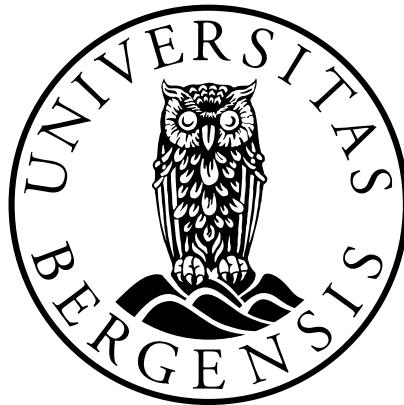


Decommissioning of oil and gas structures in the North Sea

Circularity in the decommissioning framework of oil and gas structures in the North Sea

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1 Introduction

1.1 Objective, research question and scope

This thesis deals with the analysis of circularity in the decommissioning framework of oil and gas structures in the North Sea. Does the law open for the principles that circularity is based on to maximize the material value in the components and ensure a sustainable decommissioning? Does the framework set up legal barriers that prevent a circular approach? How can the framework include circularity in a decommissioning regime that consists of complex regulations? These are all relevant questions for this thesis, and the research question will be if the relevant decommissioning framework for oil and gas structures in the North Sea includes circularity in the decommissioning process. The room for circularity in the decommissioning framework will be analyzed to see if the framework includes, fosters, or hinders circularity of the material in a decommissioning process. Possibilities and shortcomings in the framework for ensuring circularity in the decommissioning process, will also be looked at.

There are several hundreds of oil and gas platforms in the North Sea. There are over 600 installations in the UK alone that the oil and gas sector will have to decommission through the next 30-40 years¹. This also means that over 840,000 tons of materials must be recovered over the next decade, with an estimated cost of around 25 billion British pounds². When an oil and gas platform has come to the end of its working and productive life, there is an obligation to remove or prepare to leave in place the offshore structure, and this process is called decommissioning³. The consequences of the removal obligation that applies to all these installations will result in tons of leftover materials with economic value and a high potential for reuse. Particularly the ones to be decommissioned in the North Sea, where we can find the heaviest and largest oil and gas platforms. By including circularity in the decommissioning process, an oil and gas platform does not have to have an end of its useful life - but can rather live further on by being beneficial in other economic life cycles.

¹ Resource Recovery from Waste (2019).

² Ibid.

³ Anchustegui, and others (2021) p. 5.

The problem is that most of the platforms in the North Sea have never been designed to be removed, especially in a sustainable and circular manner. This, combined with their size, makes the decommissioning in the North Sea expensive. Therefore, it is necessary to ensure as much circularity as possible to get the costs down. At the same time, this will take care of the environment and create a more sustainable future for coming generations.

These practical considerations and the “value” in the materials and platforms, combined with climate change pressure, make it necessary to find mechanisms to ensure circularity in the decommissioning process. When the decommissioning rules and the public international law were formed, it was not thought to foster circularity. Sustainability was not a pressing issue then, and at the same time, there was a lack of knowledge and technical skills regarding future decommissioning.

1.2 Relevance

Climate is inextricably linked to oceans, renewable energy, the environment and sustainable management of natural resources.⁴ The Global Goals provide 17 commitments made by 193 world leaders.⁵ One of the Goals is the Sustainable Development Goal 14, which focuses on conserve and sustainably use of the oceans, seas and marine resources for sustainable development.⁶ Norway also has adopted a long-term low-emission strategy for 2050 to be carbon-neutral, and a target to be carbon-neutral in 2030 if emissions cuts are made by other countries.⁷ This will result in more decommissioning and a need to ensure a sustainable decommissioning process that includes circularity.

Including circularity in decommissioning is a timely topic. The energy transition in the industry and several oil platforms' lifespans are coming to an end. Therefore, decommissioning of the platforms will be the next natural step. However, it should involve circularity to ensure a green decommissioning process that also benefits the economy and minimizes decommissioning waste. Also, the energy transition means that there can be a different use for oil and gas fields, so that reuse or repurposing of fields can be done instead of total removal of the structure. Furthermore, the energy transition and blue economy⁸ ensure

⁴ Regjeringen, article on Klima, miljø og hav (2019) p.1.

⁵ The Global Goals official website.

⁶ Ibid.

⁷ Nordic Energy Research, article on Norway: Carbon-neutral as soon as 2030 (2015).

⁸ To read more: Norwegian Ministry of Trade, Industry and Fisheries (2019)

that the ocean is of high interest to others also in the future. This means that there are more installations in the sea yet to come. They may vary in form, structure, and purpose, but they will all be of a solid size and include a lot of materials that have a circularity potential, and it is, therefore, a topic of importance.

Since the United Kingdom (UK) and Norway have the main domination in the North Sea and much influence over the decommissioning process, this thesis will use these two countries and analyze their relevant national framework and international framework. However, some solutions that other countries have chosen will be looked at to examine different opportunities.

1.3 Methodology

1.3.1 General methodological aspects

This thesis deals with circularity aspects and offshore decommissioning in two jurisdictions in the North Sea,⁹ the UK and Norway. Geographical aspects are important as they construe the application of the law. As all oil and gas activity in these two countries takes place on their continental shelves in the North Sea, they must follow both national and international law regarding decommissioning.

This thesis uses a legal dogmatic method in both public international law and national law as it is explained further. Here the issue of soft law will be of relevance, as discussed below. Also, comparative law approaches to understand the similarities and differences between Norway and the UK regarding sustainable decommissioning are employed. Furthermore, due to the sectoral and technical nature of the topic, the thesis also resorts to law in context approaches, as well as some basic notions concerning decommissioning engineering and circularity and sustainability.

This complex choice of methods and approaches has been made in light of the nature of the chosen topic and the main research question. To determine if the decommissioning framework incorporates, fosters, or hinders circularity, all the different laws concerning decommissioning, including circularity, have to be examined to evaluate the room for

⁹ Misachi (2021).

circularity. The intention is not to provide an exhaustive analysis of the decommissioning framework but merely to focus on relevant law and initiatives to examine the opportunity for circularity in the decommissioning process. Since pipelines and cables from a legal perspective are often not included, they will not be discussed in this thesis since they fall outside most of the legal regulations for decommissioning.

1.3.2 Public international law and national law

Public international law will be examined to show general obligations that the states have to follow. Both Norway and the UK have ratified many conventions and made them part of their national law. Public international law is rules between states. There is some variation when it comes to authorities that can efficiently enforce these rules, and therefore it is essential that the state feels committed to following the international law. Since both countries have a dualistic approach,¹⁰ the national legal system does not build rights and obligations directly on the international law, they have to be implemented in the national law by incorporation or transformation.¹¹ Therefore, international law does not automatically apply as a part of national law. So, when considering which public international laws and regulations can foster circularity in the North Sea, this thesis will look at international laws that Norway and the UK have implemented and therefore is relevant for the discussion on circularity. Since every state is sovereign and therefore is not subject to another power, the understanding of the international law that the states have ratified must be understood by the wording and the purpose of the regulation and agreements.¹² This vital element lays the basics when interpreting the international law regarding decommissioning.

When it comes to regional law, neither Norway nor the UK is a member of the European Union. What happens after Brexit is still uncertain,¹³ nevertheless, the decommissioning in the UK will still be regulated through the national Petroleum Act from 1998. Since the UK previously has been an EU member, its legislation is much affected by its previous membership, and a lot of the regional EU law is still found in the UK legislation.¹⁴ Norway is a party to the European Economic Area (EEA) Agreement, and therefore incorporates EU

¹⁰ Pereira, and others (2020) p. 545.

¹¹ Bustnesli, and others (2021) p. 251.

¹² Simonsen (2002) p. 5 and 6.

