Master’s Thesis: Particularities of International Construction Contracts in the Offshore Wind Industry

Subject area: Drafting and Negotiating International Contracts
International Construction Law

Problem formulation: How should standard construction contracts be modified in order to fit the needs of the offshore wind industry, and what are the challenges and perspectives of amending such contracts?

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Abstract

With the development of the UN Sustainable Development Goals (SDGs), the world is preparing for a better future and to fight towards achieving what is now considered basic human needs. The SDGs encompass different sectors, including the energy sector, at the core of my analysis. Particularly, Goal 7 (affordable and clean energy) focuses on ensuring “access to affordable, reliable, sustainable and modern energy for all”. Offshore wind is a key source of energy and relatively young compared to other energy industries, and it presents a tremendous potential for achieving Goal 7.

Offshore wind has been developing fast, and the players in the industry must learn and adapt to the innovations that occur within it. One of the challenges faced by the parties involved in a construction contract in the offshore wind industry is the variety of international construction contract standards that are available and how they need to be adapted in order to fit the needs of the offshore wind industry.

This thesis provides an overview and analysis of the current contractual challenges related to the industry, of the main ways of navigating through such construction contracts, and of the key points that parties should consider if they want to go along with an international construction standard contract.

Keywords: renewable, energy, offshore wind industry, offshore oil & gas, onshore wind, contracts, FIDIC, BIMCO, LOGIC, NTK, contractual strategies, EPC, EPCM, multi-contracting, adverse weather conditions, liability regime, knock for knock.

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List of abbreviations

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<th>Full Form</th>
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<td>BIMCO</td>
<td>Baltic and International Maritime Council</td>
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<td>CAR</td>
<td>Construction All Risk Insurance</td>
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<td>CoC</td>
<td>Conditions of Contract</td>
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<td>EPC</td>
<td>Engineering Procurement Construction</td>
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<td>Engineering Procurement Construction and Installation</td>
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<td>FEED</td>
<td>Front-End Engineering Design</td>
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<td>Final Investment Decision</td>
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<td>International Federation of Consulting Engineers</td>
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<td>FOU</td>
<td>Foundation</td>
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<td>FIDIC Yellow Book</td>
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<td>ICC</td>
<td>International Chamber of Commerce</td>
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<td>JV/JVPs</td>
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<td>K4K</td>
<td>Knock-for-knock</td>
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<td>LDs</td>
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<td>Leading Oil and Gas Industry Competitiveness</td>
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<td>O&amp;M</td>
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<td>Operation All Risk Insurance</td>
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<td>Offshore Wind</td>
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<td>PCG</td>
<td>Parent Company Guarantee</td>
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<td>Power Purchase Agreement</td>
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<td>Public-Private Partnership</td>
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<td>Service and Availability Agreement</td>
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<td>Special Purpose Vehicle</td>
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<td>T&amp;I</td>
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<td>Turbine Supply Agreement</td>
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<td>UN</td>
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<td>WTG</td>
<td>Wind Turbine Generator</td>
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Chapter 1. Introduction

1.1. Background

Offshore wind has quickly developed since the installation of the first wind farm in Denmark in 1991. Today, offshore wind energy is claimed to be one of the main sources of clean and renewable energy which presents large potential resource around the globe.2

As part of the EU Green Deal strategy,3 the European Commission presented the “EU Offshore Renewable Strategy”4 which aims for 300 GW of offshore wind energy by 2050 throughout the European Union.5 The strategy focuses on creating a legal framework, mobilizing funds, and strengthening the supply chain across the EU.6

The founder and managing director of Green Giraffe,7 Jérôme Guillet, stated in an webinar for financing of offshore wind projects that, despite the COVID-19 crisis which hit the globe, the offshore wind industry is considered “extremely bankable”.8 In addition, a study conducted by International Energy Association concluded that the forecast for the offshore wind industry is very promising,9 as the global offshore wind capacity has the potential of attracting around one trillion USD investments by 2040.10 The investment will have a huge impact on energy consumption, creating new jobs, and reducing CO2 emissions around the globe.

The technology related to offshore wind is evolving rapidly, which can cause some discrepancy between the availability of the supply chain and vessel contractors which often cannot keep the pace of the quick development of the technology. The legal framework also plays an important role, as the countries that have a favorable climate for building offshore windfarms need to quickly adapt and create the right frameworks required to attract international investors.11

The development of the industry also leads to the development of contractual standards preferred by some players in the industry. The current trends related to contracts in offshore wind present that some of the major industry players (e.g. Vestas, Ørsted, Iberdrola) have developed a set of tailor-made contracts that have their base in international construction standard contracts such as

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6 Ibidem
7 Green Giraffe is a specialist advisory firm focused on the renewable energy sector launched in 2010 by experienced finance specialists. https://green-giraffe.eu/who-we-are (accessed 22.11.2020)
FIDIC, LOGIC, BIMCO, or the Norwegian Offshore Standard Contracts,\textsuperscript{12} in addition to other related standard forms.\textsuperscript{13} However, despite the fact that there are already some industry standards developed, it is difficult to apply an international contractual standard “as is” for an offshore wind project. Therefore, contractual aspects of the offshore wind projects should be analyzed in order to understand what one can take from a standard contract and what should be changed to fit the needs of the project.

1.2. Research Question and Delimitation

This thesis aims at answering the following question:

“How should standard construction contracts be modified in order to fit the needs of the offshore wind industry, and what are the challenges and perspectives of amending such contracts?

The thesis specifically focuses on issues related to international standard contracts that are used in offshore wind projects, and on how should such standards be adapted for an offshore wind project. The thesis analyzes what are the contractual clauses that parties should closely consider when amending an international standard contract. The legal framework related to offshore wind development is not analyzed as it is outside the scope of the present research.

In addition, to understand the complexity of the offshore industry, the thesis provides a basic introduction to interrelated industries: onshore wind and offshore oil and gas, as both had an impact on the contractual development of the offshore wind industry. Further aspects such as technical, engineering, project management, permitting, or other financial and economic aspects of building an offshore windfarm are briefly described and analyzed as they are interrelated to the understanding of the industry and of the contractual mechanism of it.

The contractual strategy of offshore wind contracts is of interest and it allows to understand further the contractual risk allocation between the parties. There is no “best” solution when it comes to contractual strategies as it depends on the nature of the project, the goal and the nature of the market.\textsuperscript{14} The thesis analyzes what are the common contractual strategies used in offshore wind and identifies for what kind of parties they are suitable.

The main priority of this research is to bring light on what are the unwritten trends in offshore wind contracting, focusing on the standards of international construction contracts that are used for building such projects. Since there are many issues related to offshore wind contracting, the thesis provides an analysis of key contractual aspects, mainly the liability regime, indemnification, the vessels, and adverse weather conditions. These aspects are of particular relevance as they distinguish offshore wind contracts from classical onshore wind construction contracts.

\textsuperscript{12} See the interviews attached as appendices to this thesis.

\textsuperscript{13} If the reader is further interested in the development of an offshore windfarm, technical, financial, and other project management aspects, access the following guide:

https://guidetoanoffshorewindfarm.com/

\textsuperscript{14} Julian Bailey, Construction Law, Vol. 1, 2\textsuperscript{nd} Edition, London Publishing Partnership, 2020, p. 26
One of the contractual standards used in the industry and mainly analyzed under this thesis is the FIDIC Yellow Book. The standard was selected after conducting interviews with different professionals in the industry which confirmed its wide applicability within the offshore wind projects. In addition, the thesis provides only introductory remarks to other standards such as BIMCO, LOGIC and NTK and does not deeply explore the applicability of such standard in the OW. The FIDIC contractual standards can applied in the offshore wind projects under different legal systems, however, the legal implications and interpretation of some mechanism, is beyond the scope of this thesis.

1.3. Research Methodology

The thesis has a practical approach to the research question, and emphasis is given to empirical research. This type of research focuses on identifying the best legal means for reaching a certain goal. The legal means in this case are the contractual provisions from international standard contracts, and the certain goal is how to adapt such standards so as to achieve the "best solution" for offshore wind projects. The empirical research method was also chosen to analyze the practical implications of the industry and how do players get involved in it and regulate their contractual relations.

For the purpose of the present research, the hermeneutic research method is also used, in order to analyze standard construction contracts which are used in the offshore wind industry and to interpret relevant provisions set therein. This method focuses on text and document analysis and their interpretation.

In addition, as part of the empirical method, the interview research method has been applied for the purpose of the research. The interview method involves social interaction, based on defined questions that aim at finding a personal opinion from the interviewee related to a particular topic. The method was used for conducting interviews with experienced professionals within the offshore wind, onshore wind, and offshore oil & gas industries. The insights gained during the interview helped the development of the thesis and crystalized the “unwritten” specifics that are not yet fully developed in legal specialty books or international standard contracts but are considered “custom” in the offshore wind industry.

The interviews aimed at discovering what are the unwritten rules of the industry, specifically focusing on the construction contracts. In addition, it provided light on the lessons that can be learned from the related industries and be equally applied in offshore wind. The interviews are attached to the thesis as appendices. I am referring to them on some occasions to fill the gaps where the relevant literature or contractual provisions from international standards are silent.

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15 The international contractual standards mentioned are further discussed in Chapter 3 of this thesis.
17 Ibidem
18 Ibidem, p. 4
19 The Interview Research Method, https://www.simplypsychology.org/interviews.html (accessed on 01.10.2020)
1.4. Structure

The thesis is structured into four chapters:

**Chapter 1** provides the background of the thesis, research methodology, and delimitates the scope of the research.

**Chapter 2** provides an overview of the offshore wind industry and compares it with the onshore wind and offshore oil and gas industries from a contractual perspective. The industries were chosen due to some similarities related to the contractual provisions, contractual strategy, and some of the risk profile that they share. Further, Chapter 2 analyzes the contractual strategy used in OW; the chapter describes and analyzes what are the pros and cons of choosing a particular contractual set-up. The chapter aims at providing a basic ground for understanding OW contracts which are further analyzed in Chapter 3.

**Chapter 3** analyzes international contractual standards such as FIDIC, BIMCO, LOGIC and NTK. However, the main focus of the chapter are the FIDIC standards. Due to the complexity of offshore wind contracts, it is necessary to narrow the analysis down to some issues specifically related to offshore wind. Nevertheless, the analyzed aspects could equally apply to offshore oil and gas with some project-specific particularities. For the purpose of this thesis, the main contractual topics discussed are the liability regime and risk allocation for vessels and adverse weather conditions. The issues were selected as the FIDIC contractual standard adopted by the parties is not entirely fit for usage in offshore wind projects. Specifically, FIDIC contract does not operate with the “no fault” risk allocation, meaning that the loss is allocated to the party who suffered it, a regime known in offshore construction industry as “knock-for-knock” which is further discussed in the Chapter.20

**Chapter 4** provides a conclusion and further consideration related to the use of FIDIC contracts. The chapter analyzes the challenges that might result when amending a FIDIC contract. It is important to keep the same structure of the contract and avoid changes in the risk allocation mechanism, otherwise such changes might result in altering the contract and thus, it can no longer be addressed as a FIDIC contract. The Chapter concludes with further perspectives on creating an international standard designed for offshore wind projects.

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20 Philip Loots, Donald Charrett, The Application of Contracts in Developing Offshore Oil and Gas Projects, Informa Law, New York, 2019, p.168
Chapter 2. Overview of the Particularities in the Offshore Wind Industry

This chapter provides an overview of some of the main energy industries that have contractual similarities with OW and focuses on analyzing the contractual perspective thereof. The chapter provides a brief history on the OW industry and then turns its attention to the contractual strategies used in the OW industry.


Electricity can be produced from different sources; some of the most frequently used forms are the following:

- **Chemical energy**: generated from carbon-based fuels, it’s produced by burning;
- **Thermal energy**: generated from the heat from underground or other industrial processes;
- **Kinetic energy**: generated by “movement”, this is the case of wind power/energy. Kinetic energy could also be generated from hydroelectric dams;
- **Nuclear energy**: generated by atoms and molecules;
- **Solar energy**: generated from the power of the sun and captured in photovoltaic panels.  

To understand the contractual background of an offshore wind project, it is helpful to get a grasp of what wind power is and what the main components of an offshore windfarm are. OW is a kinetic energy form that is generated by the movement of wind power and is then transformed into electricity.  

Focusing on the contractual strategy, OW presents lots of similarities with other industries related to the contractual strategy or the delivery method.

Some of the industries which could be related to OW are the offshore oil and gas industry, this is due to the work offshore and the high risk of project complexity, and onshore wind, which shares some of the factors related to the rentability or feasibility of a wind farm, e.g. geographical position, wind power speed, and contractual strategies.  

For all the above-mentioned industries, the main actors involved are similar to other infrastructure projects:

1. **Investors** (banks, governments, private companies, etc.)
   - the parties that provide project finance;
2. **The employer (developer/owner)**
   - the party who ordered the works;
3. **The contractor**
   - the party that builds the project;
4. **Subcontractors**
   - The party that assists the employer or the contractor in building the project.

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23 See Appendix 2
24 During the present research the words employer, developer or owner will have the same meaning.
Further, the chapter analyzes the contractual strategies and particularities of offshore wind, onshore wind, and offshore oil & gas.

2.1.1. Offshore Wind

OW industry is a relatively new compared to onshore wind or offshore oil & gas. The world’s first offshore windfarm, Vineby, was developed and installed in Denmark in 1991. During this time, the industry has evolved at a quick pace to provide clean energy and ensure a transition from fossil fuel to clean renewable energy. Since OW is a relatively new industry, it is important to note that there are a lot of lessons learned that could be implemented from other big infrastructure projects, which are explored in the following chapters.

As mentioned above, wind power produces kinetic energy. The wind turbines and the generator capture and convert the kinetic energy into electricity. In the case of offshore wind energy, a specific area must be designated to be able to build one. Typically, an offshore windfarm needs the following conditions:

1. located in an area with relatively shallow water (of little depth);
2. not far from the coastline;
3. favorable windspeed.

The building of offshore windfarms is also associated with high risks and high costs. An average budget for a 1GW offshore windfarm would be around EUR 135.000.000. The cost is including development, consulting services, environmental surveys, and other related services necessary for development. To get an overview of how an offshore windfarm works and how complex the contract management process is, please see the below pictures:

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26 Wind Exchange, What is Wind Power? https://windexchange.energy.gov/what-is-wind (accessed on 05.11.2020)
27 The conditions for floating offshore wind may be different as they can be installed in deep water and far from the coastline.
As shown in Figure 1 and 2, an offshore windfarm consists of various elements which combined can generate and deliver electricity. The elements of windfarm in contractual strategy terms are referred to as “packages”. Each “package” reflects a component or a scope of the windfarm which can be allocated in a single bundle contract or divided into diverse agreements. These considerations are further explored in subchapter 2.2.32

In order to successfully build and generate electricity, the windfarm goes through certain phases which can be delimited as follows:33

1. Development and project management;
   - Typically, some of the activities related to this stage will be securing the planning (the future site where the windfarm will be built), providing environmental analysis (how the windfarm will impact the surrounding environment), design of the windfarm, and activities focused on engineering and procurement aspects.34

2. Installation and commissioning;
   - This stage involves the construction process, transporting windfarm components to the manufacture site and then installing them on the offshore site. Furthermore, the commissioning stage involves the completion of works and that the windfarm is ready to operate and generate electricity. 35

3. Operation, maintenance, and service;
   - After commissioning, the windfarm needs to be operated and it requires maintenance and service. At this stage, the employer will contract an operation and maintenance contractor who will cater for a safe operation and will maintain the physical integrity of the windfarm and a will ensure that the windfarm generates electricity.36

4. Decommissioning.
   - This stage marks the end of the windfarm life and provides for removal of the windfarm components and the disposal of equipment.37

For the purpose of the research, the development and installation phases are analyzed as they involve setting up the contractual strategy necessary for procuring the offshore windfarm components and the construction and installation of it.

Regarding contracts used in the OW, some of the main agreements identified while interviewing professionals in OW are variations of FIDIC contracts, LOGIC, or the Norwegian Offshore Standard Contract.38 These agreements are further analyzed in Chapter 3.

32 See Table 1.
33 N.B. The focus of the thesis is not to provide insights into all the 4 mentioned stages, as it involves various procedures and information which are outside the scope of the present work. However, the main aspect that is analyzed is the contractual part.
35 Ibidem, p. 79
36 Ibidem, p. 105
37 Ibidem, p. 120
38 See the interviews in the Appendix 1 and Appendix 3.
The most common variation of an international standard contract used in OW is the Yellow FIDIC, primarily the 1999 version. It is critical to note that if the employer chooses to go along with a FIDIC form of agreement, this should be heavily amended as it is not entirely fit for the use in offshore wind. However, in practice, the parties tend to keep the same form/structure of the agreement. FIDIC forms are convenient since most of the players are familiar with them and with the procedures, therefore from a contractual management perspective they are easy to deal with. This might explain why the FIDIC approach/structure is one of the common tools used in OW.\textsuperscript{39}

As further provided in Chapter 3, the “original” FIDIC form would not be 100% fit to be used in offshore wind contracts. Parts of it will be heavily amended due to the fact that FIDIC is an “onshore” construction contract, not designed to be used offshore in the first place.

Besides the construction contracts that are the core of the present research, other types of agreements are necessary before proceeding with the construction. Below are few examples of contracts concluded during the preliminary phase: \textsuperscript{40}

- **Master Service Agreement (MSA):**
  - This is an agreement between the employer (SPV) and a project management company that has the expertise of managing offshore wind projects. The project management company would typically act on behalf of the employer and provide guidance. This is an optional agreement, and it depends on the actual experience of the employer. The set-up under an MSA is further discussed in the 2.2.2. EPCM subchapter.

- **Survey contracts:**
  - Survey contracts are concluded with different companies that can provide analysis and studies necessary for obtaining the permits for building the windfarm. Such contracts may include the environmental analysis survey (necessary for establishing the species that are present in the perimeter of the windfarm site), geological and hydrological surveys (that will assess the engineering characteristics of the site) etc.\textsuperscript{41}

- **Front-End Engineering and Design (FEED) contracts:**
  - In simple terms, FEED refers to basic engineering, and it involves studies prior to the procurement phase related to windfarm system design.\textsuperscript{42} These contracts may include aspects related to basic engineering (technical aspects of the windfarm) and the design (e.g. depending on the subsea bed conditions, what type of foundation should be used), project schedule (providing a timeline of how much will take to build the offshore wind farm), costs estimates for the project and procurement of certain type of equipment if necessary.\textsuperscript{43}

\textsuperscript{39} Quotation mark is used to emphasize that parties are referring to FIDIC which is in fact a bespoke agreement that has the same structure and similarities with FIDIC. The agreement is based on it but is heavily amended. In practice, parties create a new document to capture the General and Particular Conditions in a single document, rather than amending the General Conditions in the Particular Conditions which would cause confusion and difficulties in performing the contract. This aspect is further discussed in Chapters 3 and 4 of the present research.

\textsuperscript{40} This list is not exhaustive.

\textsuperscript{41} Guide to an Offshore Wind farm, Catapult, BVG Associates, \url{https://guidetoanoffshorewindfarm.com} (accessed on 23.02.2021)

\textsuperscript{42} Ibidem

To better understand its complexity, it is relevant to outline how the life cycle of an offshore windfarm project might look like. This might present one of the following scenarios: an investor or a group of investors would form a Joint Venture entity. The JV would then create a Special Purpose Vehicle (SPV) which would act as the developer or the employer of the project. The SPV is created as a separate legal entity for the purpose of isolating the financial risks of the investors.44

Further, if the SPV does not have the necessary personnel to cater for an offshore wind project, it can engage project developers (e.g. under a Master Service Agreement mentioned above) or award the entire offshore windfarm contract (which will include all the components) to an experienced contractor that will deliver the project “on key”, meaning that the contractor will take care of all the construction and project management aspects.

