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The legal and regulatory barriers for the development of offshore wind farms in Sweden and Norway:

A comparative study

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Abstract

This thesis studies the current legal and regulatory barriers in the offshore wind industry on an international, regional and local perspective in particular in Sweden and Norway, two of the most important countries for the offshore wind industry.

Today offshore wind farms are a very important topic for the renewable energy sector but also for the fight against climate change and a transition towards greener societies. For coastal countries like Sweden and Norway, offshore wind farms have an undeniable potential that still needs to be exploited in order to bring benefits for the countries and the environment in general.

The research is divided into two main parts. The first part is theoretical where the author expands on the current legal framework of offshore wind on an international and regional level. Different global treaties and EU legislations focused on offshore wind farms are analyzed. The second part is more practical and has to do with the current developments, practice and challenges of the offshore wind industry in Sweden and Norway. Different legal and non-legal barriers are studied involving topics such as the legal framework in each country, the allocation system of offshore wind sites, the permitting process, and the importance of the offshore wind industry in both countries.

Finally, the thesis ends with a comparative analysis of the different findings around the current legal and regulatory barriers as well as different challenges of the offshore wind industry in both Sweden and Norway with some concluding remarks to establish which country has better conditions for an offshore wind industry and which country has a brighter future to really capitalize on the benefits that offshore wind farms have for the environment and for the development of these coastal countries.

Key words: offshore wind farms, wind energy, Sweden, Norway, permitting procedure, legal framework, comparison, offshore, wind, auction, offshore wind energy, renewable energies.

Table of Contents

- 1 Introduction..... 5
 - 1.1 Context..... 5
 - 1.2 Objective and research questions 9
 - 1.3 Methodology and sources 10
 - 1.4 Limitations 11
 - 1.5 Structure 11
- 2 The role of regulation in the renewable energy wind sector 13
 - 2.1 Challenges of wind energy generation 13
 - 2.2 The role of international law in the development of the offshore wind energy sector ... 18
 - 2.2.1 The United Nations Convention of the Law of the Sea..... 18
 - 2.2.2 The Convention on the Conservation of Migratory Species of Wild Animals 21
 - 2.2.3 The Convention on the Conservation of European Wildlife and Natural Habitats . 22
 - 2.2.4 The Bergen Declaration..... 23
 - 2.3 The role of European constitutional law in the expansion of renewable energy 25
 - 2.4 EU electricity sector regulations 28
 - 2.4.1 Internal Market Regulation..... 28
 - 2.4.2 Renewable Energy Directive..... 28
 - 2.5 EU legislation pertinent to the development of the offshore wind sector..... 30
 - 2.5.1 EU Habitats and Birds Directives..... 30
 - 2.5.2 Maritime Spatial Planning Directive 32
 - 2.5.3 Marine Strategy Framework Directive 33
 - 2.5.4 Strategic Environmental Assessment Directive 34
 - 2.5.5 Environmental Impact Assessment Directive 35
- 3 Sweden’s offshore wind farm legal framework..... 38
- 4 Norway’s offshore wind farm legal framework..... 42
- 5 Comparison 49
 - 5.1 Offshore wind comparative analysis..... 49

5.2	Results comparative analysis	54
6	Conclusion	55
	Bibliography.....	60
a)	Literature sources.....	60
b)	Legislative acts.....	62

List of abbreviations

Art.	Article
AEEA	Agreement on the European Economic Area
CMS	Convention on the Conservation of Migratory Species of Wild Animals
EIA	Environmental Impact Assessment
EU	European Union
EGD	European Green Deal
EEA	European Economic Area
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
GHG	Greenhouse gases
GWh	Gigawatt hours
ICSID	International Centre for Settlement of Investments Disputes
IEA	International Energy Agency
IRENA	International Renewables Energy Agency
NVE	The Norwegian Water Resources and Energy Directorate
OED	The Norwegian Ministry of Petroleum and Energy
SEA	Strategic Environmental Assessment
TWh	Terawatt-hour
TFEU	Treaty on the Functioning of the European Union
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
U.S.	United States of America

1 Introduction

1.1 Context

Climate change today is probably the greatest threat that humanity has ever faced,¹ this is a global problem that requires close cooperation and great ambition from governments and civil society alike, it also requires the fulfillment of a lot of regional and national targets if we really want to make the changes the world needs.

Today, humanity is not only facing a global threat, but it is also facing a global challenge, and this is to tackle climate change and limit global warming, hence, it is fundamental that globally we make radical changes in our ways of living and the ways we relate with our environment.

Climate change is already happening, and energy consumption today is the main source of greenhouse gas emissions,² in particular, the burning of fossil fuels and carbon intensive activities are at the very center of this global problem as they are some of the main sources of pollution. Despite energy being one of the main problems surrounding climate change, energy is also fundamental for economic growth and development around the world,³ therefore, it is almost a necessity to find alternative means of sustainable energies that on one hand secure our energy necessities as well as economic growth, and, on the other hand, also reduce the emissions of greenhouse gases. More than ever, we need energies that are environmentally friendly and less damaging than regular sources of energy.

According to the International Energy Agency (IEA), today new technologies in the energy sector can improve energy efficiency and reduce greenhouse gas emissions in a significant way by 2050.⁴ A lot of these technological improvements are connected to renewable energies in the electricity sector.

¹ United Nations. “Climate change “biggest threat modern humans have ever faced,” world-renowned naturalist tells security council, call for greater global cooperation.” Press release, 23 February 2021.

² Aguirre, A. “Sustainable energy consumption and climate change.” Centre for International Governance Innovation, 27 October 2017.

³ Ibidem.

⁴ International Energy Agency. “Energy Technology Perspectives: Scenarios and Strategies to 2050.” Organization for Economic Co-operation and Development, 2016.

Renewable energies are fundamental for the global transition that the world needs in order to reduce emissions worldwide, especially considering the great potential that renewable energies have to address some of the climate change problems that we are facing today.

According to the IEA tracking report, in 2020, renewable electricity generation grew 7.1%, where wind and solar energy accounted for nearly 60%, meaning that more than two-thirds of renewable electricity increased due to wind and solar sources. Further, in the same year, renewable energies accounted for 28.6%⁵ of the total global share of electricity generation worldwide.

These facts are very relevant for the present research, as they show the importance and the role renewable energies have today in the electricity sector. But they also show us the great potential that these types of energies have when it comes to wind and solar energy as these two are great sources to secure the energy demand of countries and also reduce emissions in general.

The IEA expects that by 2030, renewable energies will account for nearly 60% of the global share of electricity generation,⁶ almost twice as in 2020, thus, the expansion of renewable projects is expected to grow exponentially and rapidly in the coming years, especially if countries are serious to achieve the global climate goals regarding zero emissions and secure the energy needs of their population.

Regardless of the challenges caused by the Covid-19 pandemic, renewable energies adapted to the new conditions and in multiple countries such as the United States of America (U.S.), India and the European Union (EU), commitments and policies were reinforced for the continued development of renewable energies.⁷

The quick adaptableness of the renewable energy sector and the commitment of some countries during this uncertain time of Covid-19 will for sure bring benefits in the short term for the fight against climate change and the reduction of emissions, this shift towards renewable energies will also bring other types of benefits such as jobs, innovation, energy security and economic growth and development.

⁵ International Energy Agency. “*Renewable power-tracking report.*” IEA, Paris, France. November 2021.

⁶ Ibidem.

⁷ Ibidem.

Along with the Covid-19 pandemic, the current Russia-Ukraine war has affected the energy market as well, not only in Europe but globally; thus, today. Europe needs to examine and reconsider their gas and energy dependency relation with Russia.

The energy sector not only affects human development but also affects countries energy dependency, therefore, new forms of energies such as renewable energies can help countries to secure their energy needs, but also to secure human development that will bring benefits in the long term for the human race and for the care of our common home.

Renewable energy projects can include different sources such as solar, hydro, biofuels, geothermal, tidal and of course wind. For this research, I will focus on the legal and regulatory aspects of wind power projects when it comes to offshore wind farms which are less common and more recent than onshore wind projects.

Offshore wind projects have a huge potential not only to help countries in their energy transition towards a more sustainable society but also help countries to secure their energy needs which eventually will translate in the development of countries and prosperity of their societies; according to the IEA tracking report, wind and solar energy will continue to be the most important renewable energy sources.

Sweden and Norway are two countries that have taken seriously the renewable energy goals and according to Eurostat, in 2020 both countries not only met their goals but surpassed their renewables targets making them leaders in the energy transition needed in the world.

Out of the total energy consumption in Sweden, 60.1% came from renewable energies making Sweden the country with the highest share of renewable energies within the EU and in Norway the amount of renewable energies accounted for 77.4% of the total energy consumption.⁸

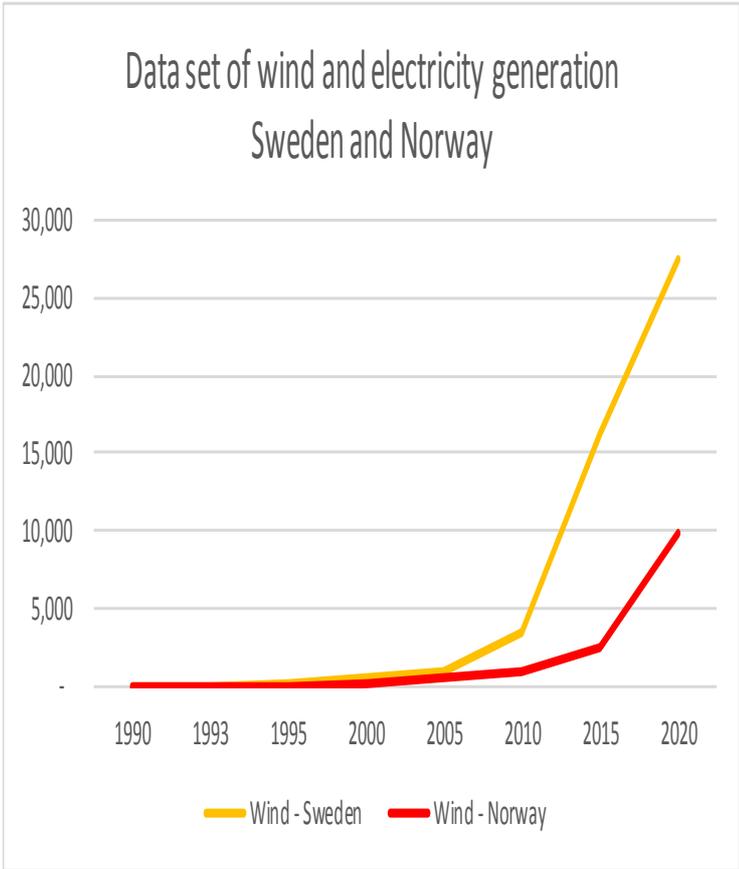
When it comes to offshore wind energy the European Union is at the forefront leading the way for the rest of the world in terms of technology and offshore wind farms, in particular among the countries bordering the North Sea where the conditions are remarkable for this type of project and where policies in place are aiming to increase offshore wind capacity.

⁸ Eurostat. *"Share of energy from renewable sources."* Data browser, 2020.

Countries in the Nordic region should focus in the generation and expansion of the offshore wind industry, which in the long term will make offshore wind energy the main source of electricity in the European Union.⁹

Despite the significant efforts made by countries like Sweden and Norway to implement renewable energies in their energy systems, when it comes to wind energy, there is still room for improvement and continued growth in this sector, as wind energy and in particular offshore wind energy do not represent a major source of energy in neither of these countries.

Year	Wind - Sweden	Wind - Norway	Units
1990	6	N/A	GWh
1993	N/A	7	GWh
1995	99	10	GWh
2000	457	31	GWh
2005	935	499	GWh
2010	3,487	879	GWh
2015	16,322	2,515	GWh
2020	27,526	9,911	GWh



¹⁰ Data Wind Electricity Generator Sweden and Norway-2020.¹¹

⁹ International Energy Agency. "Offshore Wind Outlook 2019." IEA, Paris, France. November 2019.

¹⁰ International Energy Agency. "Data and statistics-Renewables." IEA, 2020.