¹³ Pereira, and others (2020) p. 201-203.

¹⁴ Ibid.

legislation relevant to the internal market.¹⁵ When it comes to Norway, they do not consider their part of the ocean within the geographical scope of the EEA Agreement.¹⁶ Therefore, many of the directives do not apply to decommissioning in Norway and will not be discussed.

This thesis will also focus on the national practice when it comes to decommissioning, here there are some challenges regarding whether the guidelines are soft law, hard law, or just trade of information between companies. However, they are of much importance and have an impact. Since a lot of the existing decommissioning framework is from the 90s, and in many ways out-of-date regarding decommissioning, the practice and guidelines give complementary information and lay the grounds for what is considered to be practice.

1.3.3 Soft vs. hard law approaches in decommissioning

The decommissioning framework in the North Sea consists of both soft law and hard law. This makes the regulations many, and it has to be considered whether or not they are legally binding to determine if they are soft or hard law. The distinction between these approaches depends on the existence of an obligation and how it is enforced. Soft law is a regulation that is not considered to be legally binding and easier accepted by others. It therefore often occurs in international law where there are many parties. Hard law ordinary imposes the subject to a legal obligation, where breaches can be subject to a court of law.

Both Norway and the UK have chosen to include the relevant IMO Guideline in the decommissioning practice and matters, which is a soft law guideline with recommendations. On the other hand, this soft law instrument has been influential and accepted as a norm in the North Sea.¹⁷

The different approaches have their pros and cons. Hard law are often very detailed, predictable, and narrow, and breaches can be met with consequences. On the other hand, soft law is more flexible, more comprehensive, easier to adopt, and opens for more updated regulatory practices and recommendations that can put pressure on states without legal consequences. As we will see, the different approaches also have various benefits and shortcomings including circularity in the decommissioning process.

¹⁵ Pereira, and others (2020) p. 547.

¹⁶ Ibid.

¹⁷ Anchustegui, and others (2021) p. 43.

1.3.4 Comparative analysis

Since the constant internationalization of law has made foreign and international law more relevant than ever, there will be a comparative legal study to examine the similarities and differences between laws in Norway and the UK's jurisdiction. To describe different ways national law incorporates thoughts on circularity and discover different approaches towards circularity and sustainability. This will provide information on current regulations and insight into two different Petroleum Acts. When comparing two countries, their national policy and practice will also be looked at to understand how they interpret and approach international law. This will also provide information on how they deal with the possibilities or limitations the international law provides on circularity.

There will be a discussion on shortcomings and opportunities for circularity based on what is discovered after the debate on public international and national law.

2 Decommissioning in the North Sea

2.1 Introduction

The decommissioning of oil and gas installations in the North Sea, began in the 1990s.¹⁸ There are still more than 12,000 man-made offshore oil and gas structures across the seas.¹⁹ In Norway, there are close to 500 installations on the Norwegian continental shelf.²⁰ The UK has established 500 installations since 1967,²¹ some have been decommissioned, and some are still standing; approximately 10% have been decommissioned.²²

Since oil and gas platforms in the North Sea are placed out in the deep water and are exposed to severe weather conditions, they have a finite life span.²³ However, since the installations have to resist the weather conditions in the North Sea, they tend to be large. Topsides that are large,²⁴ can weigh over 50,000 tons, and the heaviest structure ever built is The Troll A Platform, which weighed 650,000 tons.²⁵ This makes the removal operations technically difficult and cost-intensive,²⁶ which is why there is a need for a comprehensive regulation for decommissioning. On the other hand, this is not the only concern that decommissioning ensures, it is also a process that is needed to ensure safe use of the sea and for others, protect the environment, and also a guarantee for conducting the decommissioning activity. This makes it a complex process with interrelated issues of economics, finance, engineering, science, politics, law and regulation.²⁷

Since the constructions in the North Sea often are of this massive size, they will leave behind a lot of materials when their time is over. However, it is not always simple to decide what to do with the materials afterward. As many industries have changed their policies on used

¹⁸ Pereira, and others (2020) p. 4.

¹⁹ Anchustegui, and others (2021) p. 5. Pereira, and others (2020) p. 3.

²⁰ Bustnesli, and others (2021) p. 250.

²¹ Anchustegui, and others (2021) p. 65.

²² Pereira, and others (2020) p. 631.

²³ Hammer (2008) p.165

²⁴ To read more about topsides see Liu and Li (2017) p. 1-33.

²⁵ Pereira, and others (2020) p. 6.

²⁶ Hammer (2008) p. 165.

²⁷ Pereira, and others (2020) p. 3.

materials, waste can become a resource when done right. Therefore, it is also necessary to discuss the disposal question.

When it comes to the decommissioning framework, it is important to have open regulations for innovation to avoid standardized decommissioning processes that are often promoted through agreements without involving third parties. Suppose the framework does not ensure room for circularity - in that case, one does not see the value in having installations that can be used in other ways in the future to provide a circular economy. There is a golden opportunity to use such installations and new technology for carbon capture and storage, but only if the regulations facilitate this. However, decommissioning is a complex process. To better understand the challenges that arise, it will be necessary to look at what decommissioning is, before looking into circularity in the framework.

2.2 What is decommissioning

Since oil and gas structures are considered to have a finite life span and, at some point, will come to their end of life, decommissioning of offshore oil and gas structures is the last phase of offshore operations. When the platforms become inefficient or no longer operative, the operators and owners of the platform have to remove them from the sea, this process is known as decommissioning.²⁸ The preferred decommissioning option is the total removal of the installation.²⁹ However, in most legal systems, there are three decommissioning options; 1) total removal, which is the most common and preferred option in most legal systems, 2) partial removal, which allows some parts of the structure to be left behind if justifiable, 3) leaving the structure in place, which is considered to be a strict exception.³⁰

Decommissioning happens after the installation has spent many years in the ocean. Therefore, a decommissioning process can be challenging since the platform has been affected by the weather conditions, and it can take years to plan a decommissioning process. When the planning is done, the different frameworks demand a plan to be delivered for what is to be done with the installation. The time limit for when the plan must be delivered varies from months to several years in the different countries.

²⁸ Anchustegui, and others (2021) p. 5. To read more about the decommissioning process see also p. 5, 6 and 7.

²⁹ Ibid.

³⁰ Ibid.

Offshore structures can be challenging since they vary in form and complexity.³¹ There is a need for a lot of different engineering solutions. It can also be quite unpredictable regarding how the material will respond, the cost, safety, and the effect on the environment. As a result, the decommissioning plan is often a comprehensive plan that has to evolve many different perspectives.

In the decommissioning process, when the structure is to be removed, it is usual to split the structure into different parts depending on the challenges that arise. The parts that are most common in decommissioning of oil and gas structures are first of all the topsides, which are located above the water column and are made of steel.³² The decommissioning process of a topside often consists of removing the whole topside with one lift or cutting it into smaller parts and then shipping it onshore.³³ Second, we have the substructures and foundations found within the water column, and their function is to support the topside.³⁴ Here, removing techniques can vary from lifting or cutting to making them float with buoys.³⁵ Then, the wells must be plugged in and ensure a safe abandonment.³⁶ The last element then is the pipelines and cables, which in a legal perspective are often not included when it comes to the removal obligation, on the other hand, they still have to ensure safety for other users, the pipelines and cables will not be further discussed since they fall outside most of the legal regulation when it comes to decommissioning.

³¹ Liu and Li (2017) p. 9.

³² Anchustegui, and others (2021) p. 5-7.

³³ Ibid.

³⁴ Ibid.

³⁵ Ibid.

³⁶ Ibid.