In all OW projects, the parties need to initiate the procurement process and identify potential suppliers that will be able to provide the offshore windfarm components. The procurement phase typically begins with a Request for Information (RFI) which is a process to gather information from potential suppliers.45 At this stage, the internal procurement team of the SPV or the developers procurement team will engage with different suppliers for offshore wind parts and will request them to participate in the Request for Proposal (RFP) phase.46 If the supplier is interested in the contract, it will be required to participate in the RFP process and send a preliminary proposal that will be specifically designed for the contract or project needs.

Further, the procurement team will analyze the proposals collected during the RFP and will initiate an Invitation to Tender (ITT) process, during which the suppliers from the RFP phase considered fit for the project will be invited to submit their bids for an award of contract. If the procurement team does not find the desired suppliers during the RFP, they can make a public announcement and invite other contractors for a public tender.

The ITT phase is usually organized in 3 stages, and at each stage one supplier will be excluded from the tender so that in the end the contract is awarded to a single supplier. The developer would engage around 3 suppliers for a specific contractual package (e.g. the foundation or the WTG package. Each supplier will submit a proposal based on the information provided by the employer.

The ITT package may include, but not exhaustive, the following documents:

- Invitation letter;
  - A letter inviting a specific supplier to participate in the tender, which will include all the documentation.
- A confirmation letter from the supplier;
  - When the supplier has received the invitation letter, it has to provide the employer with a confirmation that it received the tender documentation, stating its intention to participate or not participate in the tender. If the supplier rejects the invitation to tender, the supplier will be required to delete all the confidential information it has received in the previous phases.

46 Ibidem
• Other documents, such as the instruction for submitting the tender, eligibility, and qualification.

Further, if the supplier accepts to participate in the tender, it will have to submit its proposal, suggested prices, etc. At this stage, the employer will also provide the conditions of contract for the specific packages, and the supplier will have to provide its reservations to it during a specific period.

In most of the cases the developers have their contractual template which they would apply worldwide, while considering local law requirements and other limitations or particularities required by a specific project. The parties would normally negotiate the same key issues as in other construction contracts, such as:

1. Securities;
2. Design liability;
3. LDs/Penalties and delays;
4. Taxes and customary duties;
5. Insurance;
6. Governing law & Dispute resolution;

In the process, the parties will have regular meetings to negotiate the agreement, and at certain time, the employer will decide whether to proceed with a supplier at 2nd tender level or to exclude it from the process.

Another challenge present in the industry at the planning stage is the accelerated development of technologies, to which all parties in the industry constantly have to interface themselves with. Technological developments could lead for instance to the creation of turbines that are bigger than what estimated. Normally, the parties would conclude the procurement process and reserve a vessel for transportation and installation of components of the wind farm up to 4 years in advance. However, the abovementioned scenario of the creation of bigger turbines might result in challenges, such as finding an appropriate vessel to install them.

The permitting and consenting part is different from country to country. Especially new markets such as Eastern Europe or South America might not have the appropriate legal framework for building an offshore windfarm, which creates further challenges for investors and contractors to build and operate in those areas.

Appropriate legal framework refers to the capacity of a country to cater for offshore wind projects. Specifically, whether the country has access to the sea, and if so, whether it has appropriate legislation in place that would permit leasing a specific portion of the sea for building an offshore windfarm. Besides the consenting, the law should also provide appropriate regulations for building the offshore grid connection. For example, in 2012 an amendment to the German Energy Act was made. This included an obligation to the transmission system operators to provide an offshore grid

47 see Appendices
development plan which would include key milestones and other technical aspects related to the installation of the offshore grid connection.49

In addition, power purchase agreements should be entered to ensure that the developers would be able to sell the electricity generated by the windfarm. The obligation to engage in PPA agreements with the developers might also be provided by mandatory law to protect them from not being able to commercialize the electricity.

Furthermore, different studies related to the environmental assessments and impact of the offshore windfarm to marine biodiversity are required for getting permits. Therefore, before proceeding with an investment in a country who does not have the appropriate legal framework, the investors will often initialize discussions with the country’s representatives to start and help drafting the framework.

Regarding the risk profile, some of the main risks associated with working in offshore wind are:

<table>
<thead>
<tr>
<th>Construction risks</th>
<th>Operating risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Grid availability and connection risk;</td>
<td>“Regulatory change risk;</td>
</tr>
<tr>
<td>Contract and sub-contract interface risk;</td>
<td>Bearings risk;</td>
</tr>
<tr>
<td>Credit risk of major suppliers;</td>
<td>Cable reliability;</td>
</tr>
<tr>
<td>Weather risk;</td>
<td>Warranties and liquidated damages availability risk;</td>
</tr>
<tr>
<td>Financing availability;</td>
<td>Gearbox risk;</td>
</tr>
<tr>
<td>Harbor bottleneck risks;</td>
<td>Cable availability;</td>
</tr>
<tr>
<td>Generic supply chain bottlenecks;</td>
<td>Wind risk;</td>
</tr>
<tr>
<td>Foundation design and quality risk (certification);</td>
<td>Blade risk;</td>
</tr>
<tr>
<td>Soil conditions/ground risk;</td>
<td></td>
</tr>
<tr>
<td>Turbine design risk (certification);</td>
<td></td>
</tr>
</tbody>
</table>


The parties can mitigate the above-mentioned risk in their contract by ensuring proper risk allocation. What you can typically see in offshore wind, is that not in all cases the parties allocate the risk based on the Abrahamson Principles.51 The principles provide that “the risk should be borne by the party who can best manage it”.

The Abrahamson Principles are referring to in the FIDIC Golden Principles (GP) in “GP3: The Particular Conditions must not change the balance of risk/reward allocation provided for in the GCs [General Conditions]. The GP3 states that:

“In defining roles, duties, obligation and rights, a contract explicitly or implicitly allocates risks to either one or both party of the contracting Parties. (...) the Abrahamson principles, well known to construction lawyers, are widely regarded as the basis of «balanced» or «fair» risk reward allocation.

The key 5 risk allocation principles provided by Abrahamson are as follows:

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50 Also, in: Nadine Gatzer, Thomas Kosub, Risk and Risk Management of Renewable Energy Projects: The Case of Onshore and Offshore Wind Parks, FAU, 2015, Table A.1, Appendix
“[A] party should bear a construction risk where:

1. It is in his control, i.e. if it comes about it will be due to wilful misconduct or lack of reasonable efficiency or care; or

2. He can transfer the risk by insurance and allow for the premium in settling his charges to the other party ... and it is most economically beneficial and practical for the risk to be dealt with in that way; or

3. The preponderant economic benefit of running the risk accrues to him; or

4. To place the risk on him is in the interests of efficiency (which includes planning, incentive, innovation) and the long-term health of the construction industry on which that depends; or

5. If the risk eventuates, the loss falls on him in the first instance, and it is not practicable or there is no reason under the above four principles to cause expense and uncertainty, and possibly make mistakes in trying to transfer the loss to another.”

In practice, if the parties heavily amend an international standard contract like FIDIC, the employer might allocate the risk in an unbalanced manner. A study provided by the Engineers Australia and the Chamber of Commerce and Industry of Western Australia found out that, among other things, the risk was often shifted to contractors which were not able to handle it, as the risk allocation was different from a standard construction contract. This raises a major concern for offshore wind industry where, at the present time, there is no “official” industry standard provided to allocate the risk between the parties. As in other construction projects, the parties in OW would allocate the risk on various mechanisms such as insurance, limitation of liability clauses, guarantees, and other types of securities.

2.1.2. Onshore Wind

Another form of generating renewable and clean energy is through onshore wind turbines. Denmark was a pioneer also in this sector, providing the world’s first multi-megawatt wind turbine – T vindkraft already in 1979. The turbine, built in Denmark and never patented offered the world practical and theoretical knowledge for the development of the future onshore wind energy sector.

Today, onshore wind is an attractive source of clean energy across the globe. The world’s energy generated by onshore wind is around 530.3 GW compared to 319.8 GW offshore wind. To ensure the best outcome, an onshore wind farm typically needs the following conditions:

• “accessible sites;
• high average wind speed;
• located close to existing grid networks;”

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52 Ibidem
55 Ibidem
57 Pau A. Lynn, Onshore and Offshore Wind Energy, An Introduction, John Wiley & Sons Ltd., 2012, p. 144
As the industry is mature compared to OW, most of the countries have developed a regulatory legal framework for building such projects and set the appropriate procedures for gaining the right certification and permits.

For onshore wind certain steps need to be taken before the development of the farm. This is a general list of steps, which can vary from country to country:
1. Land acquisition;
2. Wind resources analysis;
3. Permitting;
4. Transmission and interconnection;
5. PPA and financing;
6. Environmental review;\(^5^8\)

Regarding the contractual strategy, parties may choose between different contractual set-ups. Some of the commonly used are Engineering, Procurement, Construction (EPC) or the multi-contracting strategy. The contractual strategies are further discussed in Subchapter 2.2

The EPC set-up is preferred by inexperienced employers which do not want to take the risk associated with the building of the wind farm. However, this also implies a lower control in the project and a higher price paid by the employer. As discussed in Appendix 2, the multi-contracting strategy is used in the onshore wind due to the maturity of the industry and the risk appetite of the players involved.

Since the industry is well developed, most of the countries already have an adequate framework for obtaining permits to build an onshore wind farm. The risk profile has similarities with the offshore wind industry:

<table>
<thead>
<tr>
<th>Business risk</th>
<th>The risk is associated with quick development of technologies and its impact on project planning.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logistics</td>
<td>This risk requires advance planning in ensuring safe transportation of windfarm components, preventing, or anticipating natural hazards and mitigate the risks.</td>
</tr>
<tr>
<td>Legal, regulatory and political risks</td>
<td>The risk is associated with changes in laws. legal disputes, claims during the project, political interference in the permits or passing the appropriate legislation which might result in project being delayed.</td>
</tr>
<tr>
<td>Market and financial risks</td>
<td>The risk is related to the uncertainty of the market related to energy price or the financial performance of the contractors.</td>
</tr>
</tbody>
</table>

**Table 2. The risk profile of onshore wind farms\(^5^9\)**

There is no preferred standard contract by the industry as most of the developers would go along with a local construction standard used in the country of development of the wind farm. In Australia, for example, the New Engineering Contract (NEC) is used,\(^6^0\) in Denmark AB contracts are normally


\(^{5^9}\) Nadine Gatzer, Thomas Kosub, Risk and Risk Management of Renewable Energy Projects: The Case of Onshore and Offshore Wind Parks, FAU, 2015, p. 7

\(^{6^0}\) See Appendix 2
utilized, but there is mainly a project management perspective and risk allocation split that is applied to the contract as the work is not so complex as in an offshore project. In addition, most of the countries would have a developed standard contract that follows the country’s law. However, there is no standard imposed by the industry. In Norway, the 1999 FIDIC Yellow Book is preferred for building onshore wind farms.\textsuperscript{61}

Some of the lessons learned from onshore wind industry could relate to the procurement part and contract management. It is common that professionals would transit to offshore wind industry companies and bring in the know-how from onshore wind.

2.1.3. Offshore Oil & Gas

Offshore oil & gas contracting has its particularities, especially in the stringent health and safety requirements, quality assurance, and environmental compliance to mitigate hazards.\textsuperscript{62} Compared to OW, the OOG industry is mature and well developed and has over 100 years of experience that can also be valuable to other offshore construction projects.\textsuperscript{63} The stages related to an OOG project are similar to other infrastructure projects:\textsuperscript{64}

1. Development and project management;
2. Design, construction, and commissioning;
3. Exploitation and maintenance;
4. Decommissioning.\textsuperscript{65}

The preferred contractual set-up in OOG is mainly Engineering, Procurement, Construction, and Installation (EPCI) or multi-contracting. In the EPCI set-up the contractors that would deliver the project “on key” have a smooth transition from the basic engineering and design phase (FEED) part to the construction phase, meaning that the contractor is the one who designed, and it is now ready to proceed with construction, being already familiarized with the design.\textsuperscript{66} The industry prefers to award contracts as bundle packages. This might be expensive at a first glance, but it creates a better environment for the project and reduces the interface risks between different agreements.

Some of the characteristics associated with OOG are the complexity of operations, the danger of pollution that might occur during the drilling or transportation of the oil, which might cause oil spills.\textsuperscript{67} Therefore, in such contracts, the requirements of safety and compliance with environmental regulations and quality assurance are more severe compared to other infrastructure projects.\textsuperscript{68} Hence, it is a priority that the parties regulate all the contractual aspects to be in compliance with statutory laws and regulations related to the safety of the personnel on the site.

Typically, the parties involved in such projects can base their contracts on general standard construction contracts which can take one of the following forms:

\textsuperscript{61} Mikal Brondmo, Oil and Gas Projects in Norway: Recent developments within offshore construction, Construction Law International, 13(1), p. 34
\textsuperscript{62} Philip Loots, Distinguishing features of marine construction contracts in oil and gas, Construction Law International, 13(1), 2018, p. 40
\textsuperscript{63} American Oil & Gas Historical Society, \url{https://www.aoghs.org/offshore-history/offshore-oil-history/} (accessed 29.11.2020)
\textsuperscript{64} The phases share similarities to the one mentioned in Subchapter 2.1.1 for the offshore windfarms.
\textsuperscript{65} Philip Loots, Donald Charrett, The Application of Contracts in Developing Offshore Oil and Gas Projects, Informa Law, New York, 2019, p. 2
\textsuperscript{66} See Appendix 1
\textsuperscript{67} N. Bret-Rouzaud, J.P. Favennec, Oil and Gas Exploration and Production, Reserves, costs, contracts, 3\textsuperscript{rd}, Technip, Paris, 2011, p. 277
\textsuperscript{68} Philip Loots, Donald Charrett, The Application of Contracts in Developing Offshore Oil and Gas Projects, Informa Law, New York, 2019, p. 5
Particularities of International Construction Contracts in the Offshore Wind Industry

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- General Conditions of Contract (e.g. FIDIC, LOGIC, NT/NFK) 69
  - This also implies adjusting the General Conditions and Particular Conditions of the Contract accordingly to fit the project;
- A bespoke contract typically developed by the employer.

Similarly to OW, the contractors in OOG have less appetite for risk compared to onshore work.70 The risk allocation in offshore contracts is done differently compared to the aforementioned “Abrahamson Principles”. In OOG, it is common for the employer to shift a big part of risk towards the contractor. Despite the fact that it might not be efficient, and the risk is outside of contractor’s control, some contractors are willing to take such risks, which will certainly be reflected in a contract price increase.

The risk is allocated contractually by inserting clauses to limit or exclude liability or provide indemnity in certain events.71 The risk allocation is due to the uncertainty and unpredictability of offshore operations.72 This is also a reason why the knock-for-knock regime is used in offshore contracts. The regime ensures that “the loss or damage lies where it falls”, which in such complex agreements helps to enable a good working mechanism related to claim management and encourages the parties to ensure a safe working environment.73

The standard contracts in OOG have a contractual mechanism for allocating risk based on the scope of work. Different contractual standards can be used to perform the work, and some of the preferred standards for such contracts are reported in the table below.

<table>
<thead>
<tr>
<th>SCOPE</th>
<th>STANDARD</th>
<th>DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey contracts</td>
<td>AIPN’s International Model Seismic Acquisition Contract.</td>
<td>The contracts are used for collecting seismic data which are necessary prior to the drilling operations.</td>
</tr>
<tr>
<td>Drilling contracts</td>
<td>LOGIC the Model Drilling Contract</td>
<td>The contract is used for offshore drilling below the seabed which allows the exploration of petroleum.74</td>
</tr>
<tr>
<td>Vessel services</td>
<td>BIMCO Agreements</td>
<td>The contracts are used for engaging vessels on different scopes, such as transportation and carriage of specialists, cargos, and various project components that must be transported from the shore yard to the offshore site.</td>
</tr>
</tbody>
</table>

Table 3. Types of standard contracts used in OOG75

OOG also presents an interest for OW industry due to similarities that those two industries share. Such projects involve heavy equipment, installation of cables in the seabed and specialized vessels for installation and transportation.76

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69 Mikal Brondmo, Oil and Gas Projects in Norway: Recent developments within offshore construction, Construction Law International, 13(1), 2018, p. 34
70 Philip Loots, Distinguishing features of marine construction contracts in oil and gas, Construction Law International, 13(1), 2018, p. 41
71 Philip Loots, Donald Charrett, The Application of Contracts in Developing Offshore Oil and Gas Projects, Informa Law, New York, 2019, p. 11
73 Richard W. Williams, Knock-for-knock clauses in offshore contracts, Offshore Contracts and Liabilities, Prof. Baris Soyer and Andrew Tettenborn, Informa Law, 2015, p. 58
75 Philip Loots, Donald Charrett, The Application of Contracts in Developing Offshore Oil and Gas Projects, Informa Law, New York, 2019, p. 91-92
### Particularities of International Construction Contracts in the Offshore Wind Industry

Cristian Rubanovici

| Offshore wind | 1) Significant capital investments; |
|              | 2) High risk due to construction in deep waters and unpredictable weather and seabed conditions; |
|              | 3) Limited availability of vessels and other specialized equipment; |
|              | 4) The necessity to contract and plan several years in advance; |
|              | 5) Bespoke agreements based on standard forms; |
|              | 6) Knock-for-knock regime. |

| Offshore oil & gas | 77 |

Table 4. Similarities between OW and OOG Contracting

### 2.2. Contractual Strategies in the Offshore Wind Industry

Building offshore is associated with considerable risks and an enormous amount of money. Therefore, the contractual set-up presents an interest for both investors and developers, as the risk allocation and the price of the contract could be determined based on this. All the participants involved in such projects are interested in assuring a smooth development of the project and avoiding disputes as much as possible. As in other construction and infrastructure projects, the law does not generally provide a specific way in which the project should be organized. Normally, the developers have the freedom to decide the delivery method. The delivery method is referring to the contractual strategy of the project, mainly to whether the parties will have the project deliver “on key” or whether the developer will manage the contracts separately.

Some of the main factors in choosing the right delivery method depends on the following:
   a) Nature of the project;
   b) Objectives of the procurer of the works and preferred form of procurement;
   c) Nature of the market.

Regarding offshore wind, the set-up can be determined by the following:
   a) High costs;
   b) Accelerated development of technology;
   c) Logistics.

In the following subchapters, three contractual strategies are presented and analyzed in the context of OW.

#### 2.2.1. EPC/Turnkey

An EPC/Turnkey contract is the set-up in which the contractor would assume the full responsibility for the project delivery, and it means that the product would be ready for the employer to be used – “turn the key”. Typically, such contract would be based on a lump-sum price. EPC and Turnkey contracting are usually similar but there are some variations regarding EPC and Turnkey as separate

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77 Philip Loots, Donald Charrett, The Application of Contracts in Developing Offshore Oil and Gas Projects, Informa Law, New York, 2019, p. 2
80 Ibidem
81 Ibidem p. 41
contracts. Usually, the variation differs on the risk split or scope of work, i.e. which party takes what. 82

The contractual structure in such projects would typically involve private investors and banks who would create an SPV, in which the inventors and banks would have shares and control. It can also take the form of a Public-Private Partnership. Then the SPV company can enter into an EPC agreement with a contractor who would take the obligation to design, supply, construct, install and commission the wind farm. In some cases, the EPC contractor might undertake the operation and maintenance (O&M) duty. However, the O&M obligation is often subcontracted.

In offshore wind, the full EPC wrap is not very common. However, some packages might be tendered in a bundle (combining different scope of works in one), and the project might be split in 1 to 3 major contracts that could be awarded as packages/scopes to one contractor which can later subcontract part of works. It is also unusual to see the EPC set-up where the contractor designs and constructs the project, 83 as such set-up would lay an obligation, typically avoided by contractors, of “fit for the intended purpose”. 84 This is normally avoided because the contractors do not want to assume a design life risk. 85

The EPC wrap presents a higher price compared to other contracting strategies, which is due to the fact that the contractor would take most of the risk. From an employer perspective, this set-up presents a safe method of building a windfarm, but at the same time, it removes the control from the employer as the EPC contractor would be in charge regarding various project deviations. The EPC set-up is suitable for an employer with relatively little or no experience at all in the industry.