¹¹ Data scraped from the IEA database and the visualization and table were created by the author.

Shifting towards renewable energies today is at the center of the energy transition,¹² thus, it is necessary that countries in general invest, protect and support projects of this nature, therefore, it should be a priority for countries to have well-established set of laws and regulations that can set a clear pathway for investors and developments and this is not different in the offshore wind energy sector. Having clear game rules will only bring benefits to the countries that want to invest in renewable energies and invest in a greener society.

Despite the belief that renewable energy investments can bring benefits only in the long term, when it comes to the offshore wind industry, offshore farms can become a source of income for investors in the short term. Offshore wind farms in general, could also help to secure the energy needs of countries which at the end of the day will translate into benefits for the societies and their development.

When it comes to offshore wind energy, countries need to face the main challenges that are holding the potential of this industry. In order to accelerate the development of this type of renewable energy, countries should assess and focus on their laws and regulations, the permit procedure, the grid connections and the financial cost of offshore wind farms.

Lastly, offshore wind energy refers to energy produced by wind turbines that are installed in the ocean, however, today, the majority of these projects are installed near the shore; eventually with the right technological advancements, the installation of turbines far from the shore will become a more palpable reality.

1.2 Objective and research questions

The objective of this research is to identify and examine what are the legal and regulatory barriers for offshore wind farms in Sweden and Norway in order to determine which country does it better when it comes to offshore wind energy.

Different laws and regulations from international, regional, national and local jurisdiction play an important role for the development of this type of renewable energy, thus, it is important that countries that have exceptional conditions have a well-established legal framework.

¹² International Energy Agency. “*Fuels and technologies-Renewables.*” IEA, December 22, 2021.

It could be difficult for investors and developers to navigate all the legal and regulatory barriers that can end up creating uncertainty for investments in the offshore wind energy sector, these legal barriers can also create uncertainty for countries in general as they all should aim to achieve their climate change goals and transition to a greener society.

Other purposes of this research are to identify the different offshore wind legislation in Sweden and Norway that made their offshore wind legal framework and compare their effectiveness, identify the different actors involved in the offshore wind sector and determine the permit process of the offshore wind industry in these Nordic countries.

It is very important to have a clear overview of the legal and regulatory landscape in Sweden and Norway if offshore wind energy farms want to continue to drive and continue to add towards the green transition, the fight against climate change and also to secure the energy needs in the Nordic countries.

Thus, the main research question is:

- What are the legal and regulatory barriers for the development of offshore wind farms in Sweden and Norway?

Some sub questions that may be of help to guide and focus this research include:

- What is the offshore wind legislation in Sweden and Norway? Who are the different actors involved in each country in the offshore wind industry? What is the permit process for offshore wind farms in Sweden and Norway?

1.3 Methodology and sources

This research will focus mainly on the doctrinal methodology as the main goal is to do a comparative analysis of the different laws and regulations surrounding offshore wind energy in Sweden and Norway. Specifically, the research will examine the legal and regulatory framework that today is in place in both Sweden and Norway in order to assess the present and future potential of offshore wind energy in these countries.

The comparative approach of this research will focus on two main parts. On one hand, I will focus on the *lex lata* in order to arrange, describe, structure and examine the different laws and regulations involved in offshore wind energy in Sweden and Norway from an international, but also regional and local experience. And, on the other hand, I will do a comparative analysis in

order to contrast the different findings and challenges in these Nordic countries, in order to assess the future, direction and potential of the offshore wind industry in Sweden and Norway, but also its impact in Europe and globally, as the Nordic countries are known to be pioneers when it comes to the development and implementation of renewable energies.

1.4 Limitations

Offshore wind energy is a global topic that involves different fields of studies, actors and even industries, despite all these factors, for this research I will limit the investigation to only two Nordic countries, namely, Sweden and Norway.

I will focus mostly on the legal and regulatory aspects of offshore wind energy in Sweden and Norway, which means that other aspects surrounding offshore wind energy in these two countries will be left out of the research.

Wind power energy in general can be divided in two types, onshore wind energy and offshore wind energy, however, for this research I will focus entirely on offshore wind energy, nevertheless, when necessary, onshore wind energy can be used to explain the context and influence that it has had with regards the development of the offshore wind energy sector.

Finally, it is important to mention that Norway regardless of not being a member state of the European Union, is a member of the European Economic Area (EEA), meaning that most regulations and laws studied from an European perspective are also be applicable to this country, hence, regardless of its status, as being part of the EU single market laws will not be applicable only when is explicitly mentioned.

1.5 Structure

The present research will be divided in two main parts; the first part focusing on the theoretical aspect of the offshore wind legal framework from an international and regional perspective and the second part, will focus on a more practical aspect regarding the offshore wind industry in Sweden and Norway.

In specific, this research will be divided as follows:

In chapter 2, I will expand on the role and the importance of legal regulations in the renewable energy sector; internationally, in the EU and in the Nordic region. First, I will discuss the role of regulation in the renewable energy wind sector. In this chapter, I will also present the

challenges of wind generation today on a global level. I will also expand on the role of both international and EU legislation with relevance for the offshore wind industry.

In chapter 3, I will examine the current status of the offshore wind industry in Sweden; I will touch upon different topics including the legislation regulating this sector, the different actors involved, and the barriers holding the development of the offshore wind sector in Sweden.

In chapter 4, I will expand on the current status of the offshore wind industry in Norway; I will examine the legislation regulating this sector, the different actors involved, and the barriers holding the development of the offshore wind sector in Norway.

In chapter 5, I will put together the findings from chapter 3 and 4 in order to compare different issues surrounding the offshore wind industry both in Sweden and Norway in order to systemize and organize the information to establish which country does it better when it comes to offshore wind energy.

Finally, in chapter 6, I will provide concluding remarks and comments after analyzing the results from the comparison of both countries in order to answer the main research question regarding the legal and regulatory barriers for offshore wind farms in Sweden and Norway.

In this final chapter, I will also present one chart containing the ideal procedure for a successful implementation of an offshore wind farm in my opinion.

2 The role of regulation in the renewable energy wind sector

2.1 Challenges of wind energy generation

When it comes to wind energy, we can divide it into two main areas; wind electricity generated from onshore farms and wind electricity generated from offshore farms. In 2020 onshore and offshore wind energy increased as never before, all together, wind installations generated 1592 Terawatt-hour (TWh).¹³ This is a remarkable number of TWh,¹⁴ however, it is necessary to also keep increasing the capacity of Gigawatt hours (GW).¹⁵ In general, both TWh and GW have a lot of potential to keep growing.

In general terms, there is no parity between onshore and offshore wind energy; onshore wind remains to be the major generator of renewable energy when it comes to wind generation, nevertheless, offshore farms have a huge potential that is yet to be exploited.

According to the Offshore Wind Outlook 2019 from the International Energy Agency (IEA), globally offshore wind alone could provide almost 36000 TWh of electricity per year¹⁶ whereas today onshore and offshore wind projects combined generate around 1592 TWh per year.¹⁷ Globally offshore wind energy only accounted for around 0.3% of global energy generated.¹⁸

According to the IEA, offshore wind alone could account for the entire electricity used worldwide today and this only considering offshore projects near the coastline, meaning that offshore projects in high seas could even have a bigger potential, therefore, the development of offshore wind farms should be a priority for countries and companies alike in the renewable energy sector.

Despite the great potential of offshore wind energy, there are also major challenges to overcome in order to exploit the real potential of offshore wind farms. Public policies, laws and

¹³ International Energy Agency. “*Wind power-tracking report.*” IEA, Paris, France. November 2021.

¹⁴ A unit of energy equal to outputting one trillion watts for one hour.

¹⁵ A unit of energy representing one billion-watt hours.

¹⁶ International Energy Agency. “*Offshore Wind Outlook 2019.*” IEA, Paris, France, p. 11, November 2019.

¹⁷ International Energy Agency. “*Wind power-tracking report.*” IEA, Paris, France. November 2021.

¹⁸ International Energy Agency. “*Offshore Wind Outlook 2019.*” IEA, Paris, France, p. 3, November 2019.

regulations need to be in place in order to provide a sound offshore wind legal framework that gives the industry the certainty and security needed to really invest in offshore wind projects.

In the European Union the European Green Deal (EGD) is aiming to make Europe the first climate neutral continent in the world by 2050, where all 27 members of the EU are committed to accomplish this goal and committed to reduce emissions at least to 55% by 2030.¹⁹

In order to accomplish this goal, the EU will have to invest a lot in the renewable energy sector in the coming years, especially, because according to the Renewable Energy Directive 2018/2011/EU, the EU has a binding target of implementing renewable energy sources for at least 32% of the final total energy consumption by 2030.²⁰

The European Commission has presented an amendment to the Renewable Energy Directive 2018/2011/EU, in order to change the aforementioned goal to 40% of the EU total energy mix by 2030,²¹ meaning that the EU member states are bound to use renewable energies sources for their energy supply and this commitment is expected to grow in the near future.

Another important factor to be considered in the energy systems in the EU has to do with energy independency. Today, the EU continues to import energy for its own consumption and not only that, in gross, in 2019, the EU imported around 61% of the total energy needed to carry out the needs of the member countries.²²

This dependency was mainly with Russia as this country is the main oil, natural gas and solid fossil fuels importer to the EU, hence, the EU continues to depend heavily in Russia to secure its energy needs, this dependency could have short term effects in the energy systems in Europe especially with the present war between Ukraine and Russia, and the political support of the EU to Ukraine; the EU needs to be energy independent.

¹⁹ Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. The European Green Deal. (COM/2019/640 final).

²⁰ Article 3 of the Directive (EU) 2018/2001.

²¹ European Commission. “*European Green Deal: Commission proposes transformation of EU economy and society to meet climate ambitions.*” Press release, 14 July 2021.

²² Eurostat. “*From where do we import energy.*” Data browser, 2029.

Therefore, renewable energies and offshore wind energy in particular are something that the EU should invest in and focus in the short and long term. The investment in offshore wind energy will not only take the EU member states into the right direction towards fulfilling their climate targets, but also could signify energy independence so EU countries can depend less on energy imports in order to secure their energy needs.

In the EU, the energy sector accounts for more than 75% of greenhouse emissions, therefore, investing in renewable energy sources is also fundamental for the reduction of emissions in the EU.²³ When it comes to offshore wind energy, this source will keep increasing with all the technological development in the renewable energy sector and in the near future will have a predominant role as it is at the center of this energy transformation.²⁴

Having ambitious climate goals in the EU will also bring more security and predictability for investors in this sector,²⁵ especially considering that there are binding targets that the EU and its member states need to comply with. Renewable energies and offshore wind energy have a lot of momentum at the moment; thus, it is a perfect time for countries and companies alike to exploit the offshore wind market.

Today the energy output and the energy capacity from offshore wind projects exceed those coming from onshore wind and double those from solar energy,²⁶ something unthinkable 30 years ago, when the first offshore wind turbines were installed.²⁷

The electricity generation from offshore wind farms has expanded rapidly in recent year and the future of this energy continues to be bright. Hence, the installation and technology surrounding offshore wind farms will continue to increase in the near future, however, there are some challenges that are still holding back the industry and need to be addressed.

Laws and policies in place as well as the cost to make these projects and the cost of the transmission system, including the technological development of grid infrastructure,

²³ European Commission. “*Renewable energy targets.*” Energy, 2021.

²⁴ Idem, p. 6.

²⁵ 2030 Climate Target Plan (COM/2020/562 final).

²⁶ International Energy Agency. “*Offshore Wind Outlook 2019.*” IEA, Paris, France, p.12. November 2019.

²⁷ Vindeby Offshore Wind Farm, located in the waters around Lolland, Denmark.

installations and public acceptance are just some of the major challenges that the offshore wind industry is facing today.

Thus, in my opinion, countries and regions need to tackle these challenges in order to continue the expansion in order to establish offshore wind energy as a major player in the energy market both internationally and in the EU. Regardless of the many challenges, the future of offshore wind farms looks promising.

Another important factor interconnected with the legal framework of countries has to do with investments disputes arising from projects in the offshore wind sector. The growth of offshore wind farms will inevitably increase the number of disputes between investors and host countries, disputes that can arise at any moment in the life of an offshore wind farm and consequently countries will need to have strong and clear rules in order to smoothen the disputes that may occur in the near future.