3 Circularity and decommissioning

3.1 Circularity as a concept

Circularity is a “hot topic” in different governments worldwide, and the need to adopt circular strategies as part of environmental consideration is emerging. There is essential to implement a circular economy as a part of every business to reduce linear risks, create new revenues and reduce the cost to ensure growth.³⁷ The circular economy principles concern is designing waste, regenerating ecosystems, and keeping items in use.³⁸

Circularity shifts the focus from a linear approach to a cycle approach. It is based on a system of closed loops where materials do not lose their value, where the focus is on reducing, reusing, and recycling.³⁹ This should be ensured by closed cycles, renewable energy, and system thinking.⁴⁰ Circularity also directly connects to sustainability, since sustainable development requires balanced coordination with the economic, environmental, technological, and social aspects of a process.⁴¹ So, by ensuring circularity with initiates on reducing, reusing, and recycling, it will also benefit sustainable development.

The literature also states that “reuse and repurpose is an important consideration in terms of the waste disposal hierarchy recognized in various nations across the globe”.⁴² The five-step waste hierarchy lays down some basic waste management principles, which establishes an order of preference for managing and disposing of waste. Using and including a waste hierarchy to



Figure 1 - Waste Hierarchy

³⁷ See Circle Economy (2018) and Anchustegui, and others (2021) p. 16-17

³⁸Haigh and others (2020) p. 1-5.

³⁹ Kirchherr, Reike and Hekkert (2017). Het Groene Brein (2019).

⁴⁰ Ibid.

⁴¹ Korhonen and others (2017) p. 544-552. Circular Economy Concept (2021)

⁴² Pereira, and others (2020) p. 13, see also Directive 2008/98/EC (2008) p. 3-30.

ensure circularity in the decommissioning process might change the view that oil structures are valueless waste.

Therefore, the preferred option is preventing waste which is at the top of the inverted pyramid. The last resort should be sending waste to landfills, which is at the bottom of the inverted pyramid.⁴³ This can ensure circularity in the decommissioning process by avoiding installations having an “end of life” but rather a life-cycle approach.

There are different ways to ensure circularity, so when considering if the framework provides circularity, it will be necessary to see if the law opens for the principles that circularity is based on, such as, extended life of materials, using waste as a material, renewable energy, use the full potential of materials and system thinking.⁴⁴

3.2 Circularity in the framework and decommissioning process

When an oil and gas platform is no longer profitable or is too expensive to repair, the structure has come to the “end-of-life”.⁴⁵ Subsequently, the issue and discussion of total or partial removal begin, but total removal of the installations seems to be favored. However, there is an “ongoing, intense debate on whether any installations and structures which are abandoned or disused must be entirely removed, or whether partial removal is allowed”.⁴⁶ This debate might have occurred in accordance with the amount of decommissioning. There has been a development regarding decommissioning options - more knowledge and new technologies make it possible to reuse and repurpose offshore installations or parts of them instead of considering them as waste.

Furthermore, if we include circularity, offshore structures and their materials do not have to have an “end-of-life”. We need to consider the reuse and repurposing of the platforms to avoid that. By reusing, recycling, repairing, and renovating, we can expand the life cycle of products and materials to be repurposed and valuable again. If we look at “waste” from the

⁴³ Figure 1 – Waste Hierarchy, from official website of the European Union, article on Waste Framework Directive.

⁴⁴ Korhonen and others (2017) p. 544-552

⁴⁵ Pereira, and others (2020) p. 7.

⁴⁶Ibid. p. 13

structures of oil platforms as a valuable resource or reuse for other sectors, this can ensure circularity in the offshore decommissioning. Decommissioned facilities can be used in other systems and create value by either saving costs, when used directly by the owner, or by making money from sales.

One can ask if it is necessary to include circularity in the framework or take it into the decommissioning plan as a criterion, as mentioned, it is beneficial for the environment to reuse and ensure a life-cycle approach. On the other hand, it will also be beneficial for the economy. Decommissioning in the North Sea is cost-intensive, since the platforms and installations are large, one single decommissioning process in the North Sea can cost as much as 2 billion euros.⁴⁷ Therefore, it is necessary to include circularity to keep the costs low, and it will be beneficial for others that want to use material or parts of the platform.

Including the waste hierarchy in the decommissioning plan can help include a new approach that is different from the favoritism of total removal. Since the preferred option is preventing waste, national law can develop rules that make the owners of a platform utilize as much potential of the oil platform as possible.

However, it is not always the best option for every decommissioning case. It can make it more complicated in the recycling phase and reuse, since keeping some materials in the ocean for a long time can destroy the possibility of reuse. Using the materials for too long or if repairing the materials for more prolonged use, can make it harder to ensure reuse and circularity at a later point. So, prevention is not necessarily leading to non-waste, but it allows us to use a material for longer and get the most out of it. Since it might lead to some negative consequences, the practice of a case-by-case⁴⁸ consideration when including the waste hierarchy will be beneficial. So, if the law includes the hierarchy, this is also something that the law has to consider, to avoid the hierarchy being used where it will not be beneficial.

Still, the term “circularity” suggests that it should be a circular approach, rather than a hierarchy that has a more linear form. The hierarchy focuses on the safe disposal of waste in general. However, considering the circular concept, waste management should focus on ensuring that the value of our resources is preserved in the economy for the new generations.⁴⁹ The decommissioning framework can ensure circularity through the hierarchy.

⁴⁷ Anchustegui, and others (2021) p. 11 and IHS Markit (2016)

⁴⁸ To read more about “case-by-case” approach, section 4.5 in this thesis.

⁴⁹ Resource (2019).

Still, since decommissioning includes a lot of different parties, interests, challenges, and opportunities, the framework also has to take that into account when using the hierarchy, so it has a circular approach. Therefore, it is necessary that the framework ensures the use of the hierarchy, but also in a way that allows the business to do it in a circular pattern.

Both circularity and sustainability closely connect with the issues with materials of oil and gas platforms. Furthermore, it is necessary to determine the room for circularity in the legislative decommissioning framework. When it comes to including circularity, we will see that it depends on the methods permitted by law. This concept and relation will be studied in the legislation in the following chapters.

4 Public International law

4.1 Introduction

Decommissioning that takes place offshore in the North Sea is different from the decommissioning that takes place onshore. Since it is a process that takes place in the ocean and the structures often are more complex, and there is much different interest in relation to fishing, navigation, protection of the environment, and other use of the sea,⁵⁰ it is a need for a legal system both national and international to ensure all the different interest, but also the interest that will be beneficial for the future. The legal regulation of the abandonment phase is combined with both national law and international law.

Public international law sets the basic standards and requirements that the offshore decommissioning activities need to comply with. It is the starting point that a national law can go further with. Since decommissioning of oil and gas platforms on the continental shelf and the seabed are within the Exclusive Economic Zone (EEZ), it is considered a matter of international concern and is a subject of international law.⁵¹ As mentioned, circularity is dependent on the methods that are permitted by law, therefore, this section will study international law and consider if the law incorporates issues of sustainability and circularity.

4.2 The 1958 Geneva Convention on the Continental Shelf

Article 5 (1) states that exploration of the continental shelf and its natural resources “must not result in any unjustifiable interference with navigation, fishing or the conservation of the living resources of the sea”.⁵² Concerning decommissioning, Article 5 (5) states that “Any installations which are abandoned or disused must be entirely removed” and requires an absolute removal regime of offshore installations.⁵³ At that time, the focus was on the safety

⁵⁰ Pereira, and others (2020) p. 3.

⁵¹ Ibid, page 28.

⁵² Geneva Convention on the Continental Shelf, Article 5 (1).