This set-up is well suited to handle various risk interfaces and assure successful completion of the project, however, it also requires an experienced EPC contractor. 86 If this is the case, then the project developer would typically appoint the main EPC contractor who will take responsibility for design (with certain limitations), construction and commissioning of the windfarm. 87

The benefits of having an EPC wrap would be in handling various interfaces between the packages. For example, in the case of the foundations and WTGs, the interfaces risk would be lower if the same contractor is responsible for handling both packages. In practice, if two contractors are involved, it is necessary to ensure a proper mechanism for exchanging relevant technical data that could affect the construction and installation of the packages. Some of the risk related to foundation and WTGs is due to the heavy winds while working offshore. 88

The risk allocation in the EPC contracts lies mainly with the contractor. In some cases, the EPC contractor would also be responsible for site investigations, including wind data. The ICC case no.

85 In MT Hojgaard a/s v E.ON Climate and Renewables UK, [2014] EWHC 1088 (TCC); [2014] BLR 450, the Contractor was in breach of his obligation to complete the works for a minimum lifespan on 20 years.
12090 (2004) (ICC, 2012) presents a scenario where the EPC contractor had the duty to design, supply and install the turbines which failed after 5 years of commissioning due to high winds on the site. The EPC contractor argued that it did not have the duty to investigate site data, but only the duty to supply the works. In this case, the ICC tribunal found that it is with the EPC contractor to design and supply appropriate WTGs that would suit the site and that the result would fit the requirements of the contract. The reasoning might also be tied to the English concept of fit for purpose, which argues that the work shall be intended for the scope set by the contract. In the above case, to generate power for 20 years.

Therefore, referring to particularities of an EPC wrap, the parties shall be clear in risk allocation in order to avoid any ambiguities or misinterpret the contractual obligation. For reference, Clause 2.5 “Site Data and Items of Reference” from FIDIC Silver Book 2017 states that:

“The Employer shall have made available to the Contractor for information, before the Base Date, all relevant data in the Employer’s possession on the topography of the Site and on subsurface, hydrological, climatic and environmental conditions at the Site. (…)”

“(...) The Employer shall have no responsibility for the accuracy, sufficiency or completeness of such data and/or items of reference, except as stated in Sub-Clause 5.1 [General Design Obligations].”

The exceptions to the reliance of data are also provided in Clause 5. In this case, it is most likely that the employer would be liable for technical data or employer requirements (ER) that were provided to the contractor. At the same time, the industry operates with the concept of “an experienced Contractor” and even if the ER were with errors, would an experienced contractor have found them and prevented from occurring? In the bespoke agreements in OW related to WTGs one can find both approaches where the “site data” responsibility lies with the employer or the contractor.

Assuming that the project was based on the FIDIC Silver Book, then the contractor had the obligation to ensure that the site conditions are suitable for the WTGs that it was supposed to deliver, and that the WTGs would be able to generate electricity under different weather conditions. In addition, since it was an EPC set-up, the design obligation was also with the contractor. In this sense, Clause 5.1 from FIDIC Silver Book 2017 also provides the responsibility on the contractor on scrutinizing all the information offered by the employer, while removing any responsibility from the employer for the accuracy of the information. In practice, the EPC wrap in OW mainly refers to minimizing the interfaces between different packages and handling risk in an efficient manner, but the EPC contractor would most likely shift the design risk to the employer. Another reason why the EPC setup is not very often encountered in OW is that it involves previous lessons learned where contractors suffered heavy losses due to assuming risk which were out of their control.

To summarize, the EPC contract strategy would be preferred by less experienced employers which would enable them to minimize their risk exposure.

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90 Ibidem
91 FIDIC Silver Book is an EPC/Turnkey standard contract which provides that the contractor must deliver the work “on key”.
92 FIDIC, Conditions of Contract for EPC/Turnkey Projects, 2017, General Conditions, Clause 2.5
2.2.2. EPCM

The EPCM deliver method stands for “Engineering, Procuring and Construction Management”. In the EPCM method, the employer would enter into a number of agreements with one or different professionals, who will advise the employer on how to act while working for a specific construction/infrastructure project. The contracted parties are typically engaged in assisting the employer on managing the project and ensuring a proper and timely delivery of it.

This contractual set-up is often used in offshore wind by project management companies. In practice, after establishing the SPV (the future wind farm company), the SPV would contract a project management company who will provide services under a Master Service Agreement in assisting the SPV with all the particularities of building and procuring parts for the offshore windfarm.

This set-up might be preferred by unexperienced developers or by those developers who are willing to take more risks. The EPCM set-up is cheaper compared to a classical EPC set-up where the EPC contractor would take a big part of risks and would deliver the project “on key”. In the EPCM set-up, the EPCM contractor is not taking any liabilities related to the construction of the project. Below you can see a comparison between EPC and EPCM set-up which will provide a better understanding into the two strategies:

<table>
<thead>
<tr>
<th>Number of contracts</th>
<th>Bundle packages, form 1-3 contracts;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Price</td>
<td>Relatively high, usually lump-sum price;</td>
</tr>
<tr>
<td>Risk Exposure</td>
<td>Low, usually capped, requires an experienced EPC contractor;</td>
</tr>
<tr>
<td>Employer control</td>
<td>Low, might be issued with transparency and influence on project deviations;</td>
</tr>
</tbody>
</table>

Table 5 Overview of EPC Contractual Strategy in OW from an Employer perspective

| EPC | • A design and construction contract;  
|     | • A single contractor takes the responsibility for the completion of works;  
|     | • The EPC contractor is a party to the construction of the project.  
|     | • Usually project financed with a fixed lump sum price;  
|     | • The EPC contractor takes of works from the development to the commission phase, and some-times for the O&M;  
|     | • Friendly to less experienced employers;  
|     | • Usually international standard construction contracts - e.g. FIDIC (EPC/Turnkey Contracts, the Silver Book); |
| EPCM | • A professional services contract;  
|      | • The EPCM contractor only administers the contract and is not part of the construction contract;  
|      | • The EPCM contractor acts as an agent of the employer, develops the design, and manages the construction, including managing direct contractual relationships between the employer and the suppliers. |

Table 6 Comparison of EPC and EPCM Contractual Strategy

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95 Klee, p. 172  
The EPCM contractor acting in an offshore wind project will be engaged in providing services or contracting design companies to engage them in providing the detailed design of particular OW packages. In addition, the EPCM contractor would assist the SPV with procurement and construction management on behalf of the SPV.

The structure of such set-up is presented as follows:

![Diagram of EPCM structure](image)

**Figure 3. Overview of EPCM structure** 98

The owner will contract directly with suppliers and contractors that would deliver and build the project, and the EPCM contractor will assist the owner in it. It might be that the EPCM contractor engages directly with the suppliers, however, only acting as an agent of the owner.

Regarding the liability regime of the EPCM contractor compared to an EPC contractor, the latest would be liable for almost all parts of works related to contract management and construction, whilst the EPCM contractor would be typically liable for the professional services provided to the SPV, e.g.:

- "delivery of design;"
- budget preparation;
- time schedule preparation;
- management of procurement;
- and, coordination of the design and construction works". 99

It is also worth highlighting that in both EPCM and EPC, in most cases, the contractors will not take the design risk, unless they are the employers involved in the project. 100 The EPCM is a sensible set-up and it is commonly based on trust and strong relationships between the employer and the EPCM contractor, as the employer needs to trust the EPCM contractor’s capabilities and allow him to fully act on its behalf in developing the construction project.

Some of the specific problems arising under such contracts are related to the interfaces, delays and other claims for payment and extension of time, which are responsibility of the employer in all cases.

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99 Klee, p. 193
Other responsibilities related to the employer would be the delivery of the project, care of works, and reaching the budget.\textsuperscript{101}

The EPCM contractor would usually be responsible for procurement and contract & construction management. Regarding procurement, the EPCM contractor would set the procurement strategy, advise the ordering of equipment and make relevant recommendations for technical parts of the works.

In respect to contract & construction management, the EPCM contractor would supervise the works, prepare the agreements to be entered by the employer with other contractors and ensure quality assurance.

Considering the fact that the EPCM contractor is not part of the construction contract and has no liability towards the design or completion of works, some of the common complains that he might face from the employer could refer to:

- failure to obtain competitive bids or select the wrong contractors;
- lack of transparency in the tender process;
- failure to carry the engineering works according to the schedule;\textsuperscript{102}

Regarding payment, usually the EPCM contractor is paid a project fee divided monthly across the term of the project for the performance of its role.

To sum-up, the EPCM strategy is mainly an assistance to the employer who has little or no previous experience in coordinating the projects or who wants to assume a higher degree of risk and proceed with multi-contracting strategy.

The EPCM contractor could engage or suggest the employer an EPC, multi-contracting, or a hybrid strategy which is further explored.

2.2.3. Multi-contracting

A well-known method in the energy and infrastructure industry is the multi-contracting set-up. This procurement strategy involves splitting different contractual scopes or packages and tendering them as single packages (e.g. Turbine Supply Agreement, Foundation Supply) or as a bundle package (e.g. Supply & Installation). The strategy provides that the employer would engage different contractors separately to work on single packages.\textsuperscript{103}

In practice, an SPV would be set-up by the equity providers or financers. Further, the SPV would consider if it requires or not an EPCM contractor. For example, if the employer has extensive experience, and in-house professionals who can assist with the project, then it will avoid engaging an EPCM contractor in the project to develop and administer the construction. Otherwise, if the employer does not have the capabilities to coordinate the project using its resources, it could make use of and engage a project management company under a service contract (as mentioned in 2.2.2 EPCM) to provide guidance on procurement and to manage the tender process and various


\textsuperscript{102} Philip Loots, Donald Charrett, The Application of Contracts in Developing Offshore Oil and Gas Projects, Informa Law, New York, 2019, p. 61

interfaces between agreements at the construction phase. Using the multi-contracting strategy in OW would result in awarding around nine main contracts which will cover the key aspects of the future wind farm.\(^\text{104}\)

Below you can see the allocation of the packages that the employer would tender to different contractors:

When tendering the packages, the employer bears a big part of the risks, including the interface management that could arise between different packages as some of them depend on the work provided by other contractors.

From a contractor perspective, this can be advantageous, as the contractors would typically limit their risk exposure when a number of other players are involved in the construction of the works.\(^\text{106}\)

On the other hand, using this strategy can present significant advantages also for the employer, especially due the low cost that it offers in a comparative aspect to an EPC set-up. In addition, the degree of control from the employer in this set-up is higher, meaning that the employer can intervene at each stage of the project by making different changes and perhaps updating to newer technologies that might be required during the development of the project.\(^\text{107}\)

Some of the disadvantages associated with this set-up for the employer are related to lacking of professionals in-house that can provide the necessary expertise for managing the project, and the high financial risk which might affect the project in case of a contractor’s default. Hence, the employer (or the EPCM contractor) must be able to handle and manage all phases of the project (e.g. procurement, installation and commission).\(^\text{108}\)

Further, as this set-up presents a huge amount of complexity and it involves different stakeholders e.g. suppliers of different parts, installers of the foundation and WTGs, vessel operators, and other


\(^{107}\) Ibidem

packages such as cables and substation. Having various contractors can result in interfaces between agreements and works, meaning that completing a milestone for a specific work, will trigger the beginning of the other, and if the first is delayed, it will result in delay for the second action.\textsuperscript{109}

In order to prevent potential interfaces, the employer must include an interface clause in the contract, and an appendix that is usually defined as “Division of Responsibilities Matrix” which includes a matrix that sets out the responsibilities of other contractors involved in the project. In addition, the contract would bind the contractor to cooperate with other contractors to ensure a timely and efficient project development, in particular on areas of works which more packages are interrelated. The contract may also provide that the duty to cooperate on interfaces might extend to the contractor’s subcontractors.

Breaching the interface obligation (if it has a serious impact on the project) might lead to serious consequences under the contract such as LDs or termination. Therefore, both the employer and the contractor need to cooperate and ensure that the contractor’s programme should be properly aligned with the employer’s programme and cater for all interfaces.

In practice, this set-up is mainly used by experienced project management companies (e.g. EPCM contractors) and developers such as Ørsted, Vattenfall or Equinor, as they have the capability of investing in technical and management skills of their personnel and they would be able to take the interface risk in this set-up, instead of entering into an EPC agreement and pay a high price to the EPC contractor to undertake it.\textsuperscript{110}

The Multi-contracting strategy could be summarized and presented as follows:

<table>
<thead>
<tr>
<th>Number of contracts</th>
<th>9+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Price</td>
<td>Relatively low</td>
</tr>
<tr>
<td>Risk Exposure</td>
<td>High; requires an experienced employer with in-house staff to handle the interfaces</td>
</tr>
<tr>
<td>Employer control</td>
<td>High/direct</td>
</tr>
</tbody>
</table>

\textbf{Table 7 Overview of the Multi-contracting strategy in OW from an Employer perspective}

\textsuperscript{109} Alex Bomfiled, Weather risk in Offshore Wind construction contracts, Lukas Klee, International Construction Contract Law, 2\textsuperscript{nd} Edition, John Wiley & Sons Ltd, 2018, p. 627

Conclusion and Perspectives of the Contractual Strategy

As the OW industry matures at a quick pace, the players involved have to be creative in selecting the right contractual strategy that would allow them to maximize their revenue and to ensure a proper project delivery.

To maximize profit, the parties could use the hybrid contractual strategy, which comprehends two or more contractual strategies. For example, by engaging an EPCM contractor to manage the project on behalf of the employer. Further, the EPCM contractor would conduct the procurement process and it can wrap some packages in EPC and the rest could be tendered as separate contracts under a multi-contracting strategy.

The hybrid set-up would allow the employer to benefit from a high control on the project, ensuring a good project financing and, at the same time, keeping a small project team on board to cooperate with the EPCM contractor.

Also, the hybrid set-up under multi-contracting enables to award small contract scopes that could facilitate local content, which is a condition in most of the emerging markets that are willing to develop offshore windfarms. Local content refers to the engaging of local suppliers in a project, and is usually required by the governments in PPP projects.

The local content or supply chain commitments can be drafted as a contractual obligation to the contractors to maximize the number of suppliers and subcontractors that are from the region where the windfarm is built. This, of course, should be possible at a standard market price without high increase in the contract price.

In conclusion, if the above characteristics of the hybrid set-up are met, significant financial results for the project can be generated.

The Hybrid set-up could be summarized as follows:

<table>
<thead>
<tr>
<th>Number of contracts</th>
<th>4-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Price</td>
<td>Medium</td>
</tr>
<tr>
<td>Risk Exposure</td>
<td>Medium</td>
</tr>
<tr>
<td>Employer control</td>
<td>High</td>
</tr>
</tbody>
</table>

Table 8 Overview of the Hybrid strategy in OW from an Employer perspective
Chapter 3. Contractual Particularities of the Offshore Wind Contracts

This Chapter analyzes particularities of offshore wind contracts, outlines the common standard contracts used in the industry, and focuses on some contractual challenges that parties need to consider.

For the purpose of the research, four standard contracts were selected. Namely the FIDIC Yellow Book, BIMCO SUPPLYTIME 2005, LOGIC Conditions of Contract for Marine Construction 2004 and the Norwegian Total Contract 2015 (NTK).

The main focus of this Chapter focuses on the FIDIC Yellow Book (FYB) as it is considered one of the preferred standards for OW projects. While analyzing other contractual standards, a reference will be made to some of their particular clauses that can be taken and implemented in the FIDIC Yellow Book standard.

Further, the Chapter analyzes some of the main aspects related to offshore wind contracts, the liability regime and the vessels and adverse weather conditions. As a consequence, the FYB has to be adapted to cater for different potential liabilities, the constant hazard at sea and for various scenarios that might include property damage, personal injuries and other administrative and permitting considerations.111

3.1. Standard Construction Contracts in the Offshore Wind Industry

Starting an offshore windfarm project provides that the developers must take into consideration various aspects that might affect the project, e.g. the permits, the procurement strategy, the contract and allocation of risks. Advance planning and selecting the right contract standard will ensure a smooth delivery of it. Choosing a standard form might appear easier at first, since most of the industry players might be already familiar with it. However, the standard contract forms usually are not entirely fit for the intended purpose, and since OW is a relatively new industry, the parties have to carefully select and adapt the contractual standard they intend to use.

Some of the common contract standard forms used when building an offshore windfarm are the FIDIC, LOGIC and NTK. BIMCO is also used, but mainly for transportation of windfarm components and installation vessels.112 Among other things, the advantages of using a standard form are linked to the fact that insurance companies, financing parties (e.g. banks) and suppliers are familiar with the form, thus, this will facilitate the negotiation process and the contract review by the involved parties.113

111 Source: Baris Soyer, Andrew Tettenbord, Offshore Contracts and Liabilities, Informa Law, 2015, preface
112 Busch, p. 445
3.1.1. FIDIC

FIDIC (Fédération Internationale Des Ingénieurs-Conseils/International Federation of Consulting Engineers) is a renowned international engineering association which was founded in 1913 by France, Belgium and Switzerland. Since then, FIDIC contributes to the construction, engineering, and infrastructure industries by providing risk-balanced contractual standards that are designed for different infrastructure projects.

FIDIC operates with a various suite of contracts, but some of the most used forms are the 1999 versions, especially the following three books:

- The Red Book, Conditions of Contract for Construction – used for works where the employer provides the design;
- The Yellow Book, Conditions of Contract for Plant and Design-Build – used for works where the contractor provides the design based on the employer’s requirements which are an integral part of the contract;
- The Silver Book, Conditions of Contract for EPC/Turnkey Projects – where the contractor will assume the biggest part of risks and will deliver the project “on key”.

FIDIC also published a new 2017 edition of the above-mentioned suites, but at the current stage, the 1999 version is still often used by the industry, as most of the players in the industry are familiar with the existing approach. Most of the OW projects are drafted in the spirit of the FYB 1999. However, not all the packages might be suitable for FYB, and parties can choose other books based on the scope of work:

- “Yellow Book – WTG, foundations, substations, internal cabling;
- Red Book – Internal cabling, soil survey
- Gold Book – WTG, including operation
  - This is a version mainly used in Public-Private-Partnerships projects, and after the end of the project it provides provisions for operating the facility for a certain period of time;
- Green Book – Soil survey
  - This version is usually used for small scope works;
- White Book: Engineer, design and other consultants.”

It might be of interest to understand why are FIDIC standards relevant in the OW context. This might be due to the fact that in the early stages, as referred in Appendix 3, some of the major OW developers use a FIDIC standard for their projects and since then, a bespoke FYB was mainly driven by the industry. Employers would use a FIDIC standard for their project to attract more bidders and to reduce price in the offers submitted by contractors. The price reduction in tenders is a consequence of contractor’s familiarity with the standards, hence it does not require them to engage extra resources for a thorough legal review and risk assessment.

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115 Klee, p.522
116 Busch 447
117 Klee, p. 524
Overall, the advantages of using a FIDIC form are the following:

- **Risk balanced** – providing that the risk is allocated to the party who can handle it;
- **Suitable for international projects** – usually, when the counter parties are from two different countries, it is important to find a common contractual ground. The contracts are drafted in English. However, some of the books are translated in other languages and may be used in local projects.
- **Suitability across different legal systems** – the contract is normally suitable to be applied in both civil and common law systems, and it is also widely used in the Middle East countries in the Sharia systems. This is also due to the fact that the forms do not specifically refer to a legal system or to laws of a country.
- **Standardization of the contractual conditions** – FIDIC provides the general conditions that are to be applied by the projects, and parties are free to adjust it in the Particular Conditions to suit project needs.
- **Fit for project finance** – investors and other stakeholders are familiar with the contractual approach, which provides more certainty from their side.