A clear example of disputes arising from offshore wind farms is the *Strabag and others v. Germany Case*²⁸ brought before the International Centre for Settlement of Investment Disputes (ICSID) concerning multiple aspects of offshore wind farms in the North Sea, including permits and legislative changes in the host country that ultimately were affecting the offshore wind production and therefore, investors started to abandon their offshore wind farms.

Despite the many challenges, in Europe the development of offshore wind projects is expected to keep growing both in the private and the public sector and Europe continues to lead the development of the offshore wind industry followed by the UK and China.

Today two major European private companies are at the forefront owning the largest share of the offshore wind market globally. Ørsted from Denmark with 12.86% and RWE from Germany with 10.44% of the total global shares in the offshore wind market. An interesting fact is that these two companies are privately owned. In fourth place we have Vattenfall from Sweden with 3.82% and in ninth place Equinor from Norway with 2.20% of the total global

²⁸ *Strabag and others v. Germany* Erste Nordsee-Offshore Holding GmbH, Strabag SE, Zweite Nordsee-Offshore Holding GmbH v. Federal Republic of Germany (ICSID Case No. ARB/19/29).

shares in the offshore wind market. In contrast to the first and second major companies in the offshore wind sector, Vattenfall and Equinor are both public companies.²⁹

These numbers above, allow us to see that both the private and public sector are equally important for the future of offshore wind energy and continuous efforts need to be done together by all actors involved in the offshore wind industry to ensure future investments.

Regulators are fundamental to address the many challenges in the offshore wind sector, as well as policies and guidelines. A clear legal framework in a country could translate into better support schemes, a clearer permit procedure, and clearer conditions to access the grid. The implementation of all these laws and regulations should also be considered fundamental in order for offshore wind energy to prosper in the near future and attract more investors from the public and private sector.

Therefore, countries like Sweden and Norway need to have a well-established legal framework in order to offer investors the conditions necessary to exploit the true potential that offshore wind energy has in the energy market but also to protect the investments in the sector.

Having a clear legal framework will also benefit countries in order to achieve their many climate targets, such as to reduce greenhouse emissions, secure energy demands for citizens and companies and most importantly in order to help countries to continue their energy transitions towards greener societies.

Despite the efforts done internationally and regionally, the legal framework regulating offshore wind energy continues to be widely fragmented and relatively insignificant. This fragmentation along with the minimum existing laws covering offshore wind farms and the lack of clear instruments and guidelines regulating the construction and permitting process of offshore wind farms might be some of the problems holding back the great potential that offshore wind energy has, thus, the need of having a more coherent and unitary legal framework is almost mandatory today if offshore wind energy wishes to further develop. Therefore, in the following sections I will expand on both international and regional laws and regulations connected directly or indirectly to the offshore wind industry.

²⁹ Idem, p. 18.

2.2 The role of international law in the development of the offshore wind energy sector

2.2.1 The United Nations Convention of the Law of the Sea

Today all offshore wind farms, as the name indicates, are based on the oceans, far from the shore of coastal states. Hence, the location is the most important aspect in order to determine which national or international laws are applicable for a specific offshore wind farm.

On an international level, the main law regulating marine activities is the United Nations Convention of the Law of the Sea (UNCLOS). This international convention covers a wide variety of topics surrounding the oceans that can go from the protection of the marine environment to navigation rights and of course to exploitation rights.

Despite being the main law regulating the seas, UNCLOS does not have any direct provisions regulating offshore wind farms. However, it is useful for determining certain jurisdictional aspects that affect offshore wind farms indirectly. Mainly UNCLOS is relevant in order to determine rights, duties and limits that states have towards the oceans and thus, towards offshore wind farms.

In particular, the convention distinguishes three jurisdictional areas where states can exercise their sovereignty powers and where offshore wind farms may be located, namely, the Territorial Sea, the Exclusive Economic Zone (EEZ) and the High Seas, meaning that depending on these locations will depend the legal regime applicable to regulate offshore wind farms in these areas.

In the Territorial Sea, the coastal states have the same powers as they would have in their land territory, meaning that the laws applicable on land, are also applicable on the Territorial Sea. Article 21 of the UNCLOS, in its first paragraph, provides that laws and regulations adopted by coastal states should be in conformity with this Convention and paragraph third, highlights the importance of giving publicity to the laws and regulations in place affecting the Territorial Sea³⁰ of each coastal state.

For offshore wind farms, in the Territorial Sea, the coastal states have an open door to regulate according to their national legislation. However, there is a clear emphasis put on the publicity

³⁰ Article 21(1)(3) of the UNCLOS.

of laws which is also connected to transparency and clearness of the legal framework, something that is still missing in practice in the offshore wind industry.

In the Exclusive Economic Zone, article 56 of the UNCLOS establishes that coastal states have the sovereign rights to explore, exploit, conserve and manage the natural resources, explicitly for the production of energy from water, currents and winds.³¹ Article 56 establishes that coastal states have jurisdiction over installations and structures on the EEZ, but also gives jurisdiction for states to protect and preserve the marine environment.³²

Article 60 of the UNCLOS provides that coastal states have exclusive rights to approve and regulate the construction of installations in the EEZ in accordance with article 56,³³ meaning that these rights and jurisdiction are applicable to installations connected to the production of energy from wind, along with the infrastructure concerning offshore wind farms.

It is important to point out that the grid is also something fundamental for offshore wind energy, thus the pipelines transporting the energy from the source to the land are fundamental and are also a right to regulate for coastal states according to article 79 of the UNCLOS.³⁴

According to the provisions laid down in the UNCLOS, when it comes to offshore wind developments within the Territorial Sea and the EEZ, coastal states have sovereign rights and have the power to further develop their national legal frameworks to cover issues concerning offshore wind farms.

This margin of discretion for coastal states to enforce their own rules and regulations for the offshore wind energy sector without a clear global practice can bring further problems for investors in the sector, as they would have to depend purely on the internal regulations of each country, which in practice may differ widely in each coastal state, even in bordering countries like Sweden and Norway.

³¹ Article 56(1)(a) of the UNCLOS.

³² Article 56(1)(b)(i)(iii) of the UNCLOS.

³³ Article 69(1)(b) of the UNCLOS.

³⁴ Article 79(1) of the UNCLOS.

Further, internal regulations concerning offshore wind energy, as well as the requirements and permitting process to develop offshore wind farms could also be determining factors for investors in the offshore wind energy industry.

All these challenges not only affect the perception of investors in the offshore wind sector but also affect further investments in this industry, and thus the development of the renewable energy sector in general.

When it comes to offshore wind farms in the High Seas, this continues to be a blurry area both in practice and legally that remains to be explored by countries. Therefore, it predisposes several problems for the offshore wind industry to further develop in these areas regardless of the natural conditions and potential that High Seas have for offshore wind farms.

The UNCLOS provides that High Seas are open to all states equally.³⁵ Despite this claim, there are very unclear rules and guidelines on how installations and pipelines in the High Seas should be addressed by the states. This legal vacuum is likely to restrain the development of offshore wind farms in High Seas, especially when today, the technological developments in the offshore wind energy industry are reaching the point where installations in High Seas are becoming a reality with a huge energy potential.

Nevertheless, today, the majority of offshore wind installations continue to be placed within the Territorial Sea and some in the EEZ, leaving coastal states in accordance with the UNCLOS with an open door to further develop their national legal framework to regulate offshore wind farms.

The UNCLOS gives coastal states a great opportunity to set the legal framework needed to support the development and investment for the offshore wind industry, but also alerts investors in the offshore wind industry that in case of a problem concerning their investments in this sector, the national law of each country will be the one applicable and the one regulating their investments and offshore wind farms.

³⁵ Article 87(1) of the UNCLOS.

2.2.2 The Convention on the Conservation of Migratory Species of Wild Animals

There are multiple treaties of the United Nations covering the environment. However, there is no single one that deals directly with offshore wind farms.

The Convention on the Conservation of Migratory Species of Wild Animals (CMS),³⁶ is another UN convention dealing indirectly with wind energy. This convention focuses on the conservation of migratory species, but also on their habitats and on their migration routes. The convention deals with wind energy in general.

In the 7th meeting of the Conference of the Parties of the CMS in 2002, the Resolution on Wind Turbines and Migratory Species (Resolution 7.5 or resolution) was adopted and somehow expanded more on the relevance of the wind energy sector for the protection of species and their habitats.³⁷

The Resolution 7.5 highlighted several issues surrounding wind energy that are worth mentioning. The resolution recognized the importance that wind energy has to tackle climate change, despite the environmental benefits of wind energy, the resolution also recognized the lack of data of the effects that this type of project may have on migratory species, especially in marine areas, where is not possible to fully assess the real effects on the environment.

According to this resolution, some of the negative effects that species face today are a) destruction or disturbance of their habitats; b) collision risk for birds; c) collision on connecting power cables; and d) the emission of noise and vibrations into the water.³⁸

The resolution also recognized different needs for wind projects in general, for example, the need of an Environmental Impact Assessment (EIA) prior the start of a project and even issuing construction permits in order to avoid areas of ecological value and habitats with high conservation needs.³⁹ The resolution also acknowledged the importance of monitoring and assessing the real impact of wind turbines on a regular basis, meaning that the impact assessment does not end with the EIA, but it continues during the life of a project.

³⁶ Sweden and Norway are parties of this convention.

³⁷ CMS. UNEP/CMS/Resolution 07.05. September 2002.

³⁸ Ibidem.

³⁹ Ibidem.

Following its findings, the resolution, calls upon the parties of the CMS to a) identify areas sensible to wind turbines; b) to consider the precautionary principle⁴⁰ in the development of wind turbine farms; c) to take into account the environmental impact data; d) to analyze the cumulative effects of wind farms; e) to monitor wind farms before, through and after the construction of a project; f) instructs the Scientific Council to assess existing and potential effects from offshore wind farms;⁴¹ and the most important aspect for offshore wind farms g) invites private and public actors to cooperate to minimize negative impacts of offshore wind farms for migratory species.⁴²

In 2017, the resolution was revised at the 12th meeting of the Conference of the Parties,⁴³ the resolution retained most of the initial content, however, it erased two very important points namely; a) to assess the cumulative impacts of installed wind farms and b) the instruction for the Scientific Council to assess existing and further potential effects from offshore wind farms. In my opinion, the Conference of the Parties missed a great opportunity to continue to develop clear guidelines surrounding the development of offshore wind farms and the protection of migratory species in these areas.

2.2.3 The Convention on the Conservation of European Wildlife and Natural Habitats

Another relevant convention that is worth mentioning is the Convention on the Conservation of European Wildlife and Natural Habitat (Bern Convention) adopted by the Council of Europe.⁴⁴ This convention aims to conserve wild flora and fauna and foster cooperation of states in this conservation aspect.⁴⁵

In 2004, the Bern Convention adopted the recommendation No.109 of the Standing Committee on minimizing adverse effects of wind power generation on wildlife.⁴⁶ This recommendation is

⁴⁰ Principle 15 of the Rio Declaration on the Environment and Development.

⁴¹ The Scientific Council has not completed this work.

⁴² CMS. UNEP/CMS/Resolution 07.05. September 2002.

⁴³ CMS. General UNEP/CMS/Resolution 7.5 (Rev.COP12). December 7, 2017.

⁴⁴ Sweden and Norway are parties of this convention.

⁴⁵ Article 1 Bern Convention.

⁴⁶ Recommendation No. 109 (2004) of the Standing Committee on minimizing adverse effects of wind power generation on wildlife, December 3, 2004.

in accordance with the Resolution 7.5 of the CMS, as it also recognized the environmental benefits of wind energy and its importance for climate change.

The recommendation further noted that wind farms in marine areas (offshore) represent new technologies and a new form of energy production, thus, the real impact and effects from this type of energy cannot be fully determined with the current available information. Considering this factor, therefore, the convention recognizes the need to do an environmental assessment prior to selecting a building site and deciding on construction permits in order to avoid damages on areas of particular ecological value.⁴⁷

Finally, this resolution recommended states to take appropriate measures to minimize the effects of wind turbines in general and monitor and surveille current developments to understand the real impact of wind farms.