⁵³ Anchustegui, and others (2021) p. 36.

of navigation and fishermen.⁵⁴ The oil and gas constructions were smaller and were placed on shallow water where it could be justified that the decommissioning was a total removal.⁵⁵ The convention has clearly not included any form of circularity at that point. Instead of ensuring circularity, the total removal regime prevents the reuse and repurposing of a platform on-sight. However, it was substituted in 1982 by the United Nations Convention on the Law of the Sea, and therefore it has mostly lost its practical use due to state practice and newer conventions regarding decommissioning.⁵⁶

4.3 The 1972 London Convention on Dumping

The protocol to the Convention on the prevention of marine pollution by dumping waste and other matter, 1972, the London convention on dumping,⁵⁷ is one of the first global conventions established to protect the marine environment from human activities such as dumping and pollution to the sea.⁵⁸ Therefore, it is a Convention that is related to decommissioning, since it prohibits dumping and pollution of offshore structures.

However, it is not a convention that directly focuses on circularity regarding offshore decommissioning. On the other hand, it can, indirectly include circularity when it comes to ensuring that there are no materials dumped and left behind in the ocean. If there are no materials left to use, there is also no room for circularity. However, in some ways, the convention can also set out limitations for circularity when it comes to the possibility of repurposing and using “rigs-to-reefs”.⁵⁹ On the other hand, there is a difference between dumping and decommissioning. If the offshore installation is to be reused or repurposed at sight, this is not dumping.

4.4 The 1982 United Nations Convention on the Law of the Sea

⁵⁴ Ibid.

⁵⁵ Audiovisual Library of International Law (2008).

⁵⁶ Anchustegui, and others (2021) p. 37.

⁵⁷ London Convention on Dumping

⁵⁸ Ibid. and Salcido (2005) p. 863-883.

⁵⁹ To read more about “rigs-to-reefs” see ibid. and Burton (2020)

The 1982 United Nations Convention on the Law of the Sea (UNCLOS) is an international treaty that concerns the territorial sea and the contiguous zone, the continental shelf, the high seas, fishing, and conservation of living resources on the high seas.⁶⁰ It provides a comprehensive regime of law and order in the different oceans and seas, establishing rules governing all the uses of the oceans, including their resources.⁶¹ This means that it is also a Convention that affects all country's uses of the sea, including the North Sea and Norway, and the UK.

Due to a development that took place in the oil and gas constructions, some massive structures were built offshore in the 1970s.⁶² More platforms were placed in deep water far from shore, and the need to include the risks, cost, and challenges of a total removal arose. Therefore Article 60 (3) in the UNCLOS states:

“Any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation, taking into account any generally accepted international standards established in this regard by the competent international organization. Such removal shall also have due regard to fishing, the protection of the marine environment and the rights and duties of other States. Appropriate publicity shall be given to the depth, position and dimensions of any installations or structures not entirely removed.”⁶³

Article 60 (3) still has total removal as the main rule, but it permits partial removal on some occasions if the coastal state finds it justifiable after a consideration of the elements that are mentioned. Even if it replaced the Geneva Convention, it still ensures Article 5 (5) in the Geneva Convention which states that the installation or structure shall be removed to ensure the safety of navigation and taking into account international standards and fishing, the protection of the marine environment and the rights and duties of other States.⁶⁴

There is still no circularity included in the UNCLOS Convention. However, it makes room for some circularity in the methods that the Convention permits, total removal is still favored, but partial removal is allowed. To give an example; topsides facilities from a decommissioned North Sea platform deck from the former Hutton field TLP were used for the Prirazlomnoye

⁶⁰ IUCN, article on UNCLOS.

⁶¹ IMO article on UNCLOS.

⁶² Pereira, and others (2020) p. 29.

⁶³ UNCLOS Article 60 (3)

⁶⁴ Ibid.

offshore oilfield⁶⁵ and given a future life in the oil and gas industry. This shows that the Convention opened for some circularity in practice since it is possible to do a partial removal and use the topside in a different way. However, it opened for partial removal as a narrow exception from the main rule, but it still depends on the country and owners if they want to give the material and parts of the structures a future life.

4.5 OSPAR Convention for the Protection of the Marine Environment of the North-East

The OSPAR Convention of 1992 is a regional treaty meant to ensure the marine environment in the North-East Atlantic Ocean, which both Norway and the UK are party to.⁶⁶ It is stated in the OSPAR Convention Art. 2 (1) (a):

“That Contracting Parties shall, in accordance with the provision of the Convention, take all possible steps to prevent and eliminate pollution and shall take the necessary measures to protect the maritime area against the adverse effects of human activities so as to safeguard human health, and conserve marine ecosystems and, when practicable, restore marine areas which have been adversely effected”.⁶⁷

There is no direct mention of circularity in the treaty. Still, it is a clear shift from the other previous international law that has primarily focused on ensuring total removal and prohibiting dumping. The treaty focuses more on cooperation between its parties and has a more holistic regulation. These are two key elements that make it possible to lay the grounds for the future inclusion of circularity, since including circularity is in many ways dependent on cooperation and also has a holistic approach, as opposed to the previous international law that has focused on a more narrow and dualistic approach.

Furthermore, the OSPAR Convention Art. 5 (1) states that no disused offshore installation shall be dumped or left wholly or partly in place in the sea without a permit issued by the authority on a “case-by-case” basis. This is also a key factor for the opportunity to include circularity, since it allows the specific circumstances of every individual installation to be

⁶⁵ Beckman (2004).

⁶⁶ In total 16 contracting parties included the European Commission, see the Conventions main part art. 20.

⁶⁷ OSPAR Convention Art. 2, nr. 1 letter a.

considered and we can avoid a standard approach⁶⁸ that might result in missing valuable reuse or repurposing of structures.

The preamble includes a note on sustainability, defining sustainable management as the “management of human activities in such manner that the marine ecosystem will continue to sustain the legitimate uses of the sea, and will continue to meet the needs of present and future generations”. Since defining sustainable management in the preamble is about both ensuring the ecosystem and meeting the needs of present and future generations, this indirectly includes some circularity. Circularity by rigs-to-reefs also concerns the environment and the ecosystem developed around the offshore structure that has spent decades in the North Sea. Meeting the “needs of present and future generations” can be ensured by including circularity in the decommissioning process. There is no reason for the material that this generation uses to be looked at as valueless waste in the light of the future generation, it might not be relevant for the present generation, but as the industry has shown – oil and gas fields can also be used as carbon storage and parts of platforms can live on as other objects or have a legitimate use and purpose in the future.

However, it is in the treaty’s preamble, and it still seems to be a presumption for total removal according to the OSPAR Convention. However, there can be given exemptions through the OSPAR Decision 98/3 Disposal of Disused Offshore Installations, and this Decision recognizes that “reuse, recycling or final disposal on land“ generally is the preferred option for offshore installations in the maritime area.⁶⁹ This statement might not be particularly robust, and it does not cover pipelines that have a huge potential when it comes to circularity.⁷⁰ However, the OSPAR Decision 98/3 includes some thoughts on sustainability and circularity. Since the Decision recognizes that the reuse of offshore installations is the preferred option for decommissioning (and not total removal), it is actually in line with the waste hierarchy and the basic principles of circularity. It also shows that there has been a development for UNCLOS, even though the UNCLOS indirectly opened for reuse, the OSPAR Decision 98/3 goes further in including thoughts on circularity in written words. Therefore, this is an international instrument that is of much importance for the development towards including circularity.

⁶⁸ Pereira, and others (2020) p. 639.

⁶⁹ OSPAR Decision 98/3 and Pereira, and others (2020) p. 54.

⁷⁰ Ibid. p. 210.

Further on, it is necessary to examine national law and see if the countries actually do succeed in following the requirements that the OSPAR Decision 98/3 sets, this will be done in section 5.