For offshore wind projects, FIDIC Yellow Book was adopted, as in most cases the contractor would build and design the works. It is also suitable from a project or contract management perspective as the contractors are familiar with it. Each industry has its own particularities. Therefore, FIDIC books provide a section that is drafted by the parties – the particular conditions. When using the Particular Conditions (PCs), parties can slightly deviate from the General Conditions (GCs) by amending them in the PCs.

OW projects involve elements as construction, supply, transport, and installation. FYB is mainly designed for onshore construction, supply (and transport), however, no provisions for installation offshore, hence the heavy amendments which are incurred in such contracts which are briefly explained further below.

On the other hand, a big part of the contractual obligations between the parties in OW are compatible with FYB 99’ approach:

- **The engineer and determination mechanism:**
  - The engineer in a FIDIC contract is a person appointed by the employer who acts as a contract administrator and manages the construction project on behalf of the employer.\(^{118}\)
  - The determination mechanism is provided in FYB 1999 in Sub-Clause 3.5, and it refers to a procedure where the engineer settles a claim from either the employer or the contractor.\(^{119}\) The claim may refer to costs, extension of time or other contractual matters.

- **Compliance with permits:**
  - The contract would provide who should obtain particular permits, licenses, or approvals for proceeding with the works. This can apply to both parties.

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\(^{118}\) FIDIC Yellow Book, 1999, Sub-Clause 1.1.2.4
\(^{119}\) Klee, p.7
• Extension of time (EOT) mechanism:
  o This is a mechanism that allows the contractor to request additional time for completing the works if it incurred in any delay under specific circumstances provided by Sub-Clause 8.4 of the FYB. The circumstances might refer to e.g. unforeseeable events, or any delay attributable to the employer. The engineer would be required to make a determination under Sub-Clause 3.5 and assess whether the contractor is entitled to an EOT or not.

• Contractor’s and employer’s rights and obligations under the contract e.g. the use of data, health and safety obligations:
  o The parties might also keep and slightly modify the contractual rights and obligations, in most of the cases the structure will be similar to what FYB provides, with certain adjustment that might be required under local law.

• Contractor’s design obligation:
  o The design obligation is provided by Sub-Clause 5.1 and it states that “the Contractor shall carry out, and be responsible for the design of the Works”. This will also be the case for OW projects - the contractor will design and build the works.

• Employer’s Equipment (if relevant):
  o In some cases, the employer might provide the contractor with equipment necessary to perform the works.

• Commencement, delay, taking over, suspension and termination clauses;
  o The taking-over refers to the risk transfer meaning that at a certain period of time when works are almost completed, the engineer will have to issue a taking-over certificate that will approve the works and will transfer them into the employer’s risk. The taking-over is regulated under Clause 10 in FYB.

• Defect liability period and defect notification mechanism:
  o After the issuance of the taking-over certificate, starts the defect notification period (DNP). The DNP is regulated under Sub-Clause 11.1. The DNP is around 2 years after the issuance of the taking-over certificate, and during this period the contractor has to remedy almost all the defects associated with the works.

• Securities and insurance, required by the financing parties;
  o To ensure that the contractor will perform its obligations under the contract, the employer will require securities such as a Parent Company Guarantee or a Performance Bond, and a Warranty Bond. The bonds secure that the contractor will perform its duty according to the contract, and in case of contractor’s default, the employer can cover some costs from the bonds issued by the contractor. The bond can be “conditional” or “on-demand”. If the contractor issued a “conditional” bond, the employer would have to prove contractor’s default, and both the guarantor and the contractor can raise objections whether a default occurred or not. While under an “on-demand” bond, the employer does not need to provide anything, and it will simply inform the guarantor that the contractor breached the contact and the guarantor will have to pay the employer on its first request.  

• Variation mechanism:

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A variation refers to an adjustment to the scope of works or to the employer’s requirements. The variation is instructed by the engineer; however, the contractor can also submit a proposal if it will improve, accelerate, or reduce cost of the works.\textsuperscript{121} The mechanism is necessary for a smooth implementation of the project and it proves efficient in dealing for example with uncertain situations.

- **Force majeure mechanism:**
  - This is provided under Clause 19 FYB. In case of a force majeure event, the contractor might be entitled to an EOT.

- **Dispute resolution and Dispute Adjudication Board (DAB):**
  - The FIDIC dispute resolution mechanism provides a 4-tier dispute resolution procedure. Initially it starts with a claim (e.g. contractor’s claim for cost or EOT which the engineer will assess through the determination procedure). If the contractor does not agree with it, then it can send a notice of dissatisfaction which will be further examined by the DAB.
  
  Further, FYB provides for an ad-hoc DAB that the parties will have to appoint in the event of a dispute. The DAB will issue a decision which is binding, and the parties have to comply with it.\textsuperscript{122}
  
  If the parties do not agree with the DAB decision, they are required to settle the dispute through an amicable settlement before proceeding to arbitration, if it fails, then an arbitration tribunal will settle the dispute between the parties.\textsuperscript{123}

The listed approach is providing a tested and practical contract and construction management mechanism defining each parties’ responsibilities, empowering the engineer to administrate the contract, to make determinations and approve variations which might be necessary in the execution of the project.

However, the above-listed mechanism is generic and suitable for different construction projects. At the same time, the use of a classic FYB approach is incompatible with an OW project from many perspectives, such as the fact that the works are happening offshore. The parties are of course able to provide the project specific provisions in the PCs. This procedure might be encountered due to the contract size. For example, the GCs of the FYB 1999 has 63 pages, and the amendments in the Particular Conditions might result in another 40-50 pages. Therefore, when reading a FIDIC contract, the parties will have to keep the GCs and the PCs together as the PCs will often provide changes to GCs. This might be cumbersome for the engineer or both the employer and the contractor when reading the contract and ensuring a smooth contract management process.

Considering the complexity when amending the GCs, the industry took an approach of merging the GCs and PCs in a bespoke version of contract, which has almost the same contractual mechanisms provided by the FYB. The risk that arises with such modifications is that the FIDIC form can no longer be addressed as a FIDIC contract.

The FIDIC Golden Principles (GP), 2019 edition, in the introduction states:

\textsuperscript{121} FYB 1999, Sub-Clause 13.2
\textsuperscript{122} FYB 1999, Sub-Clause 20.4
\textsuperscript{123} FYB 1999, Sub-Clause 20.6
“More and more frequently, FIDIC now experiences applications of “FIDIC contracts”, where significant changes to the General Conditions [GC] are made by means of replacing, changing or omitting part of the wording there the GCs through the Particular Conditions [PCs]. The replacement and changes introduced have lately been found to be substantial and of such extent, that the final contract no longer represents the FIDIC principles, and thus are jeopardizing the “FIDIC brand”, and misleading tenderest and the public [emphasis added].” 124

Thus, if a FIDIC standard is amended by merging GCs and PCs in the same document, this can no longer be called a FIDIC contract, and a recommendation in this sense would be that parties who use FIDIC contracts in OW do not refer to it in the invitation to tender as a FIDIC contract, as it might constitute an infringement to the copyright of FIDIC. If, however, the parties would prefer to address the contract as FIDIC, it is recommended to coordinate such changes with the FIDIC organization and ensure that the party who intends to call the amended contract FIDIC, gets a license from FIDIC organization which will either approve or reject the changes incurred in the document. 125

To avoid the copyright infringement, the parties must not publish the amended Conditions of Contract and they might also need to avoid using the FIDIC name in the ITT (if it is a public call). In the negotiations, however, the parties, can informally refer to their contract as a “FIDIC based” contract who namely has the same structure/wording, including the necessary amendments to be fit for the intended OW project.

Another point to note is that during negotiations, parties tend to refer to FIDIC principles or FIDIC standards where they want to shift risks or make the contract provided by the employer more balanced. FIDIC GP regulates this aspect in the GP3 which states that “Particular Conditions must not change the balance of risk/reward allocation provide in the GCs”. 126

Practically, the parties are already shifting the balance of risk when merging the GCs with PCs. The question might arise of why parties still use or call a contract FIDIC? In practice, it can no longer be addressed as a FIDIC contract, as it is in breach of FIDIC Golden Principles. However, as discussed in the Appendices to this thesis, the parties would informally refer to it as FIDIC. However, in the tender documentation, the contract would not be referred to as FIDIC. 127

For example, a modified version of FYB would be used for the Turbine Supply Agreement, which is a contract for supply (or for supply and installation) of the wind turbine generators. 128 Therefore, specific provisions must be inserted to make the contract suitable for such works. The following aspects should be considered by the parties when amending a FYB: 129

- Interface risk clauses – mainly imposing a cooperation obligation between the contractors when using a multi-contractual strategy. As the work usually interferes with different

125 Klee, p. 490
126 Ibidem, p. 9
127 See Appendix 3
129 Note: this list is not exhaustive
packages, and a delay from contract might result to a delay of other, hence the whole project will be delayed.

- **Health and safety procedures** – when working offshore, it is important to fill all the mandatory requirements provided by the country where the project takes place, usually a clause will be inserted in the CoC and then detailly regulated by the Employer’s Requirements.

- **Seabed (soil) risk** – specifically relevant for subsea cables and for the installation vessel to jack-up. Parties would normally allocate the risk either to the employer or the contractor based on the contractual strategy and will further conduct seabed investigations before proceeding.

- **Adverse Weather Conditions** – since the work is offshore, weather is an important factor that might affect the project. Usually parties might agree that if adverse weather conditions occur, this might not be considered a force majeure event.

- **Power Curve Warranty/Test** – this would provide an amendment to the actual conditions in FIDIC related to the test on completion. The power curve implies that the WTGs are functional, and they need to work for a certain period of time in order for the test to be considered passed.

- **Knock-for-knock indemnity** – this is an inheritance limitation of liability regime from offshore oil & gas, which is needed for works offshore, parties will usually cover their loss without having a claim towards other despite the negligence of the tortfeasor.

- **Installation vessels, crew transport vessels (CTV) and cooperation with such suppliers** – the agreement should cater for offshore operations and ensure cooperation between different contractors;

- **Marine Warranty Surveyor (MWS) provisions** – the MWS is an independent insurance expert who examines and approves offshore transport operations for different parts of the windfarm that have to be installed. After obtaining a certificate from the MWS, the contractor is able to proceed with the installation of the OW components.

Further, there are the commercial schedules and project specific technical specifications regulated by the ERs. Both the schedules and the ERs are linked to the contract. The commercial schedules would refer to forms such as securities that the contractor needs to provide and are considered condition precedent for the commencement of works.

Another generic aspect to other construction contracts are the commercial schedules. Some of the schedules are usually required from a project finance perspective to ensure that the contractor will deliver the works in accordance with the contract and, in case of a default, to provide the employer and the project financing parties with solutions to cover their losses. For example, the financing parties, would usually require the contractor to provide:

- **Parent Company Guarantee:**
  - If the contractor has a parent company, the employer might require the parent company to guarantee that in case of contractor’s default, the parent company will cover the losses.

- **Contractor Warranty Bond:**

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Particularities of International Construction Contracts in the Offshore Wind Industry

Cristian Rubanovici

- This will secure contractor’s duty to repair the defects within the Defect Notification Period.\(^\text{131}\)

**Contractor Performance Bond:**
- This will secure contractor’s obligation to complete the works, the performance bond will be returned after the taking-over of the works.\(^\text{132}\)

**Subcontractor Collateral Warranty:**
- The contractor will usually subcontract some part of works, if so, the employer would require a collateral warranty. This is a contract between the subcontractor and the employer which will enable the employer to bring a claim against the contractor if there are defects on the subcontractor’s works.\(^\text{133}\)

In addition, the employer would attach to the offshore windfarm technical specifications, which will be listed in the ERs. The ERs are specific documents related to the scope of work for different packages. The documents would normally include:

- The scope of work;
- Programme for completion of works;
- Health and Safety requirements;
- Listing necessary permits to be obtained by the contractor and the employer;
- Quality requirements;
- Other package specific technical requirements.

In the priority of documents, typically would be the contract agreement and the CoC, then the commercial schedules and after the ERs. The contract would also provide a similar mechanism as in FIDIC books related to errors, ambiguity and discrepancy in the documents provided by the employer. For example, Sub-Clause 4.7 [Setting – Out] of FYB 1999 provides that:

“(...) If the Contractor suffers delay and/or incurs Cost from executing work which was necessitated by an error in these items of reference, and an experienced contractor could not reasonably have discovered such error and avoided this delay and/or Cost, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub- Clause 20.1 [Contractor’s Claims] to:

(a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
(b) payment of any such Cost plus profit, which shall be included in the Contract Price.”

The clause operates with the term “an experienced contractor” therefore, if the engineer or the DAB finds that an experienced contractor would have found the error, the contractor will not be granted a relief under Sub-Clause 4.7.

Overall, the contractual mechanism in OW is similar to other infrastructure projects, but as usual, parties may deviate from the traditional FIDIC approach. The same issues related to other international projects are discussed and negotiated between the parties. However, referring to the specifics, parties will discuss in addition, the risk allocation for negligence, for adverse weather

\(^{131}\) Klee, p. 705
\(^{132}\) Ibidem
conditions and provisions related to the installation vessel. These aspects are further analyzed in Sub-Chapter 3.2.

3.1.2. BIMCO

BIMCO (Baltic and International Maritime Council) is a renown NGO with more than 1900 member companies, spread in 120 countries which represents shipowners, charters, ship brokers and agents, and which was founded in 1905. The goal of BIMCO has always been to “promote and secure global standards and regulations for the maritime sector”. Mainly, BIMCO is providing international standard contracts which are to be used by the shipping industry and other maritime commercial activities.

One of the widespread version of BIMCO contracts is the SUPPLYTIME, which was launched back in 1975, as a consequence of an increased demand for supply vessels and offshore service vessels. Since then, the SUPPLYTIME evolved and it was used for different scopes related to offshore industry even though it was not designed to cover such activities. The SUPPLYTIME 2005 is widely used for offshore transportation with the “knock-for-knock” indemnification regime (which is discussed in Sub-Chapter 3.2.1). In June 2017, BIMCO published an update to the SUPPLYTIME and issued the 2017 edition.

In 2013, BIMCO launched the WINDTIME standard form of contract specifically designed for offshore wind personnel transport and support vessels. However, the parties in offshore wind are still reticent in adopting new forms, as Chris Kidd and Mark de la Haye point out in an article referring to BIMCO WINDTIME:

“(…) it is early days, and experience shows that development and acceptance by an industry of such standard forms takes some years.”

Therefore, in practice, you would mainly see an amended SUPPLYTIME 2005 used for operations in OW. In addition, due to the fact that each project is unique, applying a standard contract “as is” is difficult and might not reflect the actual intention of the parties when entering into a contract, although it can be a good starting point for negotiations. Difficulties arising in applying a standard are mainly related to risk allocation and balance, which is a commercial discussion. The contractual mechanism might be the same, but the parties might amend who will take the risk, e.g. for adverse weather conditions, or if a k4k clause should also include third parties.

Referring to parties in the SUPPLYTIME and WINDTIME, there are the charterer and the owner. The charterer is the party who hired the vessel (under FIDIC, the employer) and the owner (is the vessel owner, under FIDIC, the contractor).

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135 Ibidem
137 Ibidem
140 I am referring mainly to SUPPLYTIME 2005, as it is one of the preferred standards in the industry for marine operations (see Appendix 4).
As other international standard contracts, BIMCO provides the general template with terms and conditions, which can be amended by additional conditions. However, if the parties wish to amend the general conditions, they must do so in track changes, so the amendments to the general templates are clear to the parties. Overall, BIMCO contracts are friendlier to vessel owners, and are designed to protect them against different risks. The charterers may wish to balance the risk in the additional conditions or by amending the general conditions.

A classic unmodified SUPPLYTIME 2005 may be used for hiring transportation vessels for wind farm personnel to perform necessary maintenance work or other activities. In order for the SUPPLYTIME to be used for the installation scope, this has to be amended to fit the requirements for jack-up vessel, grillage, sea fastening etc., which are necessary for transportation and installation of the windfarm components (e.g. blades, turbines). In addition, since the vessel involves transportation of foundations, turbines, the transportation of the components needs to be approved by an insurance agent – the Marine Warranty Surveyor (MWS).

The role of the MWS in offshore construction projects is to protect employer’s interest (charterer) and his insurance broker by making sure all the operations are planned accordingly and fulfill the technical requirements. The MWS is engaged to provide independent technical review and is usually part of the Contractor All Risk (CAR) Insurance Policy. CAR is a non-standard insurance required in construction projects that would cover damage to property and injury and other damage to third parties.

The MWS is usually appointed by the employer or by the employer’s insurance company who performs surveys and other assessments on the installation vessel and confirms that the load is in accordance with the technical specification and safe to transport. The MWS will ensure that all part of the works is covered under a CAR insurance, and, if in compliance, it will issue a certificate of approval to the vessel owner meaning that it can proceed and carry out the relevant activity.

The project progress depends on the decisions of the MWS as it might not allow a specific transport operation due to the lack of conformity with safety or technical aspects. If the contractor does not follow the MWS instructions, it might result in employer’s loss in case damage occurs.

Another scenario that might occur is when the MWS issues a certificate of approval, or any instructions to the contractor which are inconsistent with industry practice and result in delays of the contractor. In this sense, the parties have to provide a provision for extension of time (to extend the time for completion) and a possibility for the contractor to return cost associated with incurred loss.

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Further, the parties can agree who will bear the cost for the MWV. BIMCO provides by default in PROJECTCON (a form used for barge\textsuperscript{146} and tug\textsuperscript{147} to transport project cargoes\textsuperscript{148}), that the charterer has to pay the cost of the MWS. Under Clause 9(d), “[t]he Charterers shall arrange and pay for all the Marine Warranty Surveyor(s) services, including their approval of the Vessels and the Transportation”. The SUPPLYTIME and the WINDTIME do not provide for a MWS mechanism, such aspects will be regulated by the additional conditions to the standard form.

In OW contracts, the employer might appoint the MWS, and the contractor will bear the cost associated with it. This might be due to the fact that the contractor ultimately has to deliver the works, and it is not for the employer bear such costs as the contractor needs to deliver in accordance with the contract.

Regarding the technical aspects, BIMCO must be amended to cater for the vessel to safely jack-up. Usually such provisions will relate to the seabed conditions that will regulate who takes the soil risk in case the vessel is unable to jack-up (the vessel must be able to fix its legs in the subsea bed). If the vessel is unable to jack-up, the whole operation might be jeopardized, as finding another vessel which will be able to jack-up might take another several years.

Technically, the vessel owner will conduct its own specific assessment upon receiving site data from the charterer which must provide information on e.g. ground, soil, location, if there are any abandoned war equipment or unattained explosible substances. Considering the site-data, the vessel owner will then be able to assess whether it will be capable to perform the works or not.

Another reason for using BIMCO in the T&I operations for OW is the k4k regime which is provided in the SUPPLYTIME and WINDTIME. The k4k regime is an inheritance feature from OOG contracts, as back in the 70’s, the SUPPLYTIME was designed for oil and gas exploration in the North Sea.\textsuperscript{149} The k4k was designed to cater for risks and hazards involved at sea, and in case of an accident due to various conditions, to allow a proper indemnity and liability allocation regime.