2.2.4 The Bergen Declaration

It is also important to mention the Bergen Conference on Sustainable Development. This meeting was one of many in preparation for the United Nations Conference on Environment and Development (UNCED) in 1992, where the environment ministers of multiple countries along with 427 participants gathered to discuss environmental and climate change issues and where countries assumed a major responsibility to limit the emission of greenhouse gases.⁴⁸

Several issues were raised in this conference, along with several priorities such as to prepare the environmental rights and obligations for possible adoption in the UNCED; to implement the precautionary principle on national and international policies to prevent and attack the causes of environmental degradation; to strength cooperation and mutual assistance for transboundary problems and to protect the ozone layer.

Different measures were also proposed in a number of issues in order to combat climate change, however, the main goal was to draft a declaration which was based on two key principles; a) the precautionary principle and b) the principle of common but differentiated responsibility of states when it comes to climate change, but also to prevent environmental degradation.

⁴⁷ Ibidem.

⁴⁸ United Nations General Assembly. A/CONF.151/PC/10. August 6, 1990.

This declaration was a major commitment of different countries to combat climate change. However, even if it was a good start, no concrete agreements were reached in order to reduce greenhouse emissions.

Multiple conferences and efforts followed the Bergen Conference. In this context, the most relevant was the Fifth International Conference on the Protection of the North Sea held in 2002, where different representatives met to address issues concerning the protection of the North Sea. Among the leaders attending this conference were Lena Sommestad, Minister of the Environment of Sweden, and Bøge Brende, Minister of the Environment of Norway.

In this conference, countries agreed to adopt the Bergen Declaration in order to implement an ecosystem approach with multiple initiatives to protect the North Sea. Wind energy and offshore wind farms were topics raised by the countries in chapter IX of Declaration concerning the promotion of renewable energy.⁴⁹

In chapter IX, countries were very receptive to the development of renewable energy technology. In particular, countries highlighted the great potential that offshore wind energy has to make a significant contribution to climate change and agreed to exploit the full potential of this energy source. Moreover, countries invited the oil and gas industry to consider offshore wind as a new market with great potential and where cooperation in terms of sharing information, technology and infrastructure could bring great benefits.⁵⁰

Countries agreed on a number of points surrounding offshore wind energy such as the creation of guidelines to develop offshore wind energy projects, to include local wind conditions as well as the ecological importance of the places where offshore wind farms would be installed; participants also stressed the relevance of the strategic environmental assessment as well as the grid connection; finally countries emphasized the importance of the precautionary principle in order to assess the viability of an offshore wind farm.⁵¹

Sweden and Norway are among the countries that since 2002 have known about the importance that offshore wind energy has for the energy system, its contribution to climate change, and its

⁴⁹ Chapter IX Promotion of Renewable Energy. Bergen Declaration, para. 69.

⁵⁰ Chapter VII Prevention of Pollution from Offshore Installations, para. 65.

⁵¹ Chapter IX Promotion of Renewable Energy. Bergen Declaration, para. 71.

viability as a powerful energy source. However, after 20 years of the Bergen Declaration there has been slow progress in the offshore wind industry at least from the side of the countries.

The main achievement of chapter IX of the Declaration concerning renewable energies has been the implementation of Directive 2001/77/EC on renewable energy which today is no longer in force, and where there was no mention regarding offshore wind energy unlike what it was shared in the actual fifth conference.

In sum, these international conventions, despite raising the importance of offshore wind energy to some extent, have failed to establish a clear framework to regulate offshore wind farms, leaving states with the responsibility to expand the offshore wind industry, mainly in accordance with national laws and following the development of technology in this industry.

2.3 The role of European constitutional law in the expansion of renewable energy

The protection of the environment and the development of the energy sector are two issues that are at the center of the EU and the European Economic Area (EEA). These two issues are developed in different treaties governing European relations today.

In the preamble of the Agreement on the European Economic Area (AEEA), the protection of the environment as well as the improvement of its quality is explicitly stated, along with the utilization of the principle of sustainable development, as well as the principle of precautionary and preventive measures. Further the AEEA connects the environment with health and safety.⁵²

Article 1 of the AEEA in its second paragraph, makes emphasis on cooperation between states when it comes to the environment,⁵³ hence, cooperation should always be at the center of states to fulfil environmental and energy goals.

Chapter 3 of the AEEA, article 73 (1) further develops environmental objectives, in specific, to preserve, protect and improve the quality of the environment;⁵⁴ but also, to ensure the prudent and rational utilization of natural resources. This very important article not only establishes an objective to protect the environment in general terms, but also an objective to ensure its

⁵² Preamble AEEA.

⁵³ Article 1(2) of the AEEA.

⁵⁴ Article 73(1) of the AEEA.

utilization properly, meaning that renewable energies have a lot of potential to achieve these objectives as the rational utilization of resources is a very important aspect of the renewable energies.

Paragraph two of article 73 contains another obligation which is that the protection of the environment should be a component of any other policies of the contracting parties,⁵⁵ meaning that the protection of the environment should be an integral part of any type of policy.

Annex IV⁵⁶ is dedicated entirely to the energy sector, however, there are no provisions concerning offshore wind energy when today the development of offshore wind energy is fundamental for coastal states such as Sweden and Norway.

When it comes to the wide EU, the Treaty on the Functioning of the European Union (TFEU) also regulates different aspects surrounding the environment and the energy sector, including a shared competence between the EU and the member states when it comes to the environment and energy sector.⁵⁷

Further, article 191 establishes different environmental goals that are very similar to the ones in article 73 of the AEEA, including, the protection, improvement and preservation of the environment; protection of human health; rational utilization of natural resources; and promoting the fight against climate change on a global and local level.⁵⁸ As the AEEA, the TFEU also contemplates the precautionary and preventive principles when it comes to the implementation of environmental policies.⁵⁹

Is important to mention that to achieve the objectives referred to in article 191 (environmental) the European Parliament and the European Council need to decide together what actions to take.⁶⁰ However, when it comes to energy sources and energy supply, the European Council

⁵⁵ Article 73(2) of the AEEA

⁵⁶ Annex IV of the AEEA.

⁵⁷ Article 4(2)(e)(i) of the TFEU.

⁵⁸ Article 191(1) of the TFEU.

⁵⁹ Article 191(2) of the TFEU.

⁶⁰ Article 192(1) of the TFEU.

can decide unanimously which measures to take affecting the energy sector, as stated in article 192.⁶¹

Notwithstanding the shared competences between the EU and its member states when it comes to environmental and energy issues, the TFEU appears to give the EU more room to implement the direction for the energy sector, despite the fact, that the real changes need to be made at the national level of member states.

Article 194 of the TFEU focuses precisely on the energy sector, the internal energy market and the protection and improvement of the environment. In this context, the EU needs to collaborate with the member states not only to ensure and secure the energy needs of the EU countries, but also to promote renewables energies as it is explicitly stated,⁶² meaning that renewable energies including offshore wind farms, should be a priority for the EU and its member states.

Regardless of the power of the EU to take measures in order to achieve the objectives in paragraph 1 of article 194 of the TFEU, the member states continue to have a wide margin to determine the best conditions to exploit their energy resources as well as to decide which energy sources to use.⁶³ This right to determination by the member states in some extent contradicts what is established in article 192(2)(c) where apparently the EU had the power to determine the measures in the energy sector.

Even if the TFEU can have contradicting articles when it comes to the energy sector in the EU, it can be understood that the EU and the member states share responsibility for this sector. However, the member states have the right to decide how to exploit their own energy sources as well as to decide which sources should be further developed, nonetheless, in my opinion, the TFEU is very clear in establishing that the implementation of renewable energies should be taken into account by member states when deciding which energy sources should be exploited.

As it happens on an international level, on a regional EU level, when it comes to renewable energies this appears to be an underdeveloped area, with a weak and quite fragmented legal

⁶¹ Article 192(2)(c) of the TFEU.

⁶² Article 194(1)(c) of the TFEU.

⁶³ Article 194(2) of the TFEU.

framework. When it comes to the offshore wind energy sector conditions seem to be even worse.

Nevertheless, the EU has developed a number of regulations, directives and decisions⁶⁴ with different legal applications that directly affect the renewable energy sector and in specific the offshore wind industry. Therefore, in the following section, I will attempt to identify the most relevant EU legal acts concerning the offshore wind energy sector.

2.4 EU electricity sector regulations

2.4.1 Internal Market Regulation

The internal market regulation 2019/943 is a very important instrument on a EU level as it provides a framework to further integrate the renewable energy sector into the electricity market by increasing the share of renewable energies.⁶⁵ The overall goal is to have a functional electricity market that allow the EU to have energy security to provide electricity to all member states.

The internal market regulation does not extend a great deal on offshore wind energy, although it makes some effort to put offshore energy on the map. First of all, in paragraph 66,⁶⁶ it expands on the importance of the dual functionality of offshore wind farms as energy sources and interconnectors to the shore. This dual functionality implies an important role of offshore wind energy for the EU internal market. However, there are no further comments on the development of offshore wind farms.

2.4.2 Renewable Energy Directive

The Renewable Energy Directive 2018/2011/EU entered into force at the end of 2018. The directive aimed to help the EU to meet their climate goals as well as to put the EU at the forefront of the renewable energy sector.

⁶⁴ Article 288 of the TFEU.

⁶⁵ Article 1 Regulation 2019/943.

⁶⁶ Para. 66 Regulation 2019/943.

In this directive, regardless of focusing on renewable energies, offshore wind energy is only mentioned a couple of times in Annex II in relation to wind energy but without any substantial rules on offshore wind farms.

This is something surprising, considering the importance and potential of offshore wind energy for the renewable sector in the EU and considering that as a directive according to article 288 of the TFEU, it shall be binding to member states, but it leaves national authorities the choice to decide how to do this,⁶⁷ meaning that it should be a priority to implement this type of renewable energy. However, there are no clear rules on offshore wind energy.

It is not a surprise that the renewable energy directive is currently being amended, as it does not fully answer the renewable energy needs of the EU in connection with the climate change targets and ambitious energy goals of the member states.

The proposed amendments of 2021 portrayed a very different approach in regards of offshore wind energy. In the first paragraph there is a switch towards implementing offshore renewable energy, where having offshore wind farms is a requirement for the member states in order to achieve a new target of 40% of the energy mix coming from renewable energy sources.⁶⁸

Further the directive not only seeks to promote the use of offshore wind energy, in order to secure the EU energy needs by increasing the renewable energies share, but offshore energy has its own strategy and according to the new amendments this should be a priority across all coastal states by 2050.⁶⁹ This new proposal aims to achieve 300GW coming from offshore wind energy and this ambitious goal should be reflected in the national energy and climate plans in each coastal member state.⁷⁰

Prioritizing the increase of offshore wind farms in the EU is closely connected to a closer cooperation between member states, where at some point even the grid connections should be shared in order to make the EU the most competitive market in the renewable energy sector as

⁶⁷ Article 288 of the TFEU.

⁶⁸ Para. 1 of the revised Renewable Energy Directive 2018/2011/EU.

⁶⁹ Article 9(a) of the Revised Renewable Energy Directive 2018/2011/EU.

⁷⁰ *Idem*, p. 17.

well as in the offshore wind sector. However, this remains to be seen as the amendment is yet to be approved.

The importance and the potential of offshore wind energy is something also recognized in the European Green Deal, where in order to achieve the 2030 goals, member states are required to scale up their efforts in the offshore wind industry.⁷¹

Therefore, the EU in general and its member states not only need to scale up wind energy but in order to do so, states need to scale up offshore wind energy. The EU is expected to invest notably to make these necessary changes. Investment in the offshore wind sector is estimated to be around EUR 800 billion,⁷² meaning that having a well-structured legal framework is fundamental to make this shift towards offshore wind energy.

A well-structured legal framework for the development of offshore wind energy must also comply with the current EU environmental legislation and maritime policy.⁷³ The most relevant EU instruments affecting directly the offshore wind industry will be developed in the following section concerning the offshore wind sector.