4.6 International guidelines

4.6.1 The International Maritime Organization, Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental shelf and in the Economic Exclusive Zone

The International Maritime Organization, from 1989, developed and adopted Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental shelf and in the Economic Exclusive Zone.⁷¹ Similar to the OSPAR Decision 98/3, the Guidelines open for exceptions from the general removal obligation.

Some of the exceptions can be found in the IMO Guidelines Art. 3.4 that states “The coastal State may determine that the installation or structure may be left wholly or partially in place where”,⁷² an existing installation or structure “will serve a new use if permitted to remain wholly or partially in place on the sea-bed (such as enhancement of a living resource)”⁷³ or “can be left there without causing unjustifiable interference with other uses of the sea.”⁷⁴

Further on it is stated in Art. 3.5 “where entire removal is not technically feasible or would involve extreme cost, or an unacceptable risk to personnel or the marine environment, the coastal State may determine that it need not be entirely removed”.⁷⁵

The Guidelines have a broader approach to decommissioning and are therefore more flexible. They include, as we can see, a lot of elements. In similarity with the older and traditional international law, the Guidelines include features such as safety, navigation, and effects on the environment. However, they have an even more comprehensive approach with new elements such as costs, risk, technical capacity, and some circularity. Instead of focusing on total removal, the Guidelines actually open for repurposing and the option to use installations as

⁷¹ The 1948 Convention on the IMO Art. 15 j.

⁷² IMO Guidelines Art. 3.4

⁷³ Ibid.

⁷⁴ Ibid.

⁷⁵ Ibid. Art. 3.5

artificial reefs. Since the Guidelines both have the reuse element for artificial reefs and the costs element of decommissioning, the Guidelines make it possible for a circular approach since it includes the possibility of repurposing an installation and keeping the materials in an efficient circular system.

It follows by the term that Guidelines are not hard law, but rather recommendations. On the other hand, they have been influential and accepted as a norm in the North Sea, and both Norway and the UK have chosen to include the Guidelines in the decommissioning practice and matters.⁷⁶ It should be mentioned that the Guidelines emerged after broad collaboration between the UNCLOS members, and Norway took the IMO Guidelines into account when drafting the decommissioning rules in their Petroleum Act.⁷⁷ This gives them a rather binding function, especially for Norway. Even though they have an impact, they cannot be enforced.

According to the IMO Guidelines point 3, “The following standards should be taken into account when a decision is made regarding the removal of offshore installations or structure”. Hence the wording “should”, the content in the IMO Guidelines cannot be enforced. Still, it provides a relatively specific binding content that reinforces the actual content, it can be perceived as more effective than the vague, but formally binding conventions.

It should also be mentioned that the IMO Guidelines in similarity with the OSPAR Convention, acknowledge in point 2 - that the decision to allow an offshore installation or parts of it should be evaluated on a “case-by-case” basis. So, the Guidelines open for a broader and more individual consideration, and it should be possible to ensure circularity in a flexible manner, since guidelines often can include more elements without interfering with the state’s decision-making. However, there is no direct initiative to include circularity stated in the IMO Guidelines.

⁷⁶ Anchustegui, and others (2021) p. 43

⁷⁷ NOU 1993:25 page 10 and Ot. Prp. Nr. 43 1995-96 page 19.

5 National law: Norway

5.1 Introduction

As studied under public international and regional law, the public international law sets basic requirements that later are developed by national law. The international law obliges the operator to remove the offshore structure, even if many of the structures are not built to be removed.⁷⁸ As the analysis shows, the international law on decommissioning does not prioritize circularity and sustainability. However, the OSPAR Decision 98/3 is an exception that actually stresses and recognizes that “reuse, recycling or final disposal on land“ generally is the preferred option for offshore installations in the maritime area, which is in accordance with the circularity principles. In this section, the national law in Norway and the UK will be studied to see if the national law incorporates issues of sustainability and circularity.

5.2 The regulation of Decommissioning in the Petroleum Act

Decommissioning has since 1965 been addressed in the Norwegian legislation,⁷⁹ it has later evolved into more detailed regulations. The main provision is the 1996 Petroleum Act and its chapter 5 which regulates decommissioning, the Regulations to the Act relating to Petroleum from 1997⁸⁰, and the contractual obligations laid down in the license agreement and the Joint Operation Agreement.⁸¹ The international conventions and soft law instruments mentioned in chapter 3, are also relevant for Norway according to the principle of presumption of treaty conform interpretation.⁸²

5.2.1 Decommissioning obligations

⁷⁸ Fam and others (2018) and Torabi, Nejad (2021).

⁷⁹ Pereira, and others (2020) p. 548.

⁸⁰ Forskrift til petroleumsløven (1997)

⁸¹ Anchustegui, and others (2021) p. 56 and 57. See Bustnesli, and others (2021) p. 172-230.

⁸² Anchustegui, and others (2021) p. 56 and 57. More about the Principle of presumption in Pereira, and others (2020) p. 545.

Chapter 5 of the Petroleum Act imposes a comprehensive obligation on the licensees when it comes to decommissioning. Both owners and users who are not the installations' licensees are also subject to the decommissioning obligations.⁸³ There are no default rules about decommissioning, but specific requirements are determined on the basis of case-by-case.⁸⁴ The decommissioning plan must, in accordance with the Petroleum Act 5-1, be submitted 2-5 years before the decommissioning takes place.⁸⁵

The most important elements in the decommissioning plan from the licensee must contain the information, assessments, and evaluation that are necessary to make a decision after Section 5-3.⁸⁶ The Ministry of Petroleum and Energy (further on the MPE) can also require further information and assessments or require a new or amended plan.⁸⁷ Since the MPE can require more information or a new plan, it would be beneficial for the licensee to deliver a decommissioning plan that is accepted, to avoid a process that takes much time and is expensive. This might result in falling into standardized patterns that gives approval of the plan, instead of looking into new opportunities and including circularity that might be more unpredictable and might risk not getting approval. Therefore, it is interesting to study what the MPE has to take into account to decide if the plan receives approval or not.

When MPE is to decide on the disposal, they must, in regard to Section 5-3, consider the technical, safety, environmental, economic aspects and consider other sea users.⁸⁸ These aspects and considerations seem to have taken some elements of all international law. However, it looks similar primarily to the IMO Guidelines, which also includes all of these elements.⁸⁹ On the other hand, the IMO Guidelines go further in including circularity. The national law also tells us nothing about what is the preferred option when it comes to decommissioning of offshore installations, just what should be considered. Here the national law has some shortcomings regarding including direct thoughts about alternative use, such as the IMO Guidelines do when it comes to rigs-to-reef and as well the OSPAR Decision 98/3 that recognizes that “reuse, recycling or final disposal on land“ generally is the preferred option for offshore installations. The international law opens for alternative use and states a

⁸³ Bustnesli, and others (2021) p. 123.

⁸⁴ Ibid. page 123.

⁸⁵ The Norwegian Petroleum Act, chapter 5, section 5-1. Bustnesli, and others (2021) p. 124

⁸⁶ Ibid.

⁸⁷ Anchustegui, and others (2021) p. 58

⁸⁸ The Norwegian Petroleum Act, chapter 5, section 5-3. Bustnesli, and others (2021) p. 124

⁸⁹ As mentioned, the Petroleum Act took the IMO Guidelines into account when forming their decommissioning rules

preferred option. The Norwegian law seems to be narrower and more unclear, making the MPE consider the different aspects.

On the other hand, the decommissioning plan has a long time limit, which makes it possible for the companies to have time to consider different approaches to ensure circularity. It also has a wide window for including third parties interested in the materials that are to be decommissioned. Another essential part of the decommissioning plan is that it must go through a public consultation that involves different parties,⁹⁰ this also includes different political views and discussions, so if there is a national strategy to ensure circularity in the oil and gas decommissioning, this might have an impact on the decommissioning plan as well, this will be discussed more under part 4.3.