Besides T&I campaign in OW, BIMCO contracts might also be relevant for chartering of vessels for surveys. In particular, at the project development stage, the employer needs to apply for permits to the relevant government authority in order to get permission for OW construction. Therefore, specific surveys need to be done, for example:

- Geological and hydrographical surveys - the survey will assess the windfarm site for export cable route and the engineering characteristics of the site.\textsuperscript{150}
- Environmental surveys – the survey will assess the potential impact on biological marine environment.\textsuperscript{151}

\textsuperscript{146} “Barge - a large flat-bottomed towed or self-propelled boat used mainly for river and canal transport of heavy goods or bulk cargo” https://officerofthewatch.com/tools/maritime-dictionary/ (accessed 23.02.2021)
\textsuperscript{147} “Tug - a small powerful and highly maneuverable vessel designed for towing [pulling through water], assisting and maneuvering larger vessels in port or restricted waterways”, ibidem
\textsuperscript{148} Rainey, p. 104
\textsuperscript{149} Baris Soyer, Andrew Tettenbord, Offshore Contracts and Liabilities, Informa Law, 2015, p. 5
\textsuperscript{151} ibidem
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- Benthic environmental surveys – which is a survey of species living on the seabed and in the sediment.\(^{152}\)
- Fish and shellfish surveys – which will establish what species are present in the perimeter of the OW project.\(^{153}\)
- Marine mammal environmental survey – the survey is used for identifying how marine mammals make use of the OW site, and what impact an OW farm could have on their habitual living.\(^{154}\)
- Offshore mammal survey – this survey will engage a vessel who will rotate in shifts to observe the mammal activity in the area of the site.\(^ {155}\)

3.1.3. LOGIC and Norwegian Offshore Standard Contracts

Other potential standards that could be used in OW projects are the LOGIC (Leading Oil and Gas Industry Competitiveness) and the Norwegian Offshore Standard Contracts (NOSC). Both are international standard contracts that engage particularly with marine construction. As opposed to FIDIC, which is mainly designed for onshore works, LOGIC and NOSC provide special contractual mechanisms that are necessary for working offshore.

3.1.3.1 LOGIC

LOGIC is an NGO owned by the Oil & Gas UK that has the aim to of increasing efficiency of working practice on the UK Continental Shelf.\(^ {156}\) LOGIC developed and supports a suite of 11 standard contracts that are intended to be used in the OOG industry.\(^ {157}\)

For the proposed research, I am only referring to LOGIC General Conditions of Contract for Marine Construction ed. 2, 2004 (further referred to as LOGIC), which is designed for the following scopes of works:
- pipelaying;
- offshore installation;
- subsea construction;
- inspection repair and maintenance using diving support and other support vessels.\(^ {158}\)

The Guidance Notes also provide the GCs for Marine Construction can be used for other contracting arrangements under an EPIC (Engineering Procurement Installation and Commissioning) set-up.\(^ {159}\)

The standard therefore has a chance of being used in OW projects with certain limitations as it is properly equipped with clauses that regulates vessels, k4k regime etc. It is important to note that both FiDIDIC and LOGIC deal with similar contractual mechanisms such as:
- Payment;
- Variations;
- Consequence of delay;

\(^{152}\) Ibidem
\(^{153}\) Ibidem
\(^{154}\) Ibidem
\(^{155}\) Ibidem
\(^{156}\) The Application of Contracts in Developing Offshore Oil and Gas Projects, p. 284
\(^{158}\) LOGIC, Guidance Notes, General Conditions of Contract for Marine Construction ed. 2, 2004, p. 2
\(^{159}\) Ibidem
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- Defects;
- Tests;
- Insurance and indemnity.

However, the approach is tied to the distribution of commercial risks and based on that, the parties will decide which standard to apply for their OW project.\(^{160}\)

Compared to FYB, LOGIC is already adapted for offshore constructions, but mainly for the installation scope as there is no express design obligation under the contract which is imposed to the contractor:

“4.3 Except as expressly stated in the CONTRACT the CONTRACTOR shall not be responsible for the design of any part of the PERMANENT WORK. However, for the avoidance of doubt, where the CONTRACTOR is so responsible all such WORK undertaken shall be [fit for the purpose] in accordance with Clause 4.2.”

As there is a lack of international standard designed for offshore wind, parties in the offshore wind might be inclined to use the LOGIC standard as they are designed for offshore activities.\(^{161}\)

It is common in offshore wind contracts that the parties exclude adverse weather conditions from the force majeure. This might also be a feature that parties took from OGG. For example, Sub-Clause 15.2 (d) from LOGIC provides:

“For the purposes of this CONTRACT only the following occurrence shall be force majeure: (d) Earthquake, flood, fire, explosion and/or other natural physical disaster, but excluding weather conditions as such, regardless of severity [emphasis added].”

This does not mean that the contractor will not be entitled to remedy of extension of time or cost, parties would usually define a specific number of “waiting on weather days”\(^{162}\) which will be attached as a separate schedule to the contract, specifically designed to regulate adverse weather.

LOGIC excludes the possibility of cost for adverse weather conditions, and it only provides for extension of key dates, in this sense, Sub-Clause 35.3 provides:

“If the CONTRACTOR can show that it has suffered delay as a direct result of the number of “waiting on weather days” exceeding the number of such days specified in Appendix 1 to Section I – Form of Agreement, then, subject to Clause 14, the COMPANY shall issue a VARIATION to adjust the SCHEDULE OF KEY DATES to take into account any such delay. Except as otherwise provide in the CONTRACT, no adjustment to the CONTRACT PRICE shall be made in respect of any such delay.”

In OW contracts, the contractor would usually be entitled to both time and cost. Otherwise, if the contractor has to take fully the adverse weather risk, the contract price will be increased. Therefore, to provide a balanced risk allocation, the weather risk might be split between both parties.

\(^{160}\) Adam Constable QC, Keating on Offshore Construction and Marine Engineering Contracts, 1st Edition, Sweet & Maxwell, 2015, p. 21

\(^{161}\) Busch, p. 446

\(^{162}\) LOGIC, S.C. 35.3

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LOGIC also provides a clause for subsoil conditions. Clause 6 provides that the contractor has a duty to be informed regarding the subsoil conditions in the area where work has to be performed. If, however, the contractor encounters unforeseeable soil conditions, Clause 6.2 entitles him to additional time.\textsuperscript{163} A similar mechanism regarding soil conditions can be observed in OW contracts.

Differently from LOGIC, FIDIC would refer to sub-surface conditions, and in this sense, Sub-Clause 4.10 of FYB 2017 provides that the contractor is “deemed to have inspected and examined the site, (…) including (a) sub-surface conditions”. In special cases, the contractor might claim extension of time for unforeseeable sub-soil conditions under Sub-Clause 4.12 of FYB.

Overall, LOGIC might cater for various aspects related to project and contract management and risk allocation and would be ideal under an EPC set-up. However, some authors consider that the clauses used in LOGIC are not relevant for offshore wind contracts e.g. the pollution liability.\textsuperscript{164} This might be argued, as usually OW contracts would contain clauses related to pollution liability. Indeed, the risk is not similar to what might have on an offshore oil and gas site, where pollution could result in catastrophic proportions damage. A good example is the 1988 Piper Alpha explosion, where the explosion resulted from a gas leak on the offshore platform which caused pollution to the environment and death of personnel that worked on the site.\textsuperscript{165}

In OW, the risk of pollution is relatively low, and it might only be caused by accidents related to ships involved e.g. combustible spillage. The parties might provide an indemnity to hold each other harmless from pollution emanating from each other’s property.

LOGIC regulates this aspect in Sub-Clause 22.4, an indemnity offered by the contractor to the company in case of pollution:

\begin{quote}
“Except as provide by Clause 22.2(a) and Clause 22.2(b), the CONTRACTOR shall save, indemnify, defend and hold harmless the COMPANY GROUP from and against any claim of whatsoever nature arising from pollution occurring on the premises of the CONTRACTOR group (including but not limited to marine vessels) [emphasis added] arising from, relating to or in connection with the performance or non-performance of the CONTRACT.”
\end{quote}

This is another example where parties would get inspired from LOGIC and amend accordingly a FIDIC contract to cater for such scenarios. For example, FYB 2017, only provides in Sub-Clause 4.17 that:

\begin{quote}
The Contractor shall take all necessary measures to: (…) (c) limit damage and nuisance to people and property resulting from pollution, noise and other results of the Contractor’s operations and/or activities.
\end{quote}

Sub-Clause 4.17 from FYB becomes irrelevant in an offshore context, where no pollution would be caused directly to “people” but rather it needs to cater for damage caused to the environment.

\begin{flushleft}
\textsuperscript{163} LOGIC, Explanatory notes, p. 56  
\end{flushleft}
FIDIC is silent on how the parties should allocate such risk, or who would be liable for pollution if it was caused by the contractor while performing the works for the employer.

Regarding construction and project management aspects, as FIDIC, LOGIC is closer to an onshore construction contract, compared to BIMCO, which is specifically designed for offshore transportation.

Ralph Busch points out that LOGIC forms are not widely spread in OW contracts as “they are expressly based on English law and, thus, may be deemed less suited for use in other jurisdictions.”

From an overall perspective, LOGIC forms have potential and might be actually used in OW projects within the UK or other common law jurisdictions, providing that they are amended accordingly to fit the requirements for OW projects.

### 3.1.3.2 Norwegian Offshore Standard Contracts (NOSC)

Norwegian Total Contact 2015 is a form of contract recommended for contracting the supply of large components for the production of petroleum reserves on the Norwegian continental shelf (NCS). The contract is designed for an EPC or EPCI set-up where the contractor will undertake the responsibility for works.

NOSC are developed by Norsk Industri and Norsk Olje og Gass, which have the main goal to provide a balanced risk allocation between the oil companies and service companies involved in the OOG sector.

In OOG in Norway, parties generally use the Norwegian Fabrication Contract (Norsk Fabrikasjonskontrakt - NF) or the Norwegian Total Contract (Norsk Total Kontrakt). The need for a Norwegian contractual standard in the petroleum industry dates back to the 80’s and was driven by the fact that OOG projects involved different sorts of risk, high amount of investments, high interface risk on the site which required cooperation between the contractors, and the need to cater for unpredictable situations that might occur during the execution of the project and afterwards.

The NTK is intended to be used on large EPCI projects, and the NF for fabrication work, usually involving prefabricated units of a plant (modules) that are to be installed or assembled in offshore. The NF, and NTK are similar in structure and contractual provisions, therefore allowing the same balanced split of risks. The parties under NOSC are the company (in FIDIC the employer) and the contractor.

NOSC are construed in accordance with Norwegian law, which allows a broader interpretation than the English contract law. In this sense, the parties could be more confident in inserting penalty

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166 Busch, p.446
167 Norwegian Total Contract 2015, p. 3
171 ibidem p.2
clauses or LDs without having to worry that they might be held as unenforceable. With the caution that if the penalties are considerably disproportionate, the judge might reduce the amount. However, it is noted that since the contract is between professionals, there is a lower chance of such reduction to happen.172

For example, clauses such as “entire agreement”, which limits the interpretation of the contract only to what has been agreed “on paper”, in many civil law countries might be held as unenforceable due to the interpretation of the contract according to the parties’ intention, but in Norway might be held enforceable. 173

In addition, the NSK and NF utilizes the k4k liability regime, in articles 29-32. In order to safeguard the k4k regime, NTK provide in art. 31.1 that:

“The [insurance] policies shall state that Company Group and Contractor Group are co-insured, and the insurers shall waive any right of subrogation against Contractor Group.”

The right of subrogation refers to the situation where the insurance company would have a right to claim cost form the third-party that caused damage to the insured party.174 If the insurance policy does not include such right, it will basically jeopardize the k4k regime as each insurance company would be able to claim cost from the tortfeasor.175

LOGIC also provides in Clause 23.1 that the parties must waive their right for subrogation:

“(…) All insurances required under this Clause 23 shall be endorsed to provide that underwriters waive any rights of recourse, including in particular subrogation rights against the COMPANY, CO-VENTURERS and its and their respective AFFILIATES in relation to the CONTRACT to the extent of the liabilities assumed by the CONTRACTOR under the CONTRACT.”

OW industry took this subrogation waiver to fit the k4k regime, as the FYB indemnification regime only refers to mutual indemnification in regard to damage caused by a party’s own actions and does not cater for a k4k regime.

One of the issues for OW, however, with the k4k regime from NTK is that it provides a carve-out to property that is damaged while being in possession of the other party. In NTK, Art. 29 “Loss of or damage to the deliverables or Company’s Materials” provides:

“(…) Contractor shall carry out necessary measures to ensure that the Work is completed in accordance with the Contract. The same applies if any loss of or damage to Materials or Company’s Materials occurs while they are under Contractor Group’s safekeeping and control.”

NTK defines “materials” as “all equipment and materials required for the Work, other than Company’s Materials and working equipment”.\(^{176}\) Therefore, there is a distinction between materials necessary for work and materials as “company’s equipment” which was provided to contractor.

The rationale of this clause is that the contractor must be liable for employer’s materials and equipment only if it was in his possession, therefore, he had direct control on preventing employer’s materials or equipment from damage or loss.\(^{177}\) However, the Sub-Clause is unbalanced, as Art. 29.1 provides that the contractor must carry out all necessary measures and cover for loss of materials (including employer’s equipment) regardless of negligence from the employer’s group.

In practice, this might not be accepted by the contractor as it might prove unbalanced in regards to risk allocation. Therefore, the contractor would have to indemnify the employer against loss or damage to property and the employer would have a recourse against the contractor for damage caused to the equipment.

Overall, NOSC provide a similar contractual mechanism as other international standards which would be fit for building an offshore wind farm, providing that the amendments mentioned in Sub-Chapter 3.1.1. are considered by the parties.

In an article related to offshore construction contracts in Norway, Mikal Brondmo points out that NOSC are used in Norwegian OW projects:

“(...) In offshore construction projects related to wind farm construction (...), there are several examples in which parties use [NOSC] due to the neutrality of these contracts, and because they provide balanced risk allocation, and the parties define Norwegian Law as the law of the contract.”\(^{178}\)

The NTK has potential to be used in OW projects. However, it being fully based on Norwegian law, it might result in parties be less inclined to use it in international projects. The main reasons for not using NOSC might be project financing and that most of the parties would be not familiar with the standard which will result in extra cost in familiarizing with the contract.

\(^{176}\) NTK, Sub-Clause 1.19
3.2. Contractual Challenges in the Offshore Wind Industry

Offshore wind construction contracts are prone to high risks. A big part of the risk associated with offshore construction includes high dependency on weather, favorable sub-sea soil conditions and availability of vessels capable to carry out the works.

The weather has big impact on the project as the parties are not capable to control it. Therefore, parties have to identify a suitable contractual mechanism in dealing with adverse weather conditions. In addition, engaging different contractors on the offshore site with vessels provides a risk related to various accidents to property and personnel injury.

The parties need to safeguard the project by establishing a liability regime under the contract and a proper risk allocation. The parties can limit the liability under the contract by:

- “Establishing a cap on the total amount of damages a party will be liable for;"
- “Excluding liability for consequential damages;"
- “Limiting recovery for certain events;"
- “Establishing liquidated damages for certain breach of contract.”

The challenges that might arise with limitation of liability clauses relate to enforceability of such clauses under different legal systems and to whether the insurance will cover the injured party due to a limitation of liability clause.

The issues related to weather and limitation of liability are not specific only to the offshore wind industry. Most of the contractual aspects were inherited from offshore oil and gas industry which developed over time a know-how in dealing with offshore incertitude.

Therefore, OW can take the lessons learned from OOG and apply them based on the project specific needs. Since the parties in OW are using an onshore international standard contract (FYB) to cater for various scope of works, they need to consider for offshore construction specifics and adapt the contract accordingly. Hence, when amending a FYB contract, the parties need to pay specific attention to provisions regulating vessels, allocate weather risk and establish a limitation of liability and indemnity regime.

3.2.1. limitation of liability. Knock-for-knock regime

To understand the k4k regime, a historical background is necessary. The k4k was developed in the early 20th century by motor insurance companies. The scheme was simple, each vehicle owner had an insurance company (the insurer) that was covering a vehicle in case of an accident.

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180 Klee, p. 575
181 This subchapter does not analyze the validity of knock-for-knock clauses under different jurisdictions.
Under the k4k regime, the insurance company of the injured party would cover the costs suffered by it, and the tortfeasor would address its claim to its own insurance company. In essence, under the k4k regime, each party would cover its loss regardless of who caused the fault for the accident, contrary to the fault-based regime, where the party who caused the damage has to cover it. The rationale of the k4k is related to cost-effectiveness, as it will save time and money that might be necessary to investigate each case that led to damage. 183

The shipping version of k4k was developed during the World War II, the rationale was to provide a mutual indemnification agreement in case convoy ships were denting into each-other. 184 In such case, each state had to bear the cost associated with the incident regardless of who was responsible for it. 185

The essence of the k4k regime is that each contract party would cover its costs associated with the incident (e.g. damage to property, injury, death of an employee), and, further, it will indemnify the other party for such incidents, despite the negligence of the other party. 186

In offshore wind, as in offshore oil and gas, the parties tend to allocate the risk on a k4k basis. The liability regime is an inheritance from OOG that was adapted in OW contracts which is an industry prone to high risks. Therefore, having a standard fault-based liability regime in OW contracts might be cumbersome for participants to get insurance, and to conduct investigations for each case in identifying who should be liable for a specific accident that occurred on the site.

In FYB 1999, Sub-Clause 17.1 provides that the employer and the contractor must indemnify each-other from loss of property, damage and other injury caused to person arising in connection with a party’s negligence. Therefore, if under FYB, the contractor caused damage to the employer’s property, it has to cover the cost associated with the damage and vice-versa.

When working offshore, this approach might be impractical to use, and as the contract development in the industry shows, the parties adopted the FYB indemnification regime to fit the offshore construction practice, by amending it with a knock-for-knock liability regime.

The parties could get inspiration for amending the classical FYB liability regime either from LOGIC, BIMCO or NTK contracts, for the purpose of this research an example from BIMCO WINDTIME is used. BIMCO WINDTIME provides in Clause 16(a)(i) that:

“Nothwithstanding anything else contained in this Charter Party [agreement] (...) the Charterers shall not be responsible for loss of or damage to the property of any member of the Owners’ Group, including the Vessel, or for personal injury or death of any member of the Owners’ Group arising out of or in any way connected with the performance or non-performance of this Charter Party, even if such loss, damage, injury or death is caused wholly or partially by the act, neglect, gross neglect or default of the Charterers’ Group, and even if such loss, damage, injury or death is caused wholly or partially by unseaworthiness of any vessel;”

183 ibidem
and the Owners shall indemnify, protect, defend and hold harmless [emphasis added] the Charterers from any and against all claims, costs, expenses, actions, proceedings, suits, demands and liabilities whatsoever arising out of or in connection with such loss, damage, personal injury or death, unless such loss, damage, injury or death has resulted from the Charterers’ Group’s act or omission committed with the intent to cause same or recklessly and with knowledge that such loss, damage, injury or death would probably result.”

The above-mentioned clause operates with terms “indemnify”, “protect & defend” and “hold harmless” which are important in this sense, as they are the basis for the k4k regime. The above clause only refers to the owner indemnifying the charterer; however, a similar provision is provided in Clause 16 (a) (ii) of BIMCO WINDTIME.

To get an idea of how k4k regime, it is necessary to understand what an indemnity and hold harmless clause is. An explanation of the above-mentioned terms is provided below.

**Indemnity**
An indemnity refers to a promise to pay for another persons’ financial loss. The indemnification involves three parties:
- The indemnitor – the party providing the indemnity;
- The indemnitee – the indemnified party; and
- The claimant – the party who suffered a loss or damage.

Therefore, by “indemnifying” a party, it means that the indemnitor will pay for loss suffered by the indemnitee if a specific event occurs. In Clause 16 (a)(i) cited above, the event is related to “performance or non-performance” of the agreement, that resulted in “loss, damage, injury, or death”. Assuming the claimant is one of the indemnitor’s employee, and an accident occurred on site due to the indemnitee’s negligence which resulted in claimant’s loss of use of a body part, the indemnitor will hold the indemnitee harmless for occurred loss and will deal with it himself. Further, the indemnitor will renounce its right to claim damages from the indemnitee, contrary to a classic fault-base regime where the injured party can claim damages from the tortfeasor.