2.5 EU legislation pertinent to the development of the offshore wind sector

2.5.1 EU Habitats and Birds Directives

The Habitats and Birds Directives are very important for the offshore wind industry. Even though in neither of the Directives there is an explicit comment regarding offshore wind farms, these two directives are applicable to protect the habitats and the different species that are affected by certain projects including offshore wind farms.⁷⁴

⁷¹ EU Biodiversity Strategy for 2030. Bringing nature back into our lives. COM/2020/380 final.

⁷² JRC (2020) Facts and figures on Offshore Renewable Energy Sources in Europe, JRC121366.

⁷³ EU Biodiversity Strategy for 2030. Bringing nature back into our lives. COM/2020/380 final.

⁷⁴ Article 1 of the Birds Directive 2009/147/EC.

These directives are important in the EU particularly to protect and manage the Natura 2000 sites.⁷⁵ Despite being binding, the directives leave member states the choice to decide on the forms and methods to be implemented in order to achieve the different goals.⁷⁶

The importance is greater than ever, because today, the offshore wind industry has the potential to outperform convention energies and more than 62,000 people work in the sector.⁷⁷

According to article 6 (1) and (2) of the Habitats Directive member states shall implement the necessary conservation measures to protect the special areas of conservation, and to avoid the deterioration of the habitat, this applies to Natura 2000 sites.

Regardless of this protective goal, article 6 (3) and (4) of the directive foresees the possibility for the construction of projects in these sites as long as it follows an appropriate assessment and permitting procedure when the projects will have a significant effect on the Natura 2000 sites. This is fundamental as this appropriate assessment under this directive is mandatory and it is a requirement for the authorization of a plan or project. The article also foresees the participation of the general public, cooperation, compensation and the cases to override public interest.

According to the guidance document on wind energy development and EU legislation on nature;⁷⁸ there are five main phases of an offshore wind farm namely the pre-construction, construction, operational, repowering and removing phases; meaning that effects can arise at any moment during the life of a project. Hence, the effects on the environment may vary depending on the stage of the project and monitoring measures need to be in place to survey the impact of offshore wind farms

These effects may be permanent on the environment or temporary and they may also accumulate during the life of a project; the most common impacts are connected to the loss of the habitat, disturbance, degradation and displacement of the marine flora and fauna.

Therefore, mitigation measures and the best available technology need to be implemented in order to avoid negative effects from offshore wind farms, before, during and after a project is

⁷⁵ Article 6 of the Habitats Council Directive 92/43/EEC.

⁷⁶ Article 288 of the TFEU.

⁷⁷ European Commission, the EU Blue Economy Report - 2020.

⁷⁸ Guidance on Wind Energy Developments and EU Nature Legislation. (2020) 7730.

constructed and also coastal states need to be aware of the transboundary effects of this kind of projects especially when they are bordering the EEZ of another state. It is important to mention that the best mitigation measure is to avoid Natura 2000 sites protected by the Habitats and Birds Directives.

2.5.2 Maritime Spatial Planning Directive

The Maritime Spatial Planning Directive and the Marine Strategy Framework Directive are fundamental for the development of offshore wind farms. These two directives can help the offshore wind industry to grow in a sustainable way and should be analyzed together as they complement each other.

The Maritime Spatial Planning Directive seeks to establish a planning process that takes into consideration land-sea interactions, environmental, economic and social aspects; this Directive also seeks to promote cooperation among member states and public participation,⁷⁹ in an ecosystem-based approach. Ultimately, the goal is to identify the best places with the least negative effects to the environment.

The above purpose is to consider different factors that can contribute for the long-term protection, preservation and improvement of the environment, but this approach can also help the energy sector and the offshore wind industry to further develop.

Having plans of this nature in place that need to be reviewed at least once every ten years,⁸⁰ urges the states to minimize the impact of offshore wind developments (or any other marine project) but also encourages them to constantly assess their plans and update their content to avoid potential negative impacts on the marine environment, however, this review could be done in a more periodical timeframe.

These plans need not only to be aligned with each state national and climate plans but also with the global EU climate goals and directives in order to harmonize the different policies and prioritize the most suitable for the environment but also for the ongoing development of offshore wind farms.

⁷⁹ Article 5(2) of the Maritime Spatial Planning Directive 2014/89/EU.

⁸⁰ Article 6(3) of the Maritime Spatial Planning Directive 2014/89/EU.

2.5.3 Marine Strategy Framework Directive

As previously mentioned, the Maritime Spatial Planning Directive and Marine Strategy Framework Directive should be understood together in order to ensure an effective application of these directives towards a widest protection of the marine environment.

The Marine Strategy Framework Directive is an environmental pillar when it comes to ocean management and maritime governance.⁸¹ Regardless of being a pillar of ocean management, this Directive does not contain any explicit provisions on offshore wind farms.

The most important aspect of this directive is an obligation for member states to develop marine strategies that can help to achieve a good environmental status but also help to maintain it. Cooperation is also a central part of this directive.

An ecosystem-based approach is fundamental to implement a marine strategy in order to manage human activities in the marine area of member states, the main goal is to achieve a good environmental status.

A good environmental status affects the development of the offshore wind industry directly because on one hand it allows member states to use the marine environment in a sustainable way but on the other hand states need to ensure that there are no significant impacts or risks on the marine environment. There are however no particular provisions regulating the offshore wind industry and therefore, at the end of the day the member states have the power to decide the means to expand and regulate offshore wind farms in their territories.

In my opinion the most valuable aspect of this directive is article 5 where the marine strategy is described, in specific the different stages where an assessment needs to be conducted, including, the preparation (environmental targets, good environmental status, monitoring)⁸² and the programme of measures (reports, public information, updating, public consultation, information).⁸³ I think this structure would be very beneficial for the development of the

⁸¹ Para. 2 of the Maritime Spatial Planning Directive 2014/89/EU.

⁸² Annex I and IV of the Maritime Spatial Planning Directive 2014/89/EU.

⁸³ Annex III, V and VI of the Maritime Spatial Planning Directive 2014/89/EU.

offshore wind industry. Nevertheless, the directive is silent when it comes to identifying the best places to establish this type of farm.

2.5.4 Strategic Environmental Assessment Directive

To assess the effects and different factors around a project or a plan, an appropriate assessment should be conducted. This is not different when it comes to offshore wind farms.

For projects in general an environmental impact assessment should be the appropriate assessment, however for plans and programmes a strategic environmental assessment should be carried out. When it comes to offshore wind farms both assessments need to be integrated, because usually offshore wind farms involve projects, plans and programmes.

The Strategic Environmental Assessment Directive is an instrument of procedural nature and thus its requirements need to be incorporated by the member states.⁸⁴ This assessment should be carried out for plans and programmes that may have a significant effect in the environment but also that may be in the energy sector.⁸⁵ Therefore, it is safe to say its application for offshore wind farms is almost mandatory. Nevertheless, it remains up to the states to determine the necessity of such an assessment and its content.

Public participation and the involvement of environmental authorities appointed in each member state⁸⁶ as well as of investors in the offshore wind industry are fundamental in the decision-making process,⁸⁷ where the more information is available the more it can improve the assessment.

An environmental report shall be the outcome of the strategic environmental assessment (SEA).⁸⁸ This report shall contain all available information concerning the environmental effects of the different plans and programmes.

The report out of the strategic environmental assessment shall inform the adoption of the plan or programme, a summary of how all the environmental aspects were taken into consideration

⁸⁴ Para 9. of the Directive 2001/42/EC.

⁸⁵ Article 3(2)(a) of the Directive 2001/42/EC.

⁸⁶ Article 6(3) of the Directive 2001/42/EC.

⁸⁷ Para 15. of the Directive 2001/42/EC.

⁸⁸ Article 5 of the Directive 2001/42/EC.

and the monitoring measures in order to identify unforeseen effects that may require an early response by those responsible for the implementation of the plan or programme.⁸⁹

This directive in my opinion can be applicable for the offshore wind industry and it could also benefit this industry in order to assess the importance of a plan or programme to expand the offshore wind industry in the short, medium and long term.

Finally, this directive also allows parties to have a clear minimal structure in place that of course is not exhaustive in order to conduct a proper environmental assessment for the offshore wind industry; this could really lay the foundations that today are needed to boost the true potential of the offshore wind sector.

2.5.5 Environmental Impact Assessment Directive

The environmental impact assessment (EIA) is an instrument that seeks to protect the environment in general, especially in the decision-making process for the approval of a construction of a certain project that might have possible negative effects on the environment.

The Environmental Impact Assessment Directive⁹⁰ is an instrument of procedural nature which introduced minimum requirements to assess the effects on the environments both in public and private projects.⁹¹ This, however, does not mean that states cannot lay down more requirements in order to protect the environment. The idea behind the directive is to base the assessment on the precautionary and preventive principles pursuant the TFEU.⁹²

The list of projects that are subject to an EIA are listed in Annex I and II of the Directive 2011/92/EU. The projects listed in Annex I require a mandatory EIA for their significant effects on the environment.

When it comes to projects in Annex II, the member states have some discretion to determine if a project requires or not an EIA. This screening procedure is done to determine the effects of a

⁸⁹ Article 9(1) of the Directive 2001/42/EC.

⁹⁰ Directive 2011/92/EU amended by the Directive 2014/52/EU.

⁹¹ Article 1, Directive 2011/92/EU.

⁹² Article 191 of the TFEU.

project by a case-by-case examination or by a threshold⁹³ already implemented by the member states.

When it comes to wind farms, it is possible to identify them in article 3(i) of Annex II listed as installations of wind power. However, there is a lack of information when it comes to offshore wind farms, which could also be holding the potential of offshore wind farms.

Therefore, it is fundamental that states have a well-defined procedure to determine when a wind farm project requires an EIA and what needs to be contained in the EIA.

On one hand, if states established that this will be done on a case-by-case basis following the criteria of Annex II, this could render the process longer, as it would depend on the discretion of each national authority to determine the scope and content of the EIA. This could also affect future investments on this type of renewable energy and could also be a reason why today offshore wind farms do not meet their full potential.

On the other hand, if states already implemented a threshold when it comes to offshore wind farms and the content of the EIA for this type of project, this would give more certainty to investors about the requirements, times and expectations of the procedure itself.

However, having a standard threshold could also be problematic in order to assess the real negative effects that offshore wind farms could have on the environment as this type of investment continue to develop today and vary in terms of the characteristics of projects, location of projects and other characteristics regarding the potential impact that offshore wind farms could have on the environment.⁹⁴

The truth is that the lack of a legal framework to govern offshore wind farms on an international and regional level is a major drawback for the development of this type of renewable energy. This lack of a legal framework is also holding up investments that could benefit not only coastal countries but also could help towards the achievement of climate targets today.

Offshore wind farms in the best-case scenario are just mentioned in some legal provisions both on international and regional legislation making fragmentation and lack of legislation a problem

⁹³ Article 4(2), Directive 2011/92/EU.

⁹⁴ Annex III, Directive 2011/92/EU.

for the offshore wind industry. Today, there is not one single legal provision exclusively regulating offshore wind farms on an international or regional level.

In the following sections, I will assess the current state of the offshore wind legislation both in Sweden and Norway; thereafter, I will compare both legal frameworks in order to assess which country has a better opportunity to take advantage of the great potential that the offshore wind industry has today.

3 Sweden's offshore wind farm legal framework

The current international and regional legislation gives coastal states a lot of room to implement their own legal framework in order to regulate offshore wind farms and develop the offshore wind industry.

Today in Sweden the offshore industry has 43 projects in the planning phase; 3 projects already approved; 0 projects under construction; 7 projects in the operational phase and 6 projects that have been dismantled.⁹⁵ Regardless of having a big energy share coming from renewable energies, when it comes to the offshore wind industry, it is possible to affirm that the current status of the offshore industry is not responding to the true potential that this industry has in the country.