5.2.2 Liability in the Petroleum Act

According to section 5-4, liability and responsibility for decommissioning fall on the licensee or owner if the damage or inconvenience is caused intentionally or negligently in connection with the disposition of the facility or the implementation of the decision.⁹¹ This means that the licensee or owner can be held jointly liable for potential default caused by a buyer regarding the cost of decommissioning and disposal.⁹²

Here it can look like the liability also covers the decommissioning process, which means that if the materials to be decommissioned are sold to another part to ensure circularity or reuse, the liability can still fall on the original owner. This is a significant shortcoming regarding circularity since the framework by the liability rules seems to prohibit circularity and reuse of the structures. However, an essential element is that the Section must be read in conjunction with the Petroleum Act Section 1-4, which states that the Act will only become liable if caused by “petroleum activities”.⁹³ Where the line is drawn regarding what is considered “petroleum activities” is not clear. A lot indicates that the decommissioning on land is also a part of “petroleum activities”, since the same consideration of safety and environment is still present on land and damage risks that are typical for the petroleum activities. Where these are carried out should not be decisive. This makes it hard for companies to ensure circularity and

⁹⁰ Pereira, and others (2020) p. 556.

⁹¹ The Norwegian Petroleum Act, chapter 5, Section 5-4.

⁹² Bustnesli, and others (2021) p. 333.

⁹³ Ibid. page 128.

repurposing since they still might, at a later point, be economically responsible if issues occur, and the framework does not set out clear rules to make it attractive to ensure circularity. This is a significant shortcoming for including circularity both regarding third parties and making use of a secondhand market for the installations and materials.

On the other hand, the MPE can require specific conditions in the decision about the decommissioning plan, this is a huge potential to include circularity, and it is also an opportunity to make decommissioning plans that are up to date with the fast-changing world. The MPE stands freely to require quite specific actions toward including circularity. So here, the law opens for including circularity, but only if the MPE takes it in as a criterion. This makes it a flexible framework since it can set requirements that might change from field to field and from time to time. On the other hand, the problem seems to be that there is not a national strategy toward including circularity and sustainability, unlike, for example, the Netherlands, which has a national strategy,⁹⁴ which also becomes a topic for the politicians, which can vary a lot from who is currently in charge. In my opinion, the decommissioning process should not be affected by a short-term policy, but rather a long-term inclusion of circularity.

Another important aspect is that the Norwegian State may take over an installation when the licensee expires according to the Petroleum Act section 5-6.⁹⁵ This means that the state can take over the installation and the liability, to reuse it in the future. Here the Petroleum Act opens for circularity by giving the state a right to, at a later point, use the offshore structure as they see fit, here the state can reuse or repropose the installation, or save it for renewables in the future. However, this has not been done in practice⁹⁶ and the Act states that “it may be agreed” so it is up to the state to take over such responsibility. However, here the law opens for the possibility of ensuring circularity if the state takes responsibility and reduces the risk of uncertainty regarding residual liability, but it does not foster circularity.

5.3 Norwegian practice

⁹⁴ Pereira, and others (2020) p. 556.

⁹⁵ The Norwegian Petroleum Act, chapter 5, section 5-6

⁹⁶ OGUK, (2016) p. 18.

The oil and gas adventure in Norway began in 1969 - when one of the largest fields named Ekofisk was discovered, and the production then started in 1971.⁹⁷ The decommissioning process of Ekofisk has begun, however, it will take years to remove the whole field.⁹⁸ Norway's economic wealth places the country in a unique position to ensure sustainable circularity. As mentioned, the first decommissioned facility on the Norwegian continental shelf was the Frigg in 1996.⁹⁹ There was already some reuse and repurposing of the platform. The platform deck and control tower were used as training shelf for personnel onshore, and the steel jacket and concrete foundation was transformed into a jetty.¹⁰⁰

Norway is a part, and a co-founder of The Circular Based Waste Management project, and the NOROG (The Norwegian Oil and Gas Association) is frequently giving out handbooks to provide guidance for the companies, therefore it will be interesting to look at if there is a focus on circularity in the decommissioning business, since there is no national strategy on circularity the companies might anyway choose to include a more sustainable approach, if it is in accordance with the decommissioning framework.

5.3.1 The Norwegian Oil and Gas Association (NOROG)

The NOROG is a professional body and employer's association for oil and supplier companies.¹⁰¹ They have given out several papers on decommissioning. They have provided a handbook about impact assessment for offshore decommissioning to give guidance and share knowledge in best practices for companies on the impact assessment for offshore decommissioning.¹⁰² The handbook provides advice regarding waste management and resource utilization by including the waste hierarchy that sets the basis for decommissioning waste management. Including the waste hierarchy does ensure some of the essential elements of circularity. There is much mention of reuse in the handbook, but there is more mention of reuse instead of showing how it can be done in practice.¹⁰³

⁹⁷ Pereira, and others (2020) p. 542.

⁹⁸ Sandberg (Norsk oljemuseum)

⁹⁹ Pereira, and others (2020) p. 542.

¹⁰⁰ Ibid.

¹⁰¹ NOROG official website

¹⁰² Handbook, Impact assessment for offshore decommissioning, Decommissioning and final disposal of redundant offshore oil and gas facilities (2020).

¹⁰³ Ibid.

They have also published a recommended guideline for Best Available Technique assessments¹⁰⁴ that gives guidance on performing BAT on all relevant phases of offshore oil and gas. Since the time limit for delivering a decommissioning plan according to the Norwegian framework is long, there is plenty of time to evaluate the best available technique regarding decommissioning disposal and waste management. Using the best available techniques for decommissioning waste management might be challenging since there are no reference documents, and Norway has to evaluate what BAT is on a case-by-case basis or for the whole industry.¹⁰⁵ Still, Norway has no solid database that makes it possible to get knowledge about materials or the conditions of the structures, this makes it hard to include or consider what is best available techniques. Another shortcoming might lay in the framework as well, since the decommissioning plan must, according to the Petroleum Act 5-1, be delivered latest to years before the end of the production, as it is a rapid development also in what can be considered BAT, opportunities that occurs in those two years can result in missing opportunities and third parties that might have led to including circular use of the materials.

In similarity with the handbook on impact assessment, this guideline includes the waste hierarchy principles. On the other hand, it is stated that waste can be complex, and hard to determine what BAT is. Therefore, it is necessary to consider the different cases, since reuse might not be BAT in a life cycle perspective.¹⁰⁶ It also includes the OSPAR Decision 98/3 to focus on reuse and repurposing.¹⁰⁷ Reuse is also mentioned as being technically beneficial and cost-saving. So, there are a lot of valuable initiatives on circularity.

However, this handbook guidance is not mandatory, but they give input and recommendations from the industry to the industry, firsthand knowledge. They will also have an impact since they guide the choices to be made.¹⁰⁸ Since they include some thoughts about circularity and sustainability, the industry here takes responsibility. They manifest a lot of the modern ideas about circularity that the framework is missing. Therefore, the industry lies ahead of the framework on including circularity.

¹⁰⁴ Norwegian Oil and Gas Recommended guidelines for Best Available Technique (BAT) assessments (2022).

¹⁰⁵ Ibid. p. 14.

¹⁰⁶ Ibid. p. 35.

¹⁰⁷ Ibid. p. 27.

¹⁰⁸ Bustnesli, and others (2021) p. 393.

Since there is no national policy toward circularity and it is not mentioned in the framework, the responsibility falls on the companies, and whether they want to include a sustainable decommissioning process, the framework opens for it, and the guidance handbook from the NOROG encourages circularity. It is also shown through initiatives from Equinor that there have been reuse initiatives.

