage, the parties involved and the mortgagee's rights in the concession.[159]

The question is how a register should be organised. It is not known of any similar registers in foreign countries to compare with. One solution could be to use an already existing register. This was done for the petroleum industry in the old Maritime Act[160] where it was made an opportunity to mortgage the structures, and the concession was regarded as accessory to the structures.[161] The mortgage was given protection accorded

[157] Ot.prp.nr.61(2004-2005),p.36
[158] Ot.prp.nr.61(2004-2005),p.35
[159] Hammer, p.506
[160] The Maritime Act, 1893-07-20-01
[161] Hagen,p.333

by law through registration in the ship register. This could also be done in the wind industry.

However, a separate register will be more foreseeable and easier to control for the parties involved. This was also done for the petroleum industry through the PA in 1985, amended in 1996. The current legal basis for mortgage is found in § 6-2 and is organised around the concession as the main asset. A mortgage in the concession will encompass also other assets, like the platform itself, cf. § 6-3. There is no distinction between moveable or non-moveable structures.[162] The mortgage gets protection accorded by law by registering the mortgage in the Petroleum register, cf. § 6-2 (3). The register is systemised around the separate concessions given from the ministry, cf. 6-1 (2). A system similar to the one in the PA could be interesting for the wind industry as well.

Moreover, the Aquaculture Act is used for comparative purposes. This industry has also been provided with the possibility of registering mortgages in a separate register. A difference compared to the PA however, is that under the Aquaculture Act,[163] only the concession itself is subject to the mortgage, whilst under the PA the mortgage will also include the assets. This is because the concession in the aquaculture industry is considered as the important value.[164] The structures etc. must be mortgaged under different rules.[165]

For the wind industry, both the concession and the structures are of significant value and should be subject to a possible mortgage in a separate register in order to provide the financial institutions a proper security. A solution similar to the petroleum industry will thus be most favorable. However, a need for extensive control of the mortgage situation and the involved parties would probably not be as important as in the petroleum industry. For the involved parties in the petroleum industry, including the State, it is important that the platforms are operated as efficiently as possible and thus it is important to have control of who is operating the platforms.

[162] Hammer,p.516
[163] Aquaculture Act § 20
[164] Gjelsvik,p.108-109
[165] MA § 3-9 (2) b)

To operate a windmill is however less complicated than operating an oil-platform. Hence, which party is operating the windmill will not affect the efficiency and other factors as much. In addition, it is less danger connected to safety and environmental issues with regard to operating windmills. An extensive control of the involved parties is thus not that important. Similarly to the aquaculture register, the control of the conditions for giving a license in the first place will probably be a sufficient control of the situation. The suggestion is therefore a mix of the PA and the Aquaculture Act, with possibility to mortgage the concession and the structures without the ministry's approval of the mortgage agreement.

As the connection between the concession and the structures are significant, the register should be based around the concession as the main asset and the windmills as accessories to the concession. In that case it will not be a situation with one has a mortgage in the concession, while another has a mortgage in the structures. It is preferable that a situation like that will not occur as the connection between the concession and the structures are important and different mortgage holders could lead to conflicts in this regard. A joint register for onshore and offshore windmills could moreover be practical.

Norway should, with its experiences from offshore industry, be one of the leading countries in having a legal framework supporting the developers in this emerging industry. Amendments in the regulatory framework should be done in order to support the industry and to make it easier to improve renewable energy exploitation in Norway.

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