**Defend & protect**
Defend and protect a party in the context of indemnity, refers to the duty of the injured party to “defend and protect” the tortfeasor from claims, actions, suits, or other proceedings. In a fault-based regime, the injured party might cover its loss by providing the insurance company with a claim to cover its loss. Then the insurance company, will have the right to claim damages from the tortfeasor (subrogation right). In many cases the parties might include in this duty obligation to cover for attorney fees and associated legal costs. What could also happen is that the employer might receive a suit from an employee of the contractor related to an injury which was caused by the employer’s negligence. The duty to defend and protect will intervene and protect the employer from this suit, as the contractor undertook the obligation to cover for the loss associated with his property, or employees, etc., despite the fact that the damage was caused by the employer.

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187 Bailey, 909
188 Klee, p. 576
189 Bird & Bird, English B2B Contract Law
Hold harmless
Holding harmless the indemnitee refers to the fact that the indemnitee will not be liable for any injuries or damages caused to the claimant.

Below is provided an overview of the three components of the indemnification clause.

<table>
<thead>
<tr>
<th>under the party</th>
<th>obligation to indemnify</th>
<th>duty to defend</th>
<th>obligation to hold harmless</th>
</tr>
</thead>
<tbody>
<tr>
<td>a party</td>
<td>accepts responsibility for all losses arising from, resulting from or relating to certain acts, omissions or occurrences</td>
<td>accepts a duty to defend another party from an asserted claim, action, suit or proceeding</td>
<td>assumes all liability for, and releases of the other party from liability resulting from, certain defined acts, circumstances and events</td>
</tr>
<tr>
<td>so that the party providing it</td>
<td>has an affirmative obligation to pay and reimburse the other party for indemnified losses</td>
<td>has an affirmative duty to provide a defense for the other party in such claim, action, suit or proceeding</td>
<td>assumes responsibility for all associated risk, losses, and damages, and effectively covenants not to sue or seek to impose liability on the other party</td>
</tr>
<tr>
<td>the party providing it is</td>
<td>shifting risk from the other party to itself</td>
<td>shifting risk from the other party to itself</td>
<td>retaining risk as well as shifting it to itself</td>
</tr>
<tr>
<td>it is triggered by</td>
<td>the entry of a judgment, mutual agreement on a settlement, or other proof of an indemnified loss, and/or the acceptance of the obligation to indemnify</td>
<td>the assertion of a claim, filing of an action or proceeding, or commencement of a suit</td>
<td>the occurrence of acts and circumstances governed by the hold harmless</td>
</tr>
</tbody>
</table>

Figure 7. Overview of the components of an indemnification clause

Amending FIDIC to cater for knock-for-knock indemnification regime

FYB 1999 provides in Sub-Clause 17.1 an indemnification regime. However, this is not suitable for k4k risk allocation. The parties can take inspiration from either NTK, LOGIC or BIMCO to replace the indemnification regime provided by FIDIC or amend accordingly by keeping the initial wording provided by Sub-Clause 17.1. It is recommended to replace the whole indemnity mechanism to ensure that nothing is left out of the k4k mechanism.

Since the necessary amendments are heavy, for the purpose of this research, the analysis is limited only to the indemnification provided by the contractor to the employer, although the indemnification should go both ways.

For the present analysis, Clause 22 [Indemnities] from LOGIC was partially fitted into the indemnification regime provided by FYB Sub-Clause 17.1. Below is a potential amendment: the “clean” wording is the actual text from Sub-Clause 17.1 FIDIC 1999; the unnecessary text is “strikethrough” and colored in red; additional necessary amendments from LOGIC are inserted in [brackets] colored in blue. The text inserted in green is from BIMCO WINDTIME.

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The Contractor shall indemnify and hold harmless the Employer and [the Employer’s Group] the Employer’s Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:

(a) Bodily injury, sickness, disease or death, of any person whatsoever arising out of or in the course of or by reason of the design, execution and completion of the Works and the remedying of any defect, unless attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer’s Personnel, or any of their respective agents, and

(b) Damage to or loss of property «including the installation vessels» of the Contractor and Contractor’s Group, whether owned, hired, leased or otherwise provided by the Contractor arising from, relating to or in connection with performance or non-performance of the Contract; and

192 real or personal (other than the Works), to the extent that such damage or loss:

(i) arises out of or by reason of the design, execution and completion of the Works and the remedying of any defects, and

(ii) is attributable to any negligence, wilful act or breach of the Contract by the Contractor, the Contractor’s Personnel, their respective agents, or anyone directly or indirectly employed by any of them.

(c) [Subject to any other express provisions of the Contract, personal injury, including death or disease, or loss of or damage to the property of any third party to the extent that any such injury, loss or damage is caused by the negligence «including gross negligence» or breach of duty (whether statutory or otherwise) of the Contractor. For purpose of this Sub-Clause 17.1 (c) “third party” shall mean any party which is not a member of the Employer or Contractor Personnel, or their respective agents.] 193

The Employer shall indemnify and hold harmless the Contractor, the Contractor’s Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of (1) bodily injury, sickness, disease or death, which is attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer’s Personnel, or any of their respective agents, and (2) the matters for which liability may be excluded from insurance cover, as described in sub paragraphs (d)(i), (ii) and (iii) of Sub-Clause 18.3 [Insurance Against Injury to Persons and Damage to Property].

193 Amended from LOGIC, Sub-Clause 21.1 (c)

[All exclusions and indemnities given under this Sub-Clause 17.1 shall apply irrespective of cause and notwithstanding the negligence or breach of duty (whether statutory or otherwise) of the indemnified party or any other entity or party and shall apply irrespective of any claim in tort, under contract or otherwise at law.] 194

For consistency, it is required to amend and include in FYB the terms “Employer’s Group” and “Contractor’s Group”, to avoid wordy sentences e.g. “Employer, Employer’s Personnel, or any of their respective agents”. The FIDIC set-up becomes wordy, since a “group” will include affiliates as well. On the other hand, the LOGIC example is not that wordy and by defining which parties are members of Employer’s Group or Contractor’s Group, it would be clearer to what extent the k4k regime applies, as a basis, Sub-Clause 1.9 from LOGIC can be used. Below is an example tailored for contractor’s group, but can be mirrored by replacing it with employer’s group:

“CONTRACTOR GROUP shall mean the CONTRACTOR, its SUBCONTRACTORS, its and their AFFILIATES, its and their respective directors, officers and employees (including agency personnel), but shall not include any member of the [EMPLOYER GROUP]. CONTRACTOR GROUP shall also mean subcontractors

192 Amended from LOGIC, Sub-Clause 21.1 (b)
193 Amended from LOGIC, Sub-Clause 21.1 (c)
194 Amended from LOGIC, Sub-Clause 22.6
Referring to k4k clause drafted above, by removing the wording from FYB Sub-Clause 17.1 “attributable to any negligence, wilful act or breach of the contract by” we exclude a potential trial where the injured party would have a recourse against the tortfeasor, therefore, “the loss or damage lies where it falls”\(^\text{195}\) and each party would be compensated by the insurances it has to take in accordance with Clause 18 [Insurance].

The insurance clause should also be modified accordingly, so as to include provisions related to offshore specific activities. For example, the contractor would be typically required to provide the following insurances:

- **Contractor’s All Risk Insurance:**
  - This insurance covers the tools, materials and other associated equipment.\(^\text{196}\)

- **Third Party Liability insurance:**
  - This insurance would cover for legal liability for bodily injury, death and property damage.

- **Workers Compensation insurance:**
  - This covers contractor’s liability for bodily injury, illness, or death of its employees.

- **Marine hull and machinery insurance:**
  - The insurance covers for charterer’s liability, collision, and other damage caused in respect to vessels owned or operated by the contractor and/or subcontractors.

Usually, offshore incidents involve a degree of fault from different parties, and as a result, the lawyers, the court, and the insurance companies would spend time and money for investigating who caused the damage. Such costs can be avoided by providing for a knock-for-knock regime in the contract.

It is important to note that in offshore wind employer would usually include a carve-out to k4k in relation to the property which is in the contractor’s possession. Generally, this is an unequitable solution and jeopardizes in some ways the rationale of the k4k regime where each party bears its own loss.

Parties may amend FIDIC with a similar carve-out from Art. 29 NTK “Loss of or damage to the deliverables or Company’s Materials” which provides:

“(...) Contractor shall carry out necessary measures to ensure that the Work is completed in accordance with the Contract. The same applies if any loss of or damage to Materials or Company’s Materials occurs while they are under Contractor Group’s safekeeping and control [emphasis added].”

For example, the contractor will indemnify and hold harmless the employer’s group from the damage that the employer’s group caused to contractor’s property which includes the most

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\(^{195}\) Richard W. Williams, Knock-for-knock clauses in offshore contracts, Offshore Contracts and Liabilities, Prof. Baris Soyer and Andrew Tettenborn, Informa Law, 2015, p. 58

\(^{196}\) Contractor’s All Risk (CAR) Insurance https://www.irmi.com/term/insurance-definitions/contractors-all-risks-insurance
valuable assets – the vessel. On the other hand, the contractor will be liable to cover for damage that it caused to employer’s equipment while being its possession of employer’s equipment.

The approach is used within the industry but is not equitable towards the contractor and towards the principles of the k4k regime. If, however, the contract will not be able to avoid such carve-outs, it may require inserting a limitation of liability for such fault-based incidents related to employer’s equipment.

Overall, there are several advantages and disadvantages of using a knock-for-knock risk allocation which you can see below:

<table>
<thead>
<tr>
<th>Knock-for-knock scheme</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reduces the cost of litigation and other investigations associated with the incident;</td>
<td>• High insurance costs;</td>
<td></td>
</tr>
<tr>
<td>• Facilitates resolution of claims at an early stage;</td>
<td>• Might result in bad personnel behavior due to lack of punishment;</td>
<td>198</td>
</tr>
<tr>
<td>• The insurance industry provides higher coverage;</td>
<td>• Might be held unenforceable in some jurisdictions;</td>
<td>199</td>
</tr>
<tr>
<td>• Enables cooperation between the parties and a safe working environment;</td>
<td>• High dependency on the applicable law;</td>
<td>200</td>
</tr>
</tbody>
</table>

Table 9. Advantages and disadvantages of knock-for-knock scheme

In conclusion, if the parties wish to insert a knock-for-knock mechanism in their contract, they might get as a basis the k4k regime from LOGIC, BIMCO or NTK.

3.2.2. Vessels and Adverse Weather Conditions

3.2.2.1. Vessels
Vessels and the allocation of risk for adverse weather conditions are among the main challenges of offshore wind projects. The vessels are an indispensable element in OW construction and are necessary for the installation of the offshore substation, the array and export cables, the foundation, and the WTGs. Currently, there are around 16 available wind turbine installation vessels and there is a plan to increase them to 23 by 2023.201

Due to the limited availability of the vessels, the developers need to plan and contract specific installation vessels in advance. For the vessel owners, the challenge is related to the quick

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197 Richard W. Williams, Knock-for-knock clauses in offshore contracts, Offshore Contracts and Liabilities, Prof. Baris Soyer and Andrew Tettenborn, Informa Law, 2015, p. 58
198 Ibidem
200 Skuld, knock for knock, https://www.skuld.com/topics/legal/pi-and-defence/k4k/ (accessed 01.03.2021)
201 Havmølleproducent: “Vi mangler installationsskibe nu”, https://www.soefart.dk/article/view/736115/havmølleproducent_vi_mangler_installationsskibe_nu (accessed on 01.03.2021)
development of technology. In particular, with time, the turbines might increase in size, and the vessel owners need to constantly develop to maintain with the technology pace.

In addition, while LOGIC and NTK are designed for engaging vessels for the works offshore, FIDIC lacks such provisions, and therefore, the parties have to introduce specific clauses related to vessels to be able to realize the scope of works.

For the purposes of a Turbine Supply Agreement (TSA) the employer needs to engage an installation vessel to care for the works. It is common for the parties to use as a baseline the Yellow FIDIC 1999 for such works or a BIMCO contract. In the classical approach, the TSA supplier would bring all the materials on the onshore site where the turbines will be partially assembled, and later the installation vessel contractor would pick them and install on the offshore site.

In this scenario, two contracts should be awarded: one for the TSA and another for the WTG Transportation and Installation (“T&I”). For the T&I scope, it was common to use a modified version of BIMCO SUPPLY TIME 2005. BIMCO is already suited for the charter parties and provides relevant clauses related to the calculation of the charter period, allocation risks and the k4k regime.

If, however, the turbine supplier is willing to take the T&I scope, the TSA agreement can be designed to cater for installation as well, and in such case the classic Yellow FIDIC has to be amended to provide clauses that will regulate the installation vessel and the k4k regime.

Besides the installation vessel, in the process will be involved other types of vessels such as crew transfer vessel and supporting tugboats. The vessel can either be provided by the employer for the TSA agreement without the installation scope, or by the contractor who will undertake both the supply and installation.

When amending the FIDIC template, the parties will need provide details regarding:

- “the technical requirements for the installation vessel;
- the time period for which the installation vessel is required (and whether this is a fixed or a shifting window);
- the apportionment of costs for having the installation vessel for a longer period of time than originally envisaged; and
- the remedies if the installation vessel does not function in accordance with the specified requirements or is not available.”

The risk associated with vessels is related to various delays which may include, among other things, delays caused by the contractor, the employer, or natural delays (such as force majeure or adverse weather conditions). In all cases, the contractor is under an obligation to perform and to ensure the availability of the installation vessel from the agreed start date and until the completion of the installation.

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203 Ibidem
The obligation to perform and finish the installation works might result in serious cost for the contractor, since operating the vessel is very expensive. In addition, the vessel will be certainly hired for other projects, and a delay in one project might result in the inability to perform other contracts.

The vessel is hired for a certain period; however, it also includes “standby periods” where the vessel might be prevented from performing the works. If the contractor encounters such delays, it could be granted a relief under the contract for cost and/or extension of time, and in certain cases if the parties provided, it would have right to terminate for convenience due to prolonged suspension.

The contract would provide for a mechanism regarding the prolonged suspension. Under FYB 1999, Sub-Clause 8.11 [Prolonged Suspension] a suspension is considered prolonged if “has conditioned for more than 84 days”, in OW the parties would extend the term based on the size of the project, typically the prolonged suspension is between 120 and 200 days. If the prolonged suspension reached the provided amount, the contractor would be entitled to terminate the contract.

3.2.2.2. Adverse Weather
In OW, high waves and wind often result in delay of the transportation and installation campaign. In winter, for example, the site conditions are difficult for performing turbine lifts as the wind is stronger and there is a higher probability of having storms that can interfere with the installation process.

Weather is important, as the project will be scheduled based on it. In OW contracts, adverse weather is usually regulated in a separate schedule provided in the ERs. The schedule will be tailor-made for site conditions whether the project will be constructed. There is no straight-forward definition related to adverse weather, as for each project the impact will be different. Hence, the parties would agree on “specific values for each relevant activity”.

In OW context, adverse weather refers to significant waves heights conditions that will exceed the height of the vessel (e.g. wave heights of 2.5m and vessel workability limit is 2.0m) and excessive wind speed that will prevent the vessel from operating in such conditions. The adverse weather schedule will also define a weather working limit which will provide the conditions under which the vessel can operate and if those conditions exceed the limit set, then such conditions will be considered as adverse.

It is important for the parties to consider an appropriate adverse weather conditions mechanism in the contract, to entitle the contractor to time and cost if such limits are exceed. FYB 1999 provides in Sub-Clause 8.4 [Extension of Time for Completion] (EOT) that the contractor can be entitled to EOT if the delay is attributable to “(d) exceptionally adverse climatic conditions”. In the FYB 2017 Sub-Clause 8.4 the wording was expended to:

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206 Busch, p. 442
207 For this subchapter, adverse climatic conditions and adverse weather conditions have the same meaning.
“(c) exceptionally adverse climatic conditions, which for the purpose of these Conditions shall mean adverse climatic conditions at the Site [emphasis added] which are Unforeseeable having regard to climatic data made available by the Employer under Sub-Clause 2.5 [Site Data and Items of Reference] and/or climatic data published in the Country for the geographical location of the Site.”

Sub-Clause 8.4 of FYB 2017 refers to adverse climatic conditions at the site, and in this sense, the assessment of such adverse weather will be made by reference according to the site data provided and the schedule related to adverse weather.\(^\text{208}\) However, under FIDIC, the contractor would only be entitled to extra time, no cost will be allocated for delay associated with adverse weather.

A common feature in OW contracts is that the parties would usually exclude the entitlement for EOT and cost for adverse weather conditions if it exceeded the limits set in the schedules. In addition, the parties would also expressly exclude in the force majeure clause that adverse weather conditions must not be treated as a force majeure event under the contract.

It can be argued weather such exclusion would be enforceable, as FYB provides in Sub-Clause 18.1 a non-exhaustive list of events which “may” be considered a force majeure.\(^\text{209}\) However, even though adverse weather is excluded by parties, if such event would result in the pre-conditions related to a force majeure, then adverse weather might be considered a force majeure event.

Under FYB 2017 Sub-Clause 18.1, for an event to be considered a force majeure it has to fulfil the following requirements:

- (i) “is beyond a Party’s Control;
- (ii) the Party could not reasonably have provided against before entering into the Contract;
- (iii) having arisen, such Party could not reasonably have avoided or overcome; and
- (iv) is not substantially attributable to the other Party.”

Adverse weather could potentially qualify for relief under a force majeure clause, as it might be associated with sever natural events such as hurricanes, typhoons etc. Overall, adverse weather conditions have a commercial impact on the project, and if not planned accordingly, it will impact the project by causing delay which will affect the installation period and subsequently will extend the time for completion.

The parties would usually deal with adverse weather conditions by allocating an “allowance”\(^\text{210}\) for adverse weather conditions. The allowance will be based on the historic weather and metocean\(^\text{211}\) data for the offshore wind farm site for a certain period. In most of construction projects, the period might refer to 50 years, but it might be challenging for OW, as the first wind farm was only developed in the early 1990 and, therefore, the relevant data might not be conclusive.\(^\text{212}\)

It is important to note that the adverse weather risk will not be allocated to a single party (unless a full EPC contract was awarded), but, if the contractor will undertake fully the adverse weather risk,

\(^{208}\) Adam Constable QC, Keating on Offshore Construction and Marine Engineering Contracts, 1st Edition, Sweet & Maxwell, 2015, p. 6

\(^{209}\) FYB 1999 operates with the definition of “force majeure” while FYB 2018 with “exceptional events”, in essence, the definitions have the same meaning.

\(^{210}\) Klee, p. 629

\(^{211}\) “An abbreviation of the two words “Meteorology” and “Oceanography”. The term is often used in the offshore industry to describe the physical environment near an offshore platform.” [https://www.definition-of.co/Metocean](https://www.definition-of.co/Metocean) (accessed 28.03.2021)

\(^{212}\) Klee, p. 629
the price of the contract will increase accordingly. The parties would split the weather risk as mentioned above, based on the statistic weather data and by providing a specific amount of dates which will include the adverse weather days. 213

There might be a need for developing a standard on how to deal with adverse weather conditions that will simply the negotiations for the parties and ensure a proper balance in allocating such risk, in this sense, Alex Blomfield notes:

“Developing a market standard approach to the issues of adverse weather risk in the construction of offshore wind projects should be a priority for the offshore wind sector. However, it is likely that some degree of tailoring would remain necessary to reflect the peculiarities of the individual projects.” 214

213 Busch, p. 442
214 Klee, p. 630
Chapter 4. Discussion and Conclusions

This thesis set out to analyze particularities of offshore wind contracts and to identify specific aspects of an international standard contract that should be modified so as to be suitable for an offshore wind project. The thesis identified the common aspects between offshore wind, onshore wind and offshore oil & gas and provided some of the lessons that can be learned from the listed industries. In order to fill the gaps related to legal academic content on offshore wind, the thesis provided practical insights from the industry, by sharing the results from interviews concluded with various professionals within the offshore wind industry.