The time to develop an offshore wind farm can vary from 7 to 10 years or even more and the life expectancy of a project is between 25 to 30 years.⁹⁶ Therefore, having a clear legal framework and a well-established permitting procedure is fundamental in order for the offshore wind industry to grow. This, however, has not been the case in Sweden where obstacles can be found in the permitting procedure as well as in the national planning system.⁹⁷

Notwithstanding the current status of the offshore wind industry in Sweden, today the country is more committed than ever to accelerate the development of offshore wind farms. On the 15 of February 2022, the government announced that the Swedish Energy Agency will be in charge of creating Sweden's first offshore marine plan in order to identify suitable areas for the offshore wind industry.⁹⁸

This is a major step forward by the Swedish government towards the development of a strong offshore wind industry in the country, however, the results of this offshore plan will be reported by 2023 and then the official proposal to the government is expected to be submitted no later than in 2024. Regardless of this effort, the timeframe continues to be an important restraining

⁹⁵ Data extracted from database of Wind Power at <https://www.thewindpower.net/>

⁹⁶ European MSP Platform: Offshore Wind Energy.

⁹⁷ Soderholm, P., Pettersson, M. "Offshore wind power policy and planning in Sweden." Energy Policy, 2010, p. 5.

⁹⁸ Durakovic, A. "Sweden launches major offshore wind push, targets 120 TWh annually." Offshore Wind Biz, 15 February 2022.

factor for the development of offshore wind farms in the country especially when in words of Sweden's Minister of Climate and Environment "*the industry is screaming for offshore wind power.*"⁹⁹

The words of Sweden's Minister of Climate and Environment reaffirms the fact that today the potential of the offshore wind industry is undeniable, not only for Sweden with its big coastal line, but also for many European countries.

Moreover, the statement of the Minister allows us to see that regardless of Sweden being one of the countries leading the environmental change towards renewable energies, when it comes to offshore wind farms, Sweden has a lot of work ahead to really take advantage of this type of energy and integrate to its energy system in order to make a significant contribution to the energy share and most importantly to achieve the energy security of the country. And of course, this will also help Sweden to continue to surpass their environmental climate targets.

Even if the official statement for the development of offshore wind farms in Sweden is clear, in practice there are still different opposing interests that need to be assessed before installing any offshore wind project. For example, private and public interests; national and local interests; economic growth and environmental protection; and, financial benefits and public participation. Most of these challenges in the offshore wind industry remain unanswered by the Swedish legislation both on a national and municipal level.

In Sweden there is not a single law regulating offshore wind farms and in general governmental authorities are trying to follow the different stages in the life of an offshore wind farm to prevent environmental damage.

The lack of a clear legal framework could be one of the main reasons why the offshore wind industry remains undeveloped in Sweden. Another major problem has to do with the multiplicity and fragmentation of general laws that creates uncertainty and lack of security among developers.

⁹⁹ Ibidem.

In Sweden, the Environmental Code is the main law regulating offshore wind projects, however, this code does not focus entirely on offshore wind farms. This is a general law that regulates all projects that can have a significant effect on the environment.

In particular, the Environmental Code focuses on the environmental impact assessment, public consultations and permitting process¹⁰⁰ and the role of the different authorities in the permitting process;¹⁰¹ aspects that affect directly but in a general way the offshore wind industry. This, in my opinion, is the most important piece of legislation regulating offshore wind farms in Sweden, however, not the only one, nor is it exhaustive when it comes to regulating offshore wind farms.

In Sweden, municipalities have a lot of power to decide locally on numerous aspects regarding developments and projects; hence, the number of laws applicable for an industry like the offshore wind energy will depend not only on general laws like the Environmental Code but it will depend heavily on the municipality itself. Laws such as the Swedish Planning and Building Act¹⁰² reinforce this characteristic of municipal governments to decide on permits within their jurisdictions where the County Administrative Board representing the national government is the main body to decide the feasibility of a project. However, in practice municipalities can have the final word even if it is contrary to what the County Administrative Board decides on a project,¹⁰³ meaning that the municipalities can decide in a different way with regards the national plan and national objectives.

Instead of this municipal power being used in favor of the approval of projects and the authorization of permits in a fast-track that can benefit the municipality greatly, this municipal power has created uncertainty and a lack of clarity for developers in the offshore wind industry, where the lack of standards and rules for the offshore industry damage the perception of investors and thus the investments on these types of renewable projects that are so needed in a country like Sweden.

¹⁰⁰ Chapter 6, Swedish Environmental Code.

¹⁰¹ Chapter 16, Swedish Environmental Code.

¹⁰² Chapter 16, Swedish Planning and Building Act.

¹⁰³ Chapter 16, Swedish Environmental Code.

The power of municipalities in Sweden basically leaves the County Administrative Board the option of passing only projects that have been accepted beforehand by the municipalities; if this was not enough, these decisions may not be appealed.¹⁰⁴ Hence, this monopolistic practice gives a lot of discretion to the municipal authorities to decide which projects will be developed even if sometimes this means ignoring national interests and energy policies or even European and international energy goals.

In Sweden there is no one-stop-shop to get a permit, authorization or concession for an offshore wind farm. Depending on the Territorial Sea or EEZ one or more permits may be needed such as; a permit to use public waters, a permit for exploration, a building license, a concession for electrical cables, etc.¹⁰⁵ All these different permits extend the timeframe for the creation of an offshore wind farm.

Developers can apply to offshore wind farms anywhere in the Swedish Sea. However, when it comes to the Territorial Sea, all projects need to have the approval of the municipalities. This could be different in the EEZ, as the government can assign priority areas for offshore wind projects and the energy sector. Yet, so far, there are no offshore wind sites in the EEZ.¹⁰⁶

In sum, in Sweden there is no specific offshore wind permitting process,¹⁰⁷ and there are several rules, permits and elements that need to be assessed on a case-by-case basis concerning the development of an offshore wind project. Further, municipalities have the final word when it comes to the establishment of an offshore wind farm in the Territorial Sea with their veto power.

Without a doubt, in the coming years, the Swedish Energy Agency has a great mission ahead in order to expand the offshore wind industry all over Sweden. It is a very promising mission indeed but a mission that will require some time to really achieve some improvements in the offshore wind industry in Sweden.

¹⁰⁴ Chapter 6, Section 9 Swedish Environmental Code.

¹⁰⁵ Van der Palen, L. *“Concerted Action for Offshore Wind Energy Deployment.”* Offshore Wind Energy-Organization.

¹⁰⁶ Ibidem, p. 41.

¹⁰⁷ Soderholm, P., Pettersson, M. *“Offshore wind power policy and planning in Sweden.”* Energy Policy, 2010, p. 6.

4 Norway's offshore wind farm legal framework

Today, Norway is leading the renewable energy transition worldwide, where 77.4% of the total energy consumption in the country comes from renewable energies.¹⁰⁸

With a large coastline exposed to the Nordic Sea, Norway is probably one of the best (if not the best) countries for the development of the offshore wind industry in the world. Surprisingly, the country does not have any offshore wind farms in operation today.¹⁰⁹ At the moment the country has 8 projects in the planning phase; 2 projects already approved and 1 project under construction.¹¹⁰ Number rather shocking considering the potential and favorable natural conditions for offshore wind farms in the country.

In Norway, most energy already comes from renewable energy sources, mainly from onshore wind farms and hydropower plants.¹¹¹ This might be one of the reasons why the offshore wind industry has not exploded yet, given the almost perfect natural conditions of the country and the natural conditions from its sea.

Regardless of the current status of the offshore wind farm in the country, today, investing in offshore wind farms in Norway represents a great opportunity for investors in the oil and gas industry in order to transition to a greener business with an unexplored potential that could bring huge benefits in the near future and, also could help the country to cut the negative environmental impact of the oil and gas industry as well as to reduce greenhouse emissions.

In recent years, the Norwegian government has put offshore wind farms at the center of the energy conversation, due, mainly to its potential as a major renewable energy source but also its great potential to reduce the country's reliance on the oil and gas industry. Not surprisingly this shift towards an offshore wind industry in Norway has been well accepted by investors and the public in general.

¹⁰⁸ Eurostat. "Share of energy from renewable sources." Data browser, 2020.

¹⁰⁹ Newsroom. "Norway announces first offshore wind auction." Wind Europe, 17 February 2022.

¹¹⁰ Data extracted from database of Wind Power at <https://www.thewindpower.net/>.

¹¹¹ Slengesol, I. "Slik kan Norge få maks fart på havvindsatsingen." TU Energi, 25 August 2021.

Even if the Norwegian government has some ambitious plans and the expectations are high among investors, the development of the offshore wind industry has a slow start with only two sites already approved by the government namely Sørilige Nordsjø II and Utsira Nord.¹¹²

These two sites will be allocated to investors for the first time by an auction system.¹¹³ However, the process of the auction remains unclear and the timeline lengthy, something troublesome for investors interested in the offshore wind industry, especially because only major competitors have the capacity to actually bid in this auction. Interestingly enough, this challenge has sprung collaboration, alliance and partnerships among different competitors and companies in the sector which have to work together in order to be able to compete and win the auctions for offshore wind sites.

Today the development of the Sørilige Nordsjø II and Utsira Nord sites is currently undergoing a public consultation phase. This public consultation is fundamental to identify and balance multiple interests surrounding offshore wind farms and hear the voices of the wind energy industry and other interested parties. Further, this consultation will also help the Ministry of Petroleum and Energy (OED) to start the legislative process for the auctions in order to shape the regulatory framework and permitting process that will regulate offshore wind farms in the country.

The number of licenses expected for this auction is limited, however, this is expected to change in the near future as the Norwegian government has already requested the Norwegian Water Resources and Energy Directorate (NVE) the task to identify new sea areas for the future development of offshore wind farms. The NVE is expected to identify these new areas in the next 9-12 months.¹¹⁴ Thus, we can expect a fast growth of the offshore wind industry in Norway in the coming years.

The government has also been clear that the energy extracted from these first offshore wind farms is expected to be used internally just in the Norwegian market. This will benefit the

¹¹² Buli, N. "Norway readies first offshore wind tenders to spur oil industry transition." Reuters, 29 March 2021.

¹¹³ Newsroom. "Norway announces first offshore wind auction." Wind Europe, 17 February 2022.

¹¹⁴ CMS. "Storstilt satsing på havvind." Press release from regjeringen.no, 09 February 2022.

Norwegian people with lower electricity prices, but for the investors in general this approach is not very attractive, especially from a financial perspective. However, investors expect that in the near future offshore wind energy can also be provided to other European countries in order to build a solid international market for the offshore wind industry but also in order to help other European countries to achieve their climate targets.

The recent development sounds like a good step forward in the right direction towards a promising future for the offshore wind industry in Norway. Nevertheless, there are still some doubts among the investors especially concerning the auction process, the permitting process and the bidding rights for the development of licenses.

In Norway, there are two different regimes to cover offshore wind farms; one for projects inside the baseline of the country and one for projects outside the baseline of the country.

The baseline of a country is determined in the UNCLOS,¹¹⁵ which specifies that the baseline of a country is the limit within the territorial sea and the rest of the maritime zones of the jurisdiction of a country.

For projects inside the baseline the permitting process follows the same process as the regime regulating onshore wind farms. For these projects, the governmental authority in charge is the NVE. This approach is very convenient for investors, as this is the only authority involved in the whole process working as a one-stop-shop. The NVE is the only point of contact for investors throughout the application process and this authority is in charge of granting all the permits and rights for the operation of an offshore wind farm.¹¹⁶

This type of approach of one-stop-shop, is similar to the one used in some of the leading countries in the offshore wind industry¹¹⁷ mainly Denmark. In my opinion, to promote investments in any type of field, it is always fundamental to have a one-stop-shop system where investors can do all their administrative procedures as well as any other matters concerning a project in a regulated and secured environment. When rules are clear and a competent authority

¹¹⁵ Article 5 of the UNCLOS.

¹¹⁶ Plan-AE. *“Planning & permitting study for North Sea Wind Power Hub-concerning the Norwegian sector.”* North Sea Wind Power Hub Consortium. 2019.

¹¹⁷ Soderholm, P., Pettersson, M. *“Offshore wind power policy and planning in Sweden.”* Energy Policy, 2010, p. 7.

is in charge of dealing with all matters concerning projects in a specific field, certainty and security are perceived by the investors creating an ideal environment for investments to drive.