5.4 Room for circularity

The law sets no explicit requirement in the law to include circularity or reuse in the decommissioning plan. It is also a flexible regulation, with a lot of elements that makes the regulation unclear. It is not necessary to include circularity elements in the decommissioning plan. The case-by-case basis makes it possible to consider different reuse initiatives, and an essential element is that not one size fits all. However, a circular element in the decommissioning framework should be required, since every decommissioning process can involve circularity at some level. A lot of the decommissioning plans have a standard approach. Instead of taking a different approach and looking for new opportunities, they include the risks that emerge and show how they will be dealt with. This might be because of the uncertainty regarding including reuse and circularity. It is not mentioned in the law and is more time-saving and predictable to do what is considered necessary according to the law.

On the other hand, the decommissioning plan must consider aspects related to circularity when considering proposals for continued production or other uses.¹⁰⁹ The MPE can also require specific conditions in the decision about the decommissioning plan, this is a huge potential to include circularity, and it is also an opportunity to make decommissioning plans that are up to date with the fast-changing world. The MPE stands freely to require quite specific actions toward including circularity. So here, the law opens for including circularity.

However, the problem seems to be that there is no focus, knowledge, or national strategy for including circularity and sustainability, unlike the Netherlands, which has a national strategy that presents a national platform for decommissioning and reuse.¹¹⁰

¹⁰⁹ Anchustegui, and others (2021) p. 58

¹¹⁰ Pereira, and others (2020) p. 218-219. To read more about the national strategy on decommissioning and reuse in the Netherlands see Nexstep (2017) available at <https://www.nexstep.nl/decommissioning-landscape/>

There is, however, some legislation outside of energy law that includes some circularity. In the Pollution Control Act, important elements that should be considered in the regulation of decommissioning facilities for offshore installations includes suitability, impermeable surface, water treatment plant, emergency response systems, releases to air and water, and noise, operating hours, and environmental monitoring.¹¹¹ This is an example that demonstrates a law that includes a sustainable approach, and this should also be done in the energy law to provide a sustainable decommissioning by circularity.

¹¹¹ Climate and pollution agency (2011) p. 37.

6 National law: The United Kingdom

6.1 Introduction

Since the UK's installations also are located in the North Sea, the decommissioning progress that happens in Norway is also of importance for the UK and vice versa, since their activity in the North Sea is affected by both of the country's practices when it comes to circularity and environmental concerns. The UK is also a jurisdiction in which there are more developments around circularity than in Norway, therefore it will be of interest to examine the national framework to see if there are more to find about circularity.

A lot more installations have been decommissioned on the United Kingdom continental shelf (UKCS) compared to the Norwegian continental shelf (NCS),¹¹² and the UK started its decommissioning process earlier than Norway.¹¹³ This also gives the UK an advantage in knowledge and a more developed decommissioning market, which shows the benefits of cooperation between states to ensure the best practice. Since the UK started earlier than Norway, it will be interesting to see if they have gotten further in including and fostering circularity in their framework.

6.2 The Petroleum Act

The decommissioning process in the UK is done by statute, meaning by hard law, written laws, and soft law instruments.¹¹⁴ It also involves the governance and administrative functions since the government has to control and approve the decommissioning plans.¹¹⁵ The primary legislation regarding decommissioning in the UK is the Petroleum Act of 1998,¹¹⁶ particularly part IV. The act has been amended by both the 2008 and 2016 Energy Act¹¹⁷ to strengthen the Secretary of State's powers, maximize the economic recovery and encourage efficient

¹¹² Bustnesli, and others (2021) p. 120-121.

¹¹³ Ibid.

¹¹⁴ Ibid.

¹¹⁵ Ibid. page 22.

¹¹⁶ Ibid. page 21 and 22. Anchustegui, and others (2021) p. 66

¹¹⁷ Pereira, and others (2020) p. 632

practice and cost reduction.¹¹⁸ The responsibility for overseeing decommissioning is assigned to the Secretary of State, however, the North Sea Transition Authority (previous Oil and Gas Authority, OGA) must be consulted in the process.¹¹⁹

The Petroleum Act is the primary legal instrument when it comes to decommissioning, however, the act also implements the international obligations,¹²⁰ and the act does not state a detailed regulation but has some soft law instruments as guidance.¹²¹ Similar to Norway, it is not a framework that in detail regulates how to get approval for the decommissioning plan. Before decommissioning can start, the decommissioning program must be approved by the government, which is also done on a case-by-case basis. It is the authorities that have to request the decommissioning plan, unlike in Norway, the plan does not have to be submitted two years ahead. This shows a shift in the responsibilities – whereas in the UK, the plan should be requested by the authorities, but in Norway, the plan must be committed by the licensee. The UK process is more collaborative since it involves other interested parties,¹²² and like in Norway, the decommissioning plan can either be rejected or approved with modifications or conditions if needed.¹²³

When it comes to liability, a shortcoming for circularity is that the UK Petroleum Act recognize that operators are liable in perpetuity,¹²⁴ it is also stated in the Guidance Notes Section 17 that “residual liability remains with the owner in perpetuity”, which makes it hard to ensure circularity since it is a risk and uncertainty involved in leaving installations or parts of them for later use, because this will lead to ongoing monitoring that is both complex and challenging. Here the risks involved in the residual liability rules might prevent the companies from looking for further or different use of the offshore structures.

The Petroleum Act does not explicitly involve circularity, on the other hand, there is some focus on circularity in the Decommissioning of Offshore Oil and Gas Installations and Pipelines,¹²⁵ an instrument that will be discussed in detail further.

¹¹⁸ Anchustegui, and others (2021) p.66

¹¹⁹ Ibid.

¹²⁰ Ibid.

¹²¹ Ibid.

¹²² Guidance Notes (2018)

¹²³ Pereira, and others (2020) p. 636.

¹²⁴ Torabi, Nejad (2021)

¹²⁵ Anchustegui, and others (2021). See also Guidance Notes (2018)

6.3 Decommissioning of Offshore Oil and Gas Installations and Pipelines

The Decommissioning of Offshore Oil and Gas Installations and Pipelines (Guidance Notes) is from 2018 and is made to give licensees and operators guidance on the requirements for decommissioning of offshore installations in accordance with international obligations and those in the Petroleum Act.¹²⁶ Before looking into elements that might open for circularity in the Guidance Notes, it is of interest to say something about whether or not they are binding.

Since they are Guidance Notes, they do not have the same binding effect as the Petroleum Act in the UK, this also stated in the Guidance Notes that they are not prescriptive, but rather a guide to follow to get a submission and approval of a plan.¹²⁷ It is, therefore, more a soft law instrument, and we can see that they have in many ways the same binding effect as the IMO Guidelines, this might also be the intention. On the other hand, the Guidance Notes' purpose is to give guidance on the requirements for decommissioning so this can be done in accordance with international and national law. Not following the Guidance Notes can, consequently, be seen as a practice that is not in accordance and therefore not following the requirements in the law, this might give them more value and a more significant interest to follow them.

The Guidance Notes do not have the authority to work as a hard law. Still, since the government can decide whether they want to approve a decommissioning plan, they can use the Guidance Notes as an element of including the principles that they set out. Therefore, it is necessary to see if the Guidance Notes includes circularity.

The Guidance Notes include the waste hierarchy¹²⁸ to deal with decommissioning in a more sustainable manner. Stating that reuse for the same or a different purpose should be done instead of recycling the waste¹²⁹ and that disposal should only be considered if none of these offers an acceptable solution,¹³⁰ that might be if it is not practical or too expensive. This will

¹²⁶ Guidance Notes (2018)

¹²⁷ Ibid. p. 6.

¹²⁸ Ibid. p. 27.

¹²⁹ Ibid.