In addition, the thesis explored the contractual strategies used in the industry and provided how they can impact the contract price and the risk allocation between the parties. Usually, the contractual strategy will have a major impact on how the parties will negotiate the specific contractual provisions. For example, if the parties would choose an EPC set-up, the contractor would basically take more the risks (with several exceptions related e.g. to design and the obligation that the works will be fit for purpose). The primary focus of the thesis was to analyze how a FIDIC contract should be adapted to work in the offshore wind environment. The thesis clearly provided that a FIDIC contract requires heavy amendments to make it suitable to cater for offshore wind projects. This aspect is regulated by the fact that FIDIC is primarily suitable for onshore works, and since most of the works happen in the offshore environment, the parties have to add additional contractual mechanisms. Specifically, the parties would have to ensure that the contract addresses the following mechanisms:

- Interface risk clauses (in the event of multi-contracting procurement);
- Health and safety procedures at offshore site;
- Seabed (soil) risk;
- Adverse weather conditions;
- Power curve warranty/test;
- Knock-for-knock indemnity;
- Installation vessels, crew transport vessels (CTV) and cooperation with such suppliers;
- Marine Warranty Surveyor (MWS) provisions.

The thesis showed that offshore wind contracts share plenty of common aspects with other construction and infrastructure projects from a contractual perspective and that the parties would usually discuss similar issues for what concerns, for instance, liquidated damages or defect notification period. However, since most of the mechanisms require particular attention, the thesis only analyzed the limitation of liability clause referring to the k4k regime and the vessel & adverse weather previsions.

FIDIC does not provide for a limitation of liability where the party that suffered a loss would bear its own costs despite of fault of another party who caused the damage. Therefore, since the works offshore is prone to accidents and incidents, including to people and property damage, the parties decided to avoid lengthy legal process in identifying who caused the damage and who should bear it and to allocate such risk by knock for knock.
The thesis also highlighted that the contractors must pay attention to the carve-outs in the k4k regime related to employer’s equipment and that they need to secure a limitation of liability for such damage. A practical example was provided on how an indemnity clause can be drafted by merging the LOGIC indemnification regime into FIDIC. The parties can also use as a base the mechanism provided by NTK or BIMCO.

Further, the thesis explored and furnished solutions to the challenges related to vessels and adverse weather conditions. The limited availability of the installation vessels on the market provides a big challenge for developers in planning the installation campaign. In addition, the risk of adverse weather has a big impact as the delay could impact the vessels obligation on other contracts.

The thesis highlighted what kind of relief might get a contractor if it exceeds the allocated adverse weather condition days that can result in either extension of time or payment. If might also happen that the adverse weather might result in prolonged suspension whether the contractor would be able to terminate the agreement for convenience if the suspension will exceed a certain number of days.

It is important to note that the merge and alteration to FIDIC will result in a hybrid contract which can no longer be called FIDIC as it might be in breach of the FIDIC Golden Principles which state that:

“(…) The replacement and changes introduced have lately been found to be substantial and of such extent, that the final contract no longer represents the FIDIC principles, and thus are jeopardizing the “FIDIC brand”, and misleading tenderers and the public [emphasis added].”

It would be recommended to the parties to avoid sharing the hybrid versions and advertising their invitation to tender that they used a FIDIC contract. Up to date, there is no official contractual form that is designed to cater specifically for offshore wind projects. FIDIC, BIMCO and LOGIC have been among the most used forms within the industry. The standard would have to be modified accordingly to cater for project specific needs and to insert specific mechanism that were previously outlined in the thesis. As there is no set standard specifically designed for offshore wind by an international renown organization, the parties have to adapt, and build based on the project specific requirements.

Referring to a potential yellow book for offshore wind, FIDIC mentioned in a Q&A session that they are working on Particular Conditions designed for offshore wind projects:

“The FIDIC CC currently has a TG preparing a “Plug In” (standardized set of PCs) for the 2017 Yellow Book GCs, specifically for offshore wind projects.”

The work is on-going already for several years; however, the PCs have not yet been published. Overall, while discussing with professionals involved in OW industry, even though FIDIC will launch the PCs for the yellow book, the developers might not be willing to use it. This is due to the fact that

216 Klee, p. 628
an unofficial market standard has been developed already. However, it might be helpful for new players that enter in the industry to have a standard which they can rely on during negotiations.\textsuperscript{218}

The perspectives of such standard would be of course welcomed by the industry, but as with other standards it will take time before they will be fully assimilated by the industry. As Chris Kidd and Mark de la Haye concluded:

\begin{quote}
(...) \textit{[the] experience shows that development and acceptance by an industry of such standard forms takes some years.}\textsuperscript{219}
\end{quote}

At the current stage, referring to the scope or package, as shown in Figure 1 and 2, the below table provides an overview of the FIDIC contracts that could be used by developers.

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Wind Turbine Generator</th>
<th>Foundation</th>
<th>Offshore Substation</th>
<th>Array Cables</th>
<th>Export Cables</th>
<th>Onshore Substation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCOPE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td>Yellow FIDIC</td>
<td>White FIDIC</td>
<td>Bespoke</td>
<td></td>
<td></td>
<td>Yellow FIDIC Bespoke</td>
</tr>
<tr>
<td>Supply</td>
<td>Gold FIDIC</td>
<td></td>
<td></td>
<td>Red FIDIC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>Yellow FIDIC</td>
<td>Yellow FIDIC + BIMCO or + LOGIC</td>
<td>Bespoke</td>
<td>Yellow FIDIC</td>
<td>Yellow FIDIC</td>
<td>Yellow FIDIC</td>
</tr>
<tr>
<td>Vessels</td>
<td>Bespoke</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Site Investigations</td>
<td>Green FIDIC</td>
<td></td>
<td></td>
<td></td>
<td>White FIDIC</td>
<td></td>
</tr>
<tr>
<td>O&amp;M</td>
<td>Red FIDIC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bespoke</td>
</tr>
</tbody>
</table>

\textit{Table 10. Contracts that could be used for offshore wind projects based on packages and scope.}\textsuperscript{220}

In the meantime, the parties will use as a basis the standard listed in above and amend them into bespoke version of agreements.

\textsuperscript{218} See question 11 in Appendix 3.
\textsuperscript{220} The contracts must be amended accordingly to fit the scope as they might not be fit for use in the original wording. Ralph Busch, Construction Contracts for Offshore Wind Farms, International Construction Law Journal, 2014, p. 447
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Appendix I

11.11.2020

INTERVIEW

/on the lessons learned from offshore oil & gas that could apply to offshore wind/

Background

Reno has successful and extensive experience in supply chain management and strategic contracting from early phase development throughout execution for major capital projects in the offshore wind and Oil & Gas industry.

Reno was a CAPEX contracting specialist for capital development projects. Previously as Head of CAPEX Procurement with DONG Oil & Gas and Lead Contract Manager at Ørsted Wind Power.

The interview was done at Copenhagen Offshore Partners A/S in English. The interview was recorded and then sent to Reno for review and approval.

Questions

Q1: What is the usual contractual set-up in Offshore Oil & Gas?

Reno: Staged-gated contracting process is typically applied. The prime focus is to create a robust front-end engineering phase to select the best concept and to mature this through a detailed FEED engineering to finally enable the best basis for an EPCI competition and contracting. Contracts are typically structured as major contracts but applied to the different project phases. The cost and exposure are nearly 50/50 between sub-sea work and facility work, depending on the actual development, whether Greenfield (completely new production field) or Brownfield (existing production field being modified).

Cristian: You mention EPCI, however, did you encounter other contractual set-ups/strategy e.g. EPCM, multi-contracting?

Reno: The key message is that the Offshore Oil & Gas (OOG) Industry prefers bundle contracts, not a multi-contracting strategy. In the EPCI, you have one counterparty who takes the responsibility, but you can also have the EPCM, where they are working on the developer’s behalf, the EPCM was also used.

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221 Copenhagen Offshore Partners (COP) is a leading and experienced provider of project development, construction management, and operational management services to Offshore Wind projects. The company is headquartered in Denmark and has offices in Taiwan, USA, Canada, Australia, Japan, and Korea, and is owned by the management. COP’s team of specialists has a broad range of competencies within project management, early and late-stage development, engineering, construction, procurement, operational management as well as business development and project financing.

More information: [http://cop.dk/](http://cop.dk/)
The reason for undertaking the EPCI strategy is that it enables the Contractor to complete the detailed engineering, therefore, it is a smooth transition from the engineering phase to the construction phase.

**Q2: What determines this set-up?**

The risk allocation becomes clearer. The basis becomes and the EPCI Contractor undertakes full commitment to deliver the contracted solution and to ensure interface management within its scope and with other major contractors.

In this set-up, the EPCI contractor also has the opportunity to come with some optimization to the project. The contract price, however, can be both agreed on a lump-sum basis or an open book. In the first case, the EPCI contractor has a cap, which means that he might not be compensated for extra hours or work which is above the agreed lump-sum, therefore he has to be as efficient as possible. However, in practice, you would see open book prices on the engineering phase and lump-sum on the construction phase. But that also means that in the construction phase, the EPCI contractor has more certainty about the execution of the project and if he can undertake the risks.

**Q3: What is the standard contract that is used in Offshore Oil & Gas?**

The Norwegian contract standards are known as balanced, clear, and fair contract standards, and are appreciated by both owners and contractors. Different variants are available depending on scope and accountability (NF / NTK / NSC). This is a very user-friendly standard.

Predominantly, you see the Norwegian standard used in Europe, but it’s an international contract, and you can see it applied across the globe. Typically, what operators do, they take a standard and modify it to their needs and then they create their template based on a standard.

Under Norwegian standards, you can have either EPCI-full turnkey either EPCM or multi-contracting. There is also a standard applicable to sub-sea activities. If you look at the CAPEX, 50% of the cost is on top of the seabed and 50% is below the seabed. However, typically all the risk lies below the seabed, as you don’t know what might be under it.

**Q4: What about FIDIC, LOGIC, or BIMCO, did you encounter any of these standards?**

LOGIC and BIMCO are more used for simple vessel services and operations, as soon the contract includes engineering and construction then the other contracts are preferred. Regarding FIDIC, and the employer’s requirements and other Schedules, it’s a bit messier for me, in the Norwegian standard you have both the legal and commercial terms, but when you look at the technical part, it’s a better structure and a more user-friendly way.

**Q5: Did you see other standards used in other parts of the globe compared to Denmark?**

Yes, there are others and predominately these other contracts are developed by the individual Owners but based on known contract standards. However, when applying known contract standards, such as Norwegian standards this enables better options for balanced negotiations.
**Q6: What are the similarities between Offshore Oil & Gas contracts and offshore wind?**

Work is offshore, which is associated with limiting and constraining factors when working offshore. Costs and risks are considered to be factor 5. Also, many contractors are the same, except for subsea (O&G drilling companies, etc.). However, the green energy transition is pushing the OOG contractors to move into offshore wind.

**Q7: Did you encounter any disputes related to the performance of the contract in your career?**

Yes, however, the prime reasons for disputes were nearly always due to the poor performance of the lead contractor, not having fully understood the scope, the deliverables, and the required quality level. Reasons for default being linked with too low pricing and far too accelerated timelines and with claimed lack of balance in the contract (price commitment – quality level – resource allocation).

If the contractor shows poor performance, then he’s hit by the LDs, which can lead to termination. An important thing to note is that in most cases, termination is not desirable as it is very expensive. I’ve been in some contracts which lead to termination due to high LDs, then we simply abandoned the project with a huge loss.

In my experience 9 out of 10 times, there’s been a dispute for the reason for misalignment performance. The problem with this contract is that they are very complex, and sometimes you see that the contractors undertake obligations which later on they can’t deliver. That’s also due to the EPCI wrap. In the early phase of the project, all participants seem very optimistic, however, at the execution phase, you can see clearly if the contractor overestimated its capabilities towards the performance of the agreement. Therefore, most of the disputes escalated because of the poor contract management by the contractor.

**Q8: What are the lessons that need to be learned from Offshore Oil & Gas that might apply to offshore wind?**

**Reno:** The structured approach, enabling clear phases and firm decision making to create more consistency and robustness in the execution. It’s important to note that the complexity in OOG is higher than in OW. OOG is more complex because you are looking at one complex unique development and installation. That’s why the stage gated process is important. Whereas OW is a minor complex and with several installations, so you can learn and improve within the project. The decision process from OOG could be beneficial for OW, e.g. if you pass a gate, then the decision is frozen, and you move to the next execution phase. In offshore wind, however, we have the tendency of last change adjustments, which means carrying on a huge amount of risks.

**Cristian:** What about variations in the Offshore Oil & Gas contracts?

**Reno:** As mentioned, in the offshore wind we have both variations during the tender phase, but also after the award. Whilst in oil and gas we have the concept of “design freeze”, which means that the decision is locked. Therefore, this set-up would be beneficial for offshore wind, as you would
undertake less risk after you “freeze” a decision. But it also comes with consequences, because we also want to have the latest turbines before we start the installation, but then we also make the execution riskier.

Another lesson learned from OOG is utilizing the market competences, it is very important. When you do the front-end work, we should allow the contractors to bring the best knowledge to our project. No matter what our project is, we should make sure to on-board the best innovation and the best knowledge from the contractors. The challenge in offshore wind is that we need to build-up the contractor market.

**Q9: What are the most negotiated contractual terms from an Employer and Contractor’s view?**

The liability terms in alignment with the actual scope and performance as per the contract. Also, payment terms and cash-flow are very important due to the extensive contract costs. Regarding LDs, normally the cap is between 10-20% of the contract, if you reach it, then you can terminate. The issue here is that when you hit the cap, then you have a project that is in the default.

The LDs would never save the project, it’s just a mechanism. LDs are always being negotiated, but the overall liability, in terms of what kind of performance do we expect the contractor to undertake, has that been well described? What kind of project-management do we see, what kind of interface management? Are those parts very well described in the contract? Because if these parts are not well defined, then you are hitting delays, and delays provide the LDs, and then you are in default.

Therefore, many times, a root cause for the big contracts to collapse is the poor project/contractual management. The same applies to offshore wind. The time is also very important, because this is mainly the trigger for LDs, so if you take some unrealistic tasks that are not doable within the contractual time, then from the notice to proceed both parties are under the pressure.

What happens, in reality, is that the contractor would accept all the terms because he wants the contract and the money, and the employer would be interested in awarding the contract based on the cheapest offer, but basically, you are looking at something that might result in default.

**Q10: Is the offshore wind challenges with vessels and adverse weather conditions similar to Offshore Oil & Gas? How they are handled?**

**Reno:** Yes, same issues however different profiles. In the Offshore Oil & gas installations are much shorter in duration, but much larger and more complicated. Whereas offshore wind is very much volume-based scopes. The contract price is therefore very different from oil and gas being very high.

**Cristian:** Who would typically take the risk for the adverse weather conditions?
Particularities of International Construction Contracts in the Offshore Wind Industry

Cristian Rubanovici

Reno: In Offshore Oil & Gas, it is agreed how much weather is included. That means an installation (e.g. P10 or P15, etc.)\(^{222}\) that is part of the contract, so if the contractor expects in the worst case 10 days of weather down-time, then the vessel could remain at the site for 10 days, if the weather downtime is more than that, then typically the contractor would have right to demobilize and do other works and then return to complete the works.

The big difference between Offshore Oil & Gas (OOG) compared to offshore wind (OW) is that in OOG there is typically a single lift, then the contractor could leave for another project. In OOG you could have a full season where the contractor would work, therefore, the weather down-time is different. In OOG almost every project is unique, you only do one thing of such installation, and you have a window of 20 days, and if he exceeds the 20 days, then he has another contract to do. Therefore, in OOG everything has to be more accurate because the scope is bigger, and the time is less. OW is more volume-based e.g. 100 turbines, which includes more float for delays during installation.

Cristian: Do you think the difficulty of finding a vessel of OOG is the same compared to OW?

Reno: In OOG many times is difficult to find the right vessel that is available, but I think OW has a much higher degree of difficulty in finding a right vessel because there are more and more projects, technology is developing, size is increasing and the vessel contractors can’t hold the pace with the industry development. For example, 3 years ago you had 10 vessels that you could use, then now the turbines increased in size, from those 10 you could only use 5 of them that are capable of doing OW installations, that’s due to the size of the turbines and foundations.

In OW the Developers do the innovation first, then they turn to the supplier and ask if they are capable of doing such works? And that’s one of the big challenges in the OW industry, compared to OOG.

Q11: Is the knock for knock regime similar in both offshore wind and Oil &Gas?

This is very much the same. The insurance framework applied is based on the same principles across the two industries.

Q12: Where is the higher interface risk between different agreements?

The interface is critical in the handling and execution of the project. However, the interface criticality already starts in the engineering phase, to ensure that whatever is being engineered is suitable for construction and installation, which means that these interfaces are very important to facilitate and outline within each of the contracts. However, in the early project phase, these contracts have not all yet been entered, which means that these key interfaces have to be ensured in your management, contract, and engagement plan. Consequently, interfaces are crucial and need to be adapted as part of your staged gated development to ensure alignment from early development throughout the execution and delivery of the project. One of the main reasons for disputes and

\(^{222}\) P50, or P100 (this stands for probabilistic weather simulation, meaning how much weather impact is included in the contract and P100 means 100% weather included except for force majeure or adverse weather criteria)
arbitrations are very often linked to interface issues, that contractors are claiming poor and misaligned performance by others, which leaves the Owner very exposed.

When I look at the procurement quilt in the OW, we typically have around 10 contracts, in OOG you might have around 2-3 big contracts above seabed (Engineering, EPC, and Installation). The reason for doing multi-contracting in OW is that you could get better pricing, but when you are going to new markets, there is a tendency to involve the local market and develop a big contractor; I think that in the future the tendency in OW contract strategy would be to do EPC, however, at this point there is limited availability to do 100% EPC/turnkey in OW.

-End-
INTERVIEW
/on the lessons learned from onshore wind that could apply to offshore wind/

Background

David has a successful execution of complex business cases in auction markets globally for more than 3,000 MW of large-scale Onshore Wind projects across Australia, India, and the Americas. His focus is on WTG Supply & Business Development. Before joining COP, David worked as a Global Deal Team Lead at Vestas.

The interview was done at Copenhagen Offshore Partners A/S in English. The interview was recorded and then sent to David for review and approval.

Questions

Q1: What is the usual contractual strategy in Onshore Wind?

David: The contractual strategy is usually tailor-made, and it depends on various factors. From a turbine OEM perspective, it is “Supply and Install”, which is the most used across the globe. In this set-up, the turbine OEM supplies and installs the turbine, the towers, and also Commissions. However, they don't deal with the foundation, roads, cables, etc.

On the other hand, you can also have the “Supply and Commission” set-up, which is popular in China or the U.S., where the turbine OEM would supply the turbines to the site, and from there, a third-party would install them, and then the employer would commission. In this kind of set-up, the risk lies with the developer, that’s because the onshore wind industry is very mature compared to the offshore wind. Developers are very comfortable with taking lots of the interface risk and they are not willing to pay the overhear, however, in some markets, you do see a lot of ECP.

The EPC structure is mainly used by the funds, or companies who do not have experienced people on board (e.g. engineers, contract managers, etc.), so it is mainly the investors with no prior experience. In that case, it’s the turbine OEM who got the balance sheet enough to put a PCG. The employer could also enter into a JV with a local construction company; however, this set-up presents its risks as there is a joint liability and the JV would normally be smaller compared to the turbine.

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223 Copenhagen Offshore Partners (COP) is a leading and experienced provider of project development, construction management, and operational management services to Offshore Wind projects. The company is headquartered in Denmark and has offices in Taiwan, USA, Canada, Australia, Japan, and Korea, and is owned by the management. COP’s team of specialists has a broad range of competencies within project management, early and late-stage development, engineering, construction, procurement, operational management as well as business development and project financing. More information: [http://cop.dk/](http://cop.dk/)
OEMs like Vestas or Siemens Gamesa. In the EPC case, it’s recommended that the turbine OEM sits on top of the contract.

Cristian: Did you encounter any PPP’s set-up in Onshore Wind projects?