For projects outside of the Territorial Sea of Norway, there is another regime regulating this area, mainly governed by the Offshore Energy Act.¹¹⁸ This law, not only establishes that the Norwegian state has the right to utilize offshore energy resources,¹¹⁹ but also regulates offshore wind farms outside the baseline of country, where offshore wind farms can only take place once the government represented by the Ministry of Petroleum and Energy has determined and open an specific area for projects of this kind. This procedure for the allocation of licenses for offshore wind farms outside the baseline follows also the one-stop-shop model that apparently works pretty well for a number of industries in Norway with tailor-made policies.

The main goal of the Offshore Energy Act is to ensure that the utilization of this type of resource benefits the Norwegian people and that resources are used in accordance with the needs and ambitions of the society. This Act also needs to take into account, the environmental and energy needs of country when determining when, where and with whom an offshore wind farm can be constructed.¹²⁰ Here it is important to point out that offshore wind farms do not have the potential to affect marine protected areas in the country because most of these protected areas are too close to the shore.

The idea of allocating special sites beforehand is, in my opinion, extremely important in order to predict and prevent unforeseen situations that may require mitigation measures. But it is also important to control and regulate these types of projects as well as the investors involved. First, because Norway determined sovereignty of these resources and second, because Norway also determined ownership of these resources. This idea was first implemented in 1965 in the oil industry, where the allocation of 22 licenses given by the government in multiple rounds covered 78 delimited areas,¹²¹ where Norway had the control and also a partnership with domestic and international investors that followed a license system implemented by the state.

¹¹⁸ The Offshore Energy Act No 21 of 2010.

¹¹⁹ Ministry of Petroleum and Energy. “*Offshore Energy Act.*” Governemnt.no, 13 September 2021.

¹²⁰ Norsk Industri AS. “*Regulators and legislation for offshore wind in selected countries.*” DNV, p. 16, 2 June 2021.

¹²¹ Ministry of Petroleum and Energy. “*Norway’s Petroleum History.*” Governemnt.no, 23 March 2022.

We all know what happened thereafter with the success story of the oil and gas industry in Norway.

In order to allocate new sites for the offshore wind industry, the OED needs to carry out a strategic environmental assessment in order to determine which specific areas will be open for auction. The specific criteria for the allocation of sites are yet to be determined.¹²² The criteria may require the participants to pass a pre-qualification stage, and to ensure that participants have both the financial and technological means for the exploitation of the offshore wind sites.

The Offshore Energy Regulation entered in force recently in 2021 and now, it is possible to find out the licensing process as well as other requirements needed for the allocation of offshore wind farms. In general terms, the licensing process for offshore wind farms is way faster than for onshore wind projects. Basically, because for offshore wind farms, the state has the authority to decide who is entitled to get a license and the strategic impact assessment is already done before the offshore sites are even open for licensing according to the Offshore Energy Act.¹²³

The application for an offshore wind project according to the Offshore Energy Regulation is very straightforward. However, it is also lengthy, where the whole process from the approval of a project to the construction of a project can be around seven years and, in some cases, it could also be extended up to two more years.

The process starts with an investor submitting an application with a proposal for a project specific impact assessment for a defined area. Once this specific impact assessment is approved by the OED, the investor has two years to submit an application to obtain a license. If an application is submitted within the timeframe, then, the OED has the obligation to process the application and render a decision. If the license is not awarded, then the decision can be appealed to the King's council. If the license is awarded, then, the investor has two years to submit a plan for a project and around three years to build the offshore wind farm,¹²⁴ in either

¹²² Skalstad Ellensen, S., Oftedal, K., and Hilt, A. "Summary of recent development within onshore and offshore wind in Norway." DLA Piper, 28 April 2022.

¹²³ Ministry of Petroleum and Energy. "Adoption of Regulations to the Offshore Energy Act." Royal Decree 20/88, 12 June 2020.

¹²⁴ It is fundamental that the OED makes sure that offshore wind licenses and oil and gas licenses do not overlap in terms of location.

case, the OED needs to take into consideration both public and private interests in their decision-making process and licenses can be granted for a duration up to thirty years.¹²⁵

Despite the start of the development of the offshore energy regulatory framework in Norway, the details and requirements for offshore wind farms are not final, as today they are waiting for the final approval from the government.

The grid connections are another issue that has not been properly developed according to the present needs of the offshore wind industry. This is a very important factor that not only limits the energy capacity of offshore wind farms, but this could also be one of the reasons why the offshore wind industry has not exploded yet in the country. Today, it is fundamental for the offshore wind industry in Norway to have a well-established grid connection system.

The Norwegian Parliament and government have been very vocal in favor of offshore wind farms and in favor of making substantial changes to the offshore energy regulatory framework.¹²⁶

The government is expected to submit a proposal for amendments during 2022 in order to improve the auction system and also to create a speedier process for the allocation of licenses for the construction of offshore wind farms. Hence, besides excitement, there is still some uncertainty for investors that are ready to take part in the first auction of offshore wind sites in Norway.

Finally, from what the country is planning to do in order to improve the offshore wind industry, it is not difficult to imagine the bright future that the offshore wind industry has in Norway, despite being in the very early phase. With a promising auction system in the making, a one-stop-shop model for a speedy and efficient licensing process and a mature oil and gas industry that is willing and can transfer its accumulated experience and technology to the offshore wind

¹²⁵ Ministry of Petroleum and Energy. “*Adoption of Regulations to the Offshore Energy Act.*” Royal Decree 20/88, 12 June 2020.

¹²⁶ Norwegian Government. “*Major initiative to promote offshore wind power.*” Press release from regjeringen.no, 12 February 2022.

industry, along with the tradition of Norway to create tailor-made policies for its industries, the sky is the limit for the future of offshore wind energy in the country.

The Norwegian Water Resources and Energy Directorate has probably one of the most important tasks for the future of Norway and a turning point for its offshore wind industry. This task is, to identify new sites for the development of offshore wind farms and provide new grid solutions to explore the true potential of offshore wind energy in the country.

If Norway manages to take the right actions towards a future focus on the offshore wind industry, we might be witnessing the making of a new era for the country where the offshore wind industry has the potential to take over from the successful story of the oil and gas industry and make of Norway a major low-carbon electricity provider and a global leader for the offshore wind sector worldwide.

5 Comparison

5.1 Offshore wind comparative analysis

In this chapter, I will attempt to systematize the findings from chapter 3 and 4 and compare them in a table format in order to identify which country does it better when it comes to the offshore wind industry, who has a more predictable framework and most importantly who has a greater potential for the offshore wind industry for the future.

I will organize the information in a comparative format by different topics related to the offshore wind industry in Sweden and Norway. I will also give a punctuation score from 1 to 5 depending on how well the country is doing, where 1 is the minimum and 5 is the maximum.

Finally, I will provide some brief personal comments on each of the different topics compared.

#	Offshore wind topics	Sweden	Norway	Comments
1	Legal framework regulating offshore wind farms	3	2	<p>When it comes to the legal framework, both countries have relatively low points.</p> <p>Sweden has an established legal framework; however, the fragmentation of laws and multiplicity of powers makes it difficult to navigate for investors in the industry.</p> <p>Norway has an Act and a Regulation, the only two legal documents with a fairly clear procedure which is easier to navigate for investors. However, the lack of offshore wind farms in the country has made these laws outdated.</p>
2	Natural conditions	4	5	When it comes to the natural conditions of the country for offshore wind farms both countries are well

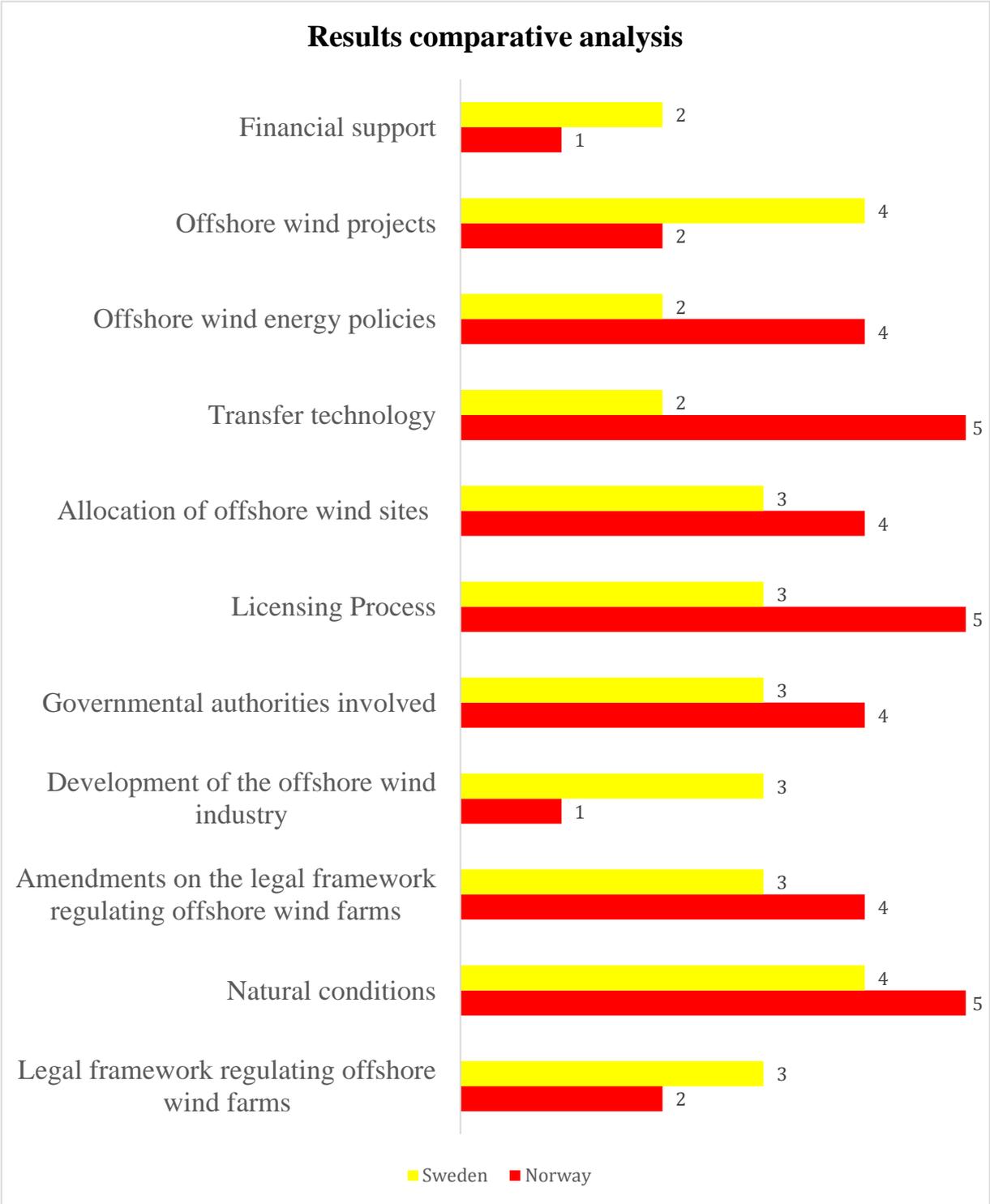
				positioned with ideal natural conditions. However, the closeness to the Nordic Sea makes Norway probably the best country in the world for the development of offshore wind farms.
3	Amendments on the legal framework regulating offshore wind farms	3	4	Both countries are in an urgent need of making amendments in order to change their legal frameworks to impulse a strong and leading offshore wind industry. However, Norway seems to be more serious about the amendments needed, especially with the current amendments that the country is planning to do to change their offshore energy regulatory framework in the short term.
4	Development of the offshore wind industry	3	1	Both countries have a relatively young offshore wind industry, with Sweden ahead just by a short but significant distance. Sweden has more experience and more offshore wind farms in place and the Swedish government is sending some signals that the country will be focusing on the offshore wind industry.
5	Governmental authorities involved	3	4	When it comes to this aspect, Norway is ahead, with the Norwegian Water Resources and Energy Directorate being the only authority responsible