¹³⁰ Ibid.

ensure circularity since the Guidance Notes encourage reuse in the decommissioning of the structures as the preferred option.

It also states that the potential for reuse in the decommissioning program must be examined and discussed with the OGA¹³¹ (now known as the North Sea Transition Authority, NSTA). This makes it a process that includes circularity, there is not a requirement to choose the most circular option, but it helps to include thoughts on circularity, and for the NSTA to give inputs on new uses or reuse, also the licensee cannot disclaim liability and the process becomes more transparent. It is also an opportunity for the NSTA to include third parties that might be interested in the reuse of parts of the platform.

As we can see, the Guidance Notes include elements of circularity, and it is a significant step in the right direction compared to Norway. On the other hand, they have a soft law approach, and it is unsure if that is enough to ensure circularity in the decommissioning framework.

Similar with the IMO Guidelines, where there also are some reflections regarding circularity in a soft law approach. These soft law approaches concerning circularity are not included in the North Sea decommissioning practice through the IMO Guidelines. Alternative uses such as rigs-to-reefs are not even considered. This shows how a softer law approach through guidance might not be enough to ensure circularity.

Anyway, the countries in the North Sea strictly follow the IMO Guidelines, so they do have an impact on the decommissioning, but not when it comes to more controversial alternatives such as rigs-to-reefs solutions. It might be more beneficial if the UK included guidelines that only were about circularity, which would still be flexible but avoid that a country can choose elements such as safety and technology as an excuse not to include circularity. If they had a guideline about circularity, there would be elements of circularity and still be flexible in how they include it in the decommissioning process. It would also make it easier to include circularity by having one comprehensive guideline and not several different guidelines pulling in different directions and making it hard to get an overview.

Even if the Guidance Notes is a more of a soft law instrument, it states that they still ensure basic principles enshrined in the UK's obligation to OSPAR Decision 98/3, but that some of the decommissioning processes have changed, so it is necessary to give more clarity about

¹³¹ Ibid.

both requirements and the expectation to the licensees.¹³² This shows that there has been a change in the approach and might also be a desire to ensure the OSPAR Decision thoughts about reuse and recycling to open for more circularity. Attaching the Guidance Notes to thoughts in the OSPAR Decision also makes them more solid and binding. It encourages the licensees to include reuse and repurposing, opening for circularity and cultivating circularity. Here the UK includes the OSPAR Decision 98/3 thoughts on circularity.

6.4 The OGA Strategy

It also follows by the Guidance Notes that the Energy Act 2016 established the North Sea Transition Authority, which has the principal statutory objective to maximize the economic recovery of the UK's oil and gas resources, and it also imposed decommissioning duties such as considering potential reuse opportunities.¹³³ The OGA Strategy is a new strategy that updates the former Maximizing Economic Recovery Strategy (MER Strategy).

The OGA Strategy sets out requirements and obligations to operators, which means that the OGA Strategy paper has a more hard law approach than the Decommissioning of Offshore Oil and Gas Installations and Pipelines Guidance Notes. However, the Strategy paper does not have its main focus on decommissioning, but rather on binding requirements to help the UK achieve a net-zero carbon emissions.¹³⁴ On the other hand, it mentions decommissioning, and the obligations that follow here include a lot of circularity by requesting that the companies evaluate the reuse potential.

It also states that the obligations in the Strategy require that “the full lifecycle costs of the recovery of petroleum, including decommissioning and the reuse and/or re-purposing of infrastructure, and operations relevant to such matters, are incurred in the most cost-efficient way, and that relevant benefits from reuse and/or re-purposing of infrastructure have been assessed properly”.¹³⁵ This has a lot in common with circularity and focuses on a holistic approach where the entire lifecycle is evaluated and placed in focus. Therefore, the OGA

¹³² Ibid. page 3.

¹³³ Ibid. page 101.

¹³⁴ To read more about the Strategy see Watts (2021).

¹³⁵ The OGA Strategy (2021).

Strategy is a big step in the right direction and ensures circularity also in the decommissioning process.

6.5 UK practice

The UK has a slightly different approach from Norway and might be affected by previous membership in the EU. The North Sea Transition Authority has developed one of the most technologically advanced basins in the world¹³⁶, this provides the decommissioning with a lot of information about the material and makes it easier to have access to information about the materials in the structures, and it makes it possible to ensure circularity in the decommissioning process. Here it will also be easier to determine what BAT is, rather than in Norway, where there is no database that can provide enough information about the structures and materials. The reason that BAT is important to ensure circularity is that using techniques that can determine the recycling potential of discarded items will be beneficial for both the environment and the economy and the UK seems to therefore have a lead in the technical part, which makes it easier for them to ensure circularity in practice.

In the UK, it is often major companies that stand for the establishment of a platform and the utilization of oil and gas, and in the decommissioning phase, smaller operators that is specializing in the late-life phase take over.¹³⁷ This might be beneficial since ensuring circularity often not are the main concern for the companies that are specialized in establishment and utilization of oil and gas.

It is also essential to have the local capacity for the various processes. The United Kingdom has an absence of local capacity for steel melting,¹³⁸ this will also indicate that the value created from a conversion process of material circulation will be lost to other countries. However, it is a very carbon-intensive process and, therefore, not a favorite when it comes to the environment.

The UK has a lot of good initiatives and apparently also a lot of Guidance and Strategy that ensure circularity. On the other hand, it needs to work in practice as well, the Petroleum Act from 1998 has been nuanced by a lot of other soft and hard law initiatives concerning

¹³⁶ Official website for the North Sea Transition Authority official, Technology.

¹³⁷ Pereira, and others (2020) p. 631.

¹³⁸ Akinyemi, A, Sun, M & Gray (2019) p. 5.

decommissioning and concerns that were less prominent in the 1990s, but are more apparent now. However, these are to find in different and spread regulations, and there is a requirement to ensure cost certainty and reduction and also a need to ensure availability of capability of decommissioning in the UK.

6.6 Room for circularity

Since there are many regulations in the UK that foster and incorporate circularity, there is room for circularity in the framework and the decommissioning practice. Unlike Norway, we can find more including and thoughts about circularity. On the other hand, there are a lot of different regulations regarding circularity and decommissioning, which might hinder circularity since there are many regulations pulling in different directions, and the incorporation of circularity might be perceived as unclear with unpredictable consequences.

Through their previous membership in the EU, the UK law has also been affected by the EU law in many beneficial matters. Through the EU Directive on Maritime Spatial Planning,¹³⁹ the UK has been introduced to both planning their use of the sea and using an ecosystem-based approach and the importance of cooperation, which might give them a different view on how to ensure circularity through collaboration and planning as well.¹⁴⁰

As mentioned earlier, there are no criteria for when the decommissioning plan should be present, this makes it up to the Secretary of State to decide when the plan should be delivered. This makes it a flexible process for the Secretary of State, but might not for the licensees or operators who have to deliver the plan. However, very detailed plans and a lot of correspondence between the government and the owners, might be positive. Still, it is hard to change and include circularity in such a detailed plan.

¹³⁹ Official website of the European Union, Article on Maritime spatial planning (MSP).

¹⁴⁰ Pereira, and others (2020) p. 220.

7 Conclusions and findings on avenues for circularity

7.1 Thesis findings: shortcomings and possibilities

This chapter will present the conclusion to the research question. Then it will deal with the thesis findings. To put it into a bigger perspective, some thoughts about the future decommissioning will also be delivered.

The research question for this thesis was if the relevant decommissioning framework for oil and gas structures in the North Sea includes circularity in the decommissioning process. As discussed in chapter 4, most of the focus in the public international law is on safety for other sea users. It was discovered that complete removal stands forward as the preferred option in the public international law. There is a minor development in the OSPAR Conventions which opens for case