David: It’s not very usual, this is because the industry is very mature, and it has private Developers. Generally, you would have governments doing PPA’s, not auctioning projects. What might happen is that a government would tender e.g. a 500 MW project and then bidders would present their offer, and the bidder who gets the contract awarded would be responsible for building the onshore windfarm. Everything, in this case, is done at the developer’s risk, compared to offshore wind.

Cristian: What about the permitting part?

David: As mentioned, everything is done at the developer’s risk, what you’d normally see in the Onshore Wind are a lot of private PPA’s (e.g. Microsoft or Apple would come and buy the power, etc.), these are merely private transactions. Of course, you still need to get the permits to build, but it’s relatively easy compared to offshore wind; in onshore wind, it might take around 12-24 months, in some cases even less as the guidelines and requirements are very clear—and again it’s due to a developed legal framework for onshore wind.

Q2: What determines the “Supply and Installation” set-up?

David: I would say:
1) Cost;
2) The appetite of risk from the turbine OEM;
   a. There might be cases when a developer would want an EPC set-up, and the OEM would simply not offer if it’s a new market, especially, if the responsibility for getting permits lies with the turbine OEM, then the OEM would most likely refuse this set-up.
3) The appetite of risk from the developer;
   a. If it’s an experienced developer, they would never ask for an EPC set-up, they would try to cut-up the scope as small as possible;

Cristian: Is it then a “Multi-contracting” strategy? Where the Developer would split up the scope and subcontract the works? Could it also be the case that the Developer undertakes a part of the scope?

David: Yes, for example, Enel Green Power, which is similar to Ørsted in a way, as they are the biggest onshore wind player in the world, they have plenty of qualified personnel who can do the e.g. the design, site-design, electrical design – in-house. Since they have a procurement department, most of the scope would be given to them, they would also undertake to take the grid part and manage it themselves. They can also do self-service of their turbines, which could also be the case for offshore wind.
Q3: What is the standard contract that is used in Onshore Wind? Did you see other standards used in other parts of the globe compared to Denmark or Australia?

David: From my experience, I didn’t encounter a particular standard, it varies from country to country. For example, in Australia and New Zealand you have an Australia/New Zealand Engineering Standard Contract, this is used as a basis, however, it’s amended heavily. The same applies to other jurisdictions like the U.S. or China. The standard contract is mainly driven by the local market. Some companies use a country standard as a basis (e.g. AB in Denmark), but they develop their own in time which has that standard as a basis, but it’s heavily amended.

Cristian: Did you encounter some of the international standard forms like FIDIC or NEC?

David: I’ve seen NEC; however, I haven’t seen the FIDIC standard to be used. I have only seen NEC in Australia, but I haven’t seen NEC in the U.S., they have a local one. Nevertheless, this doesn’t mean FIDIC is not used, it’s just in my experience, I haven’t seen FIDIC standard used in Onshore Wind projects.

Cristian: For example, Vestas, if they would go to a new market in Asia, what standard contract would they use?

David: They would comply with the local one. The only situation I saw Vestas using their standard contract was in Germany, however, it was used for a small onshore windfarm for some cooperative housing, it was around 12 pages, easy to work with and understand, and banks were also comfortable with it.

Q4: What are the similarities between Onshore Wind and offshore wind contracts?

From my background on the technology part, I would say: new technology, service agreements, LD’s, these kinds of mechanisms are very similar. The bonding, guarantees, etc., are similar. One of the main differences in this set-up compared to offshore wind is the transfer of risk. For example, in offshore wind you don’t have the OEM component where it is responsible for doing pre-assembly, load-out, the responsibility of who’s on the boat, etc., also the insurance regime is very different compared to Offshore. As an example, in onshore we don’t use the knock-for-knock principle, it’s negligence-based.

In onshore, the turbine amounts to around 60% of the contract, if some small contractor is involved in an incident, they would not be able to handle knock-for-knock.

Q5: Did you encounter any disputes related to the performance of the contract in your career?

David: In the EPC structure you see a lot more disputes compared to Supply and Install. That’s mainly related to delays, specifically on the grid connection. For example, in India, the developer would come with a wind farm, and the only land that they will have secured is for the actual turbines, but they won an EPC contract, so that means that you as a developer have to secure the land parcels to the transmission station. For some projects that could be 50-60km and the developer might need
to deal with hundred-plus land-owners, and in India, it’s very difficult to know who owns the land, nothing is laid-out. What could happen is as an EPC contractor you might take that risk. In most of the cases the developers are highly optimistic and assume such kinds of risks, and that triggers the delay mechanism, they can’t deliver on time, and as mentioned, most of them are related to the grid. Another trigger that causes such delays are the split of responsibilities, if the parties haven’t made clear or missed them, then you might get a claim.

**Cristian:** What about offshore wind, did you notice similar disputes?

**David:** A good example would be the permits which are the duty of the Developer to obtain. So, if the Developer must obtain a certain permit to get the work started, and if they don’t have it, obviously the contractor won’t be able to start, which would result in a claim.

**Cristian:** How are such disputes normally handled in Onshore Wind?

**David:** Generally, you would have similar a DAB/DAAB mechanism, but the parties tend to negotiate/mediate individually without using the dispute resolution mechanisms. The parties would try to cooperate and mitigate the risk to avoid delay as much as possible. For example, if the permit is delayed, then basically the whole project is delayed, however, it’s easier to get a crane in onshore wind, compared to a vessel in offshore wind, it might take you e.g. two years to get a vessel. In onshore wind you have more flexibility in this sense, and you can play with the schedules and the program due to the availability of suppliers and equipment.

**Q6: What are the lessons learned from Onshore Wind that could apply to offshore wind?**

For contracting there is a huge opportunity for offshore wind to try to (...) I think it comes down to the cost structure, because once you are on a big project scope e.g. the T&I, you could get the same contractor to install your foundation, turbines, substation. In some cases, it might be cheaper to have the same contractor working on the same scope instead of splitting it to different contractors and managing the interface risks. This could also prevent the situation when if one contractor goes bankrupt, then it might put the whole project in delay.

In onshore wind you have a lot of third parties involved in the O&M part, you don’t see that in offshore wind. But the barriers for new players to enter the market are very high compared to onshore. You might have the best team on board, but you still need to hire a vessel, and that vessel is expensive, and usually not available. In onshore everything is more flexible; you can easily substitute subcontractors or equipment if something goes wrong. Perhaps long term as the industry would mature, this attribute would be met more often in offshore wind.

It’s important to remember that offshore projects generally take lots of investments and lots of time, they could be extended to up to ten years, but speaking about onshore, you could easily plan a project and deliver it within 12-24 months and with little investment. The operational life span of an onshore turbine is relatively similar to an offshore one – 25 years.
**Q7: What are the most negotiated contractual terms from an Employer and Contractor perspective?**

Always the LD’s and making sure that you have adequate protection by capping them. The market standard liability cap in the onshore wind is around 15-20% of the contract price. What you see onshore is the power curves LD’s that are very important. However, you rarely fail a power curve test, which relates to the maturity of the industry. A lot of OEMs are willing to take this kind of risk, and that relates to the possibility of remedying the defects, which offshore would be expensive and risky to undertake.

In some cases, parties argue the definition of the “main component” (which could be the gearbox, the turbine, etc.) in offshore you argue what is the main component, due to the risk of the OEM. The insurance part is also negotiated. Offshore for example you don’t have any designer who fabricated the foundation. You would get a contractor like Rambøll who would design the foundation and then give the drawing to a manufacturer. But if you have a design issue, you could claim very little from Rambøll as they don’t take the operational risk. On the onshore, you would have civil engineering companies who would Design and Built, and you could claim the cost of the design failure.

**Q8: Where is the higher interface risk between different agreements?**

Cabling is always a good one, who terminates the cables, who is responsible? Because the turbine comes with cables, and it’s always challenging if you don’t have the scope as an OEM. This kind of risk is very program related. But overall, the interfaces are very easy to handle compared to offshore wind.

-End-
Appendix III

17.11.2020

JUM-BO Consulting Group A/S
Islands Brygge 26, Copenhagen S,
DK-2300, Denmark
Ulrik Bang-Olsen
CEO / Managing partner

INTERVIEW
/on the specifics of the offshore wind contracts/

Background

Ulrik is a Danish qualified lawyer with experience in procurement, negotiation, transaction, contract, and claim management matters, as well as litigation and arbitration both nationally and internationally. Ulrik has been involved in a substantial number of large Danish and international construction and civil engineering projects, especially working with various FIDIC based forms of contracts giving him a unique knowledge on the use of FIDIC contracts subject to Danish law. He has worked on various tenders and contracts related to offshore windfarm projects and has substantial knowledge concerning most legal and contractual matters related to civil works being performed offshore.

In 2013 Ulrik was appointed as Lead Counsel for a consortium of three law firms – Bang-Olsen & Partners, Molt Wengel Advokatpartnerselskab, and Bird & Bird Advokatpartnerselskab advising a leading European consortium of international contractors concerning their bid for the Fehmarn Belt Fixed Link. Ulrik has also taught several courses in the use of FIDIC contracts for the Danish Association of Consulting Engineers (FRI) and the Danish Association of Architectural Firms (Danske Ark). Besides, Ulrik has been responsible for internal courses to the contract managers of the DONG Energy A/S procurement department for offshore projects.

The interview was done via Microsoft Teams, in English. The interview was recorded and then sent to Ulrik for review and approval.

Questions

Q1: What is the most common contractual strategy in offshore wind? (e.g. EPC, EPCM, Multi-contracting, etc.)

As you say in the way you phrased your question, what would you most of the time need is hybrid set-ups, meaning that for certain packages you would see EPCI and for other packages, you would see a pure multi-contracting strategy. The primary driver is the scope, and in addition to the scope, the project set-up, the financing of the project would be a defining factor when looking at the contractual strategy.

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224 JUM-BO is a consultancy firm dedicated to providing procurement and contract management services with software solutions within the Offshore Wind industry and other infrastructure projects. More information: https://jumbocg.com/
When you look at certain scopes (e.g. the Cables) the incentive is to pull it together, meaning that the installation and supply are part of the same agreement. From the perspective of the employer, you are dealing with an important interface risk, especially in cables which presents a high risk of damage. Therefore, by wrapping up the supply and installation, you avoid such risks of the interface. For other packages, you can also see stand-alone contracts for the WTGs, but there is also a drive for merging the WTG in supply and installation.

I can say that you rarely see only an EPCI set-up, it depends on the package and the extend of the scope of the project, and who is the employer of the project.

**Q2: What determines the hybrid set-up?**

The example I gave above with the cables is a set-up where the hybrid strategy would work. But it could also be driven by the finance part, in some cases, it might be too expensive to put two scopes together e.g. fabrication of foundation and installation of them, which are two big contracts, and if you pull them together, one of the contractors would then have to be the “main contractor” or an EPC contract, and that could add a mark-up of 10-15% in price. There are plenty of reasons for taking one or another strategy in such contracts and that is very project-specific.

**Q3: What is the most common standard contract used in offshore wind?**

There is no doubt that the FIDIC hybrid is the most known and used in the industry. It is not nature given that it would be the best contract, but that’s for historical reasons as the first Developers of offshore windfarms started to use the FIDIC books as a base. I remember Ørsted (formerly DONG Energy) used the Danish standard AB, however, when they started to work with international contractors many of them being Dutch, and many of them coming from the dredging industry, those contractors didn’t know the AB, and they started to look for an international standard basis. FIDIC was chosen to be the right fit, which also has the benefit of project finance as FIDIC is a known used standard. Therefore, it allows everyone involved in the project to know and be familiarized with the contractual set-up.

However, FIDIC is not the only know standard used in the industry, we do see that players with an Oil & Gas background use the standards from their industry, for example, the Norwegian standard contract (NF, NTK, NSC). You could also see that for certain packages FIDIC is not being used, for example on the installation scope LOGIC could be used.

**Q4: What is the reason for using FIDIC?**

The main reason is that you need to find one standard which is known by everybody, its fair, certainly in some in cases of the hybrid set-up, some risk allocation might not be considered fair from a FIDIC contract risk perspective, but in general, there is a possibility of comparing with the starting point, also the players might not be happy for undertaking a certain risk, but as longs as its clear for them, they could navigate easier through the risk and take the appropriate measures to mitigate it. As mentioned, there is a drive of standardizing the agreements, and what you see is that
the contracts in offshore wind are becoming the same which is driven by large law-firms or financial institutions.

**Q5: Do you find contractual similarities between offshore wind and Offshore Oil & Gas?**

The common starting point is that in both cases the work is offshore, I would say that most of the time there is a difference in the financing structure if you are looking at big Developers like Ørsted, but at the project financed companies like Copenhagen Infrastructure Partners (CIP), the contract would reflect the financial entitlement of the financing parties (e.g. the step-in rights, assignment rights, key subcontractors collateral warranties, novation agreements, etc.).

If you look from an execution point of view, the difference is from Offshore Oil & Gas is that you have a longer campaign in offshore wind. However, on a big Offshore Oil & Gas project, you sail out there, you place the jacket and you put the platform, therefore, this could be done in one month, but in the offshore wind the building could take up to three years. Therefore, you need to regulate these aspects in the contract which might extend to a longer period.

From a historical perspective, the Offshore Oil & Gas industry is more obsessed with getting things done faster and maybe not thinking so much about the cost related things, while in offshore wind, has much smaller margins, time is also of the essence, but at the same time, you need to be very cost-aware. I would also say while offshore wind is a younger industry, many of the contractual mechanism from it are more advanced compared to Offshore Oil & Gas.

**Q6: What are the most negotiated contractual terms in offshore wind from both sides of the Employer and the Contractor? And why?**

There will always be issues regardless of which contract you are discussing, e.g. risk of delays, LDs associated with it, termination entitlements, limitations of liability, this is typically discussed a lot. But there is some sort of unwritten market standard for certain scopes related to the limitation of liability. I would say that there are classical contractual issues which you always discuss and then there are things connected to the financing of the project, besides, the scope is highly discussed and the split of responsibilities (who is doing what). This also implies that you as a lawyer will be able to handle the technical issues, but you will be responsible for reflecting that in the conditions of the contract, thereof aligning the technical specifications with the scope of the contract.

**Q7: How is the interface risk normally regulated?**

Most of the time you will have the interface risk regulated in the conditions of the contract. I have to say that this is a kind of risk that you could not regulate properly in the conditions of the contract. The interface risk would need to be dealt with in the offshore projects in a much-detailed way, where you identify each risk, and then you outline how you want to deal with it. You reflect that in the program, risk register, etc., and you can’t solve it by putting in some boiler-plate provision in the CoC often saying that the contractor should align with the other contractors and simply not to bother the employer, that doesn’t work.
Q8: Do you see any contractual lessons learned from other industries that could be equally applicable to offshore wind?

Yes, I do think that there are lessons learned regarding interface management in other large infrastructure projects, which is something that people have been doing since the time of the pyramids. To a large degree and for many years, we have been inspired by the Oil and Gas Industry, but there is certainly a reason for other onshore maker projects and how they do it, for example, MTH or Femern tunnel and these kinds of contracts have some very well-developed set-ups which offshore wind could learn from, and I don’t think the offshore wind is there yet. Also, how to deal with concurrent delay, it’s too superficial, if you are relying on the FIDIC wording which is too broad. Interface risk and delay mechanism are certainly some things that could be learned from other mega projects.

Q9: What is the liability regime in offshore wind? How do the parties split the risk and what is the contractual mechanism that is used?

Ulrik: You could say that the risk division is should be allocated to the party who is best able to control it, but it is difficult for many employers not to place the risk which they don’t want to deal with to the contractor, even though the contractor is not able to control such risk. So, there is a difference between how it should be and what it is.

Talking about liability regime as such, the market standard developed towards knock for knock liability regime in offshore windfarms project.

Cristian: Does the London Maritime Convention affect anyhow the contractual knock for knock regime?

Ulrik: I have not seen that; I don’t think it has been an issue.

Q10: What is your opinion on the Floating Windfarms contracts, could similar contractual standards be used?

To be honest I have not thought that through if there are some needs specifically related to that. Obviously, the risk becomes connected in the transport to site, but apart from that, I do not see any reason why the present contractual regime would not apply to floating windfarms. Different risks would materialize through the fabrication or the transportation scope and installation. They might be a bit different, but it’s the same elements that you have in the present contracts.

Q11: What is your opinion on a potential FIDIC Yellow book designed for offshore works? Do you think it might be successful or the parties would stick to their tailor-made template?

I don’t think it will make a difference, because most of the industry has already developed these contracts, and probably are happy with them, at least on the employer side. They might also not be willing to use a new template which is developed by FIDIC, regardless of what you do, you would need to work a lot on the content. And as I said, the market standard has developed already, but of
course, it could be helpful for new players and contractors who are not aware of that, they could get some help there. But I do not see a real need, and that is also the reason why they haven’t developed yet one. The market players don’t have enough interest in developing a standard template. I think that companies like Ørsted are happy with their template.
Appendix IV

25.11.2020

CADELER A/S
Fairway House
Arne Jacobsens Allé 7
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Jacob C. Jørgensen
General Counsel

INTERVIEW
/on the specifics of the offshore wind contracts/

Background

Jacob C. Jørgensen is a Danish lawyer with more than 15 years’ PQE from Swiss, UK, and Scandinavian law firms. He is specialized in international arbitration law and construction law – with a focus on onshore and offshore renewable energy projects. Currently, Jacob is the General Counsel at Cadeler A/S, which is a key supplier within the offshore wind industry for installation services and operations and maintenance works.

The interview was done via e-mail in English.

Questions

Q1: What is the used contractual strategy for the T&I scope?

BIMCO Supply Time is the preferred contractual basis.

Q2: What determines this set-up? (e.g. high risk of interfaces?)

It best matches what we actually deliver, namely transportation.

Q3: What is the standard contract used in such works? (e.g. FIDIC, BIMCO, LOGIC)

If BIMCO, is it the WINDTIME, SUPPLTIME, or HEAVYCON that is used for the T&I? In addition, do you normally deal only with T&I, or you are also involved in the construction phase?

BIMCO Supply Time. We typically focus on transportation only.

225 Formerly known as Swire Blue Ocean A/S, Cadeler operates two highly efficient Windfarm Installation Vessels (WIVs), Pacific Orca and Pacific Osprey. In addition to Offshore Wind farm installation, these vessels are very well suited for a wide range of maintenance, construction and decommissioning tasks. Equipped with a 1,200t crane, large clear deck area, working water depth of 60m and 2.5m Hs limit for jacking, our vessels are designed to meet both the current and future needs of the offshore industry. Safety and reliability are two key points of focus in the WIV design and aftermarket support. The WIVs are fitted with six legs to increase stability during jacking operations and a high redundancy diesel electric power system to reduce risk of breakdown. By striving for excellence in safety, recruitment and training, vessel design, maintenance and management, Cadeler provides the best in class service to our customers.

More information: https://www.cadeler.com/en/about/cadeler/
Q4: Why is a “particular” standard used and what are its advantages and disadvantages?

It facilitates the negotiation phase, and our insurers know the terms.

Q5: What are the contractual challenges in such agreements?

None.

Q6: What are the most negotiated contractual terms from the Contractor’s side? And why?

LDs and seabed risk and liability caps.

Q7: What are the most common disputes that arise during the performance of the contract?

Delay related disputes.

Q8: Are there any legal challenges that might affect the performance of the contract? (e.g. mandatory law or international conventions?)

Not really.

Q9: There is limited availability of installation vessels, in your opinion, would vessel Contractors and Employers be interested in joining a vessel consortium or a pool agreement?

This has been attempted but with limited success.

Q10: Who takes the adverse weather conditions risk in offshore wind, and how do you usually deal with it?

The customer. The vessel remains on hire in case of adverse weather.

Q11: Do you find it difficult to enforce knock-for-knock clauses around the globe?

I have no experience in this regard. I think K4K is a well-known concept in most countries.

Q12: Do you see any lessons learned from other industries that could be equally applicable to offshore wind?

Yes, power plant EPC projects can be a useful source of inspiration.

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