				<p>for the allocation of offshore wind sites.</p> <p>In Sweden there are multiple governmental authorities that are involved in the whole process for the allocation of offshore wind projects and in some cases the different authorities can even compete between themselves with opposing interests.</p>
6	Licensing process	3	5	<p>The licensing process is quite lengthy in both countries.</p> <p>In Sweden multiple permits are required for the establishment of a wind farm.</p> <p>Norway at least on paper has a more straightforward application process that is easier to navigate for investors in general with a one-stop-shop model that offers certainty and security for investors in the offshore wind industry. However, real practice in the offshore wind sector is still needed to assess the effectiveness of the Norwegian model.</p>
7	Allocation of offshore wind sites	3	4	<p>When it comes to the strategy to allocate offshore wind sites, the auction system that Norway offers seems to be best; it gives the opportunity to the government to do an assessment before any site can be offer</p>

				<p>in an auction, so most of the administrative work is done beforehand, this way the investors can only focus on the project once the auction is completed.</p> <p>However, the Norwegian system needs to be tested yet to see if in practice is as effective as on paper.</p> <p>Finally, the quantitative criteria for the allocation of offshore wind sites are still to be defined to offer more clarity on the whole process.</p>
8	Transfer of technology	2	5	<p>When it comes to the transfer of technology from other industries that share many technical aspects such as the oil and gas industry, Norway is way ahead, with probably the strongest oil and gas industry in the world, hence, the transfer of technology is just a matter of time.</p> <p>A clear example is the joint partnership between different leading companies in the oil and gas sector that are coming together to participate in the offshore wind auction.</p>
9	Offshore wind energy policies	2	4	<p>When it comes to public policies, both countries have certain policies that support offshore wind energy in general. Nevertheless, history shows that Norway is an expert in creating</p>

				tailor-made policies for their priority industries. The oil and gas industry is a very good one that has proven to be a success and brought a lot of benefits to the country.
10	Offshore wind projects	4	2	<p>When it comes to the number of projects operating, the comparison is not even close, especially considering the time it takes to build an offshore wind farm.</p> <p>Sweden is way ahead of Norway in terms of offshore wind developments.</p> <p>In particular, Sweden has 7 offshore wind farms that are in operation when in Norway there are none.</p>
11	Financial support	2	1	When it comes to different forms of financial support, both countries are fairly weak, with no clear plans to make offshore wind an attractive investment from an economical perspective. Only time will tell.

5.2 Results comparative analysis



The comparative analysis developed in this chapter portrays Norway in the lead with better conditions for the development of offshore wind farms in general. However, the difference is minimal, where Sweden averaged a total score of 2.9 and Norway averaged a total score of 3.3, a minimum but significant difference for the offshore wind industry.

6 Conclusion

It is fair to say that today the offshore wind industry does not have an established legal framework on an international level. The lack of a legal framework that can actually answer the present and future needs of the offshore wind industry is definitely a drawback holding the development of the industry.

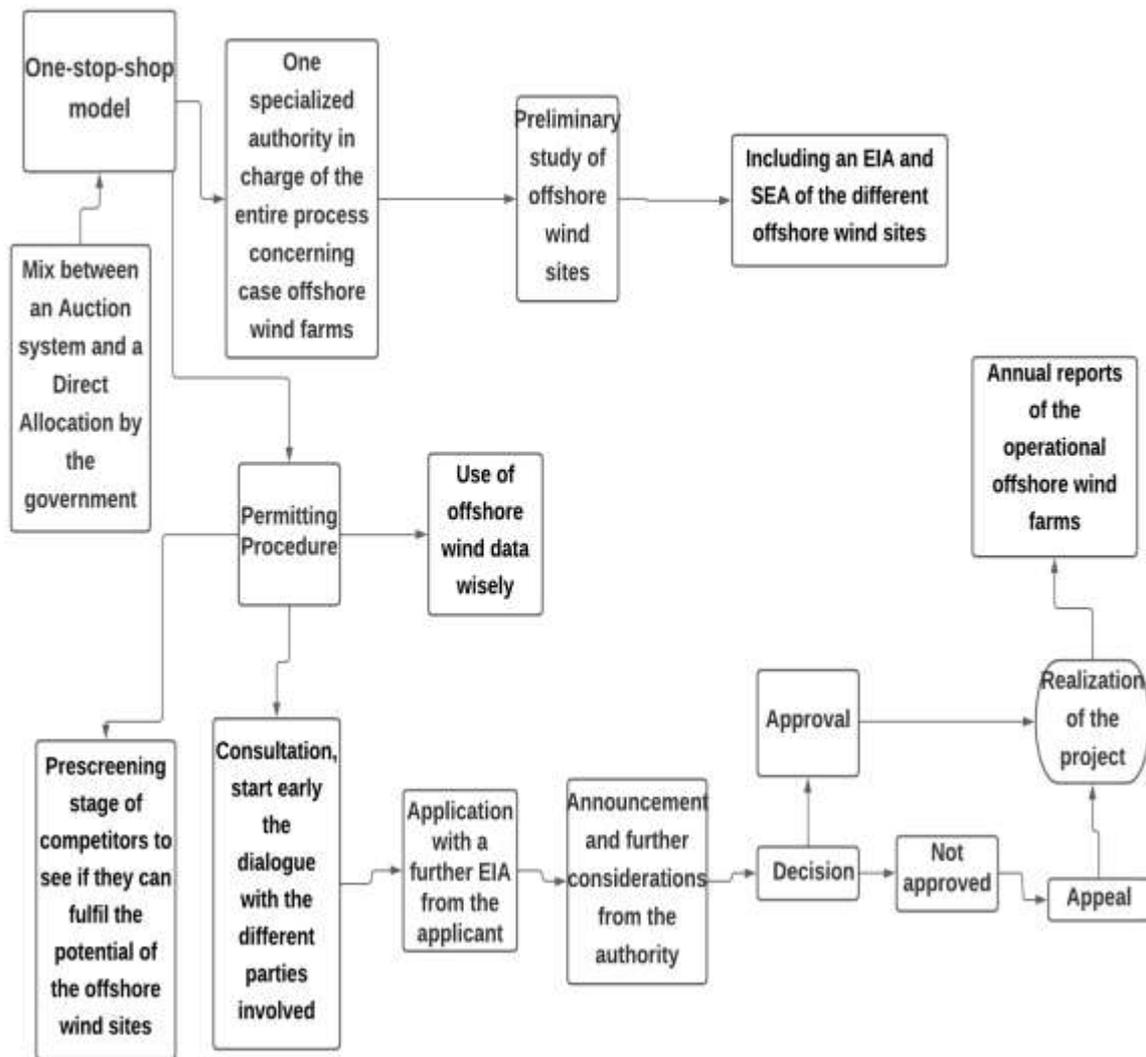
The relevant provisions on an international level are few and they are mainly part of different framework conventions. Moreover, none of these legal provisions touch upon offshore wind energy directly. Most of the provisions in these international conventions regulate the offshore wind industry indirectly or just mention it as part of the renewable energies sector or energy in general.

This is a major problem for the offshore wind industry and probably one of the main reasons why the industry has not bloomed yet to its full potential. The lack of clear rules translates in a lack of clarity and uncertainty among the investors in this industry. This helps us explain why offshore wind energy represents just a small fraction of the total amount of energy used to satisfy our energy needs globally.

On a regional level, the story is similar with no legal framework regulating offshore wind farms neither in the EU or the EEA. The different directives focus mainly on environmental protection and touch on offshore wind farms only indirectly. This is troublesome when the EU should be aiming to secure its energy independence.

Most of the different regulations on an international and a regional level focus heavily on the environmental impact assessment and the strategic environmental assessments. These are very useful instruments that have an important applicability for the establishment of offshore wind farms, but their importance is the same as in any other project that can have negative effects on the environment. There are no specific provisions for offshore wind farms.

It is fair to say that the legal and regulatory barriers exist on an international and regional level. They are mainly associated with the process to build an offshore wind farm. In my opinion, and based on what the research of this thesis suggests, the one-stop-shop model could be the most efficient and clear procedure for offshore wind farms, where the different stages towards the realization of an offshore wind farm are well established.



127

When it comes to the current status of the offshore wind industry in Sweden and Norway, there are multiple legal and non-legal barriers that are holding up the development of this industry and thus, these countries are missing a great opportunity to capitalize on the benefits that offshore wind farms offer from an environmental, economic and social perspective.

Sweden and Norway are missing much in terms of having a clear legal framework regulating offshore wind farms and an efficient permitting process, but they are also missing some important aspects of the offshore wind industry including the lack of data with respects to the environmental impact of wind farms, grid infrastructure, the necessary measures to be taken in

¹²⁷ Proposal made by the author.

pre- and post- phases of the construction of an offshore wind farm, unclear policies in the sector and the opportunity to provide energy to the European market.

These constraints are limiting the development and acceleration of an offshore wind industry in both countries. These problems need to be addressed by the member states in the EU. For a bright future for the European offshore wind industry, countries need to have a clear plan and make long-term commitments.

On the one hand, Sweden has a non-friendly offshore wind legal process for investors interested in developing this type of renewable energy. The rules are not clear and different authorities are involved in different stages of the life of an offshore wind. Along with these problems, the municipalities have a veto power to practically decide if a project is approved or not on a case-by-case examination. These problems prevent investments without a doubt.

Overall, the multiple problems existing in the offshore wind industry tend to increase the cost of and delay the establishment of a project and in some cases, there can even exist discrepancies between the different authorities involved that wears out the interests of the investors in the offshore wind sector and also, it wears out the relationship between the national and local authorities.

The result of these many problems is that Sweden has focused instead on other types of renewable energy. The lengthy process, bad acceptance of the public and other issues concerning the use of land have led to a bad perception for all kinds of wind projects in general, hindering the development of offshore wind farms.

The country has a lot to do from a legal perspective to create an accurate and straightforward process for the development of offshore wind farms. The country has also a lot to do to change the perception with regards offshore wind projects to actually embrace the great opportunity that this industry offers for Sweden.

To develop a Swedish offshore wind industry is fundamental to secure the energy needs of the country and keep reducing greenhouse emissions.

Norway, on the other hand, is a country that has put all his efforts and attention towards the oil and gas industry in recent times. The results are clear, with probably the strongest oil and gas industry worldwide. This major accomplishment has left other industries hanging waiting for clear guidelines from the government.

It is also true that renewable energies are massive in the country, however, most of the efforts have been put towards hydropower, leaving offshore wind energy waiting to develop.

On the other hand, today, Norway has finally realized the true potential of offshore wind energy. The potential is so big that it is safe to say that it could be the new oil and gas industry in the country. This shift towards offshore wind energy would mean a change of era for Norway and for the offshore wind industry globally.

The efforts that are being made in the country show us how serious is the Norwegian government to really kick off the start of a new offshore wind era. With a one-stop-shop model, a speedy permitting process, a wise use of data in the offshore industry and partnerships with highly transferable industries like the oil and gas industry, along with the work of the Norwegian Water Resources and Energy Directorate to identify offshore wind sites and lead the development of the offshore wind industry in the country; it is possible to imagine the bright future for the offshore wind industry in Norway.

If Norway is able to capitalize all these efforts, many opportunities will be open for investors in the offshore wind sector, including the government and companies in other sectors that are willing to make a shift towards a greener business model and transfer their offshore experience.

Now it remains to be seen how fast the offshore wind industry will develop in Norway. This year of 2022 will be crucial to see where the offshore wind industry goes, whether it rises to the top or the development of the offshore wind industry in the country requires more patience and work. Regardless of this, it is safe to say that the Norwegian Sea will be waiting for offshore wind farms to grow.

From the comparison in chapter 5 where different elements were taken into consideration, the total average puts Norway in the lead as a better country for the development of offshore wind farms than Sweden. This result is a little biased considering that there are no real offshore wind developments in the country yet. However, that shows us the massive expectations that the country is creating for this industry. Expectations that may finally materialize this year, in 2022.

Only time will tell how successful the offshore wind industry will be in the near future in Sweden and Norway. A legal framework, with transparency, long-term commitment and a speedy permitting procedure are key elements for the success of the offshore industry in both countries. But if Sweden and Norway are really serious about making a meaningful shift

towards this industry and visualize the true potential of offshore wind farms not only in the coming years but in the long term, then the sky is the limit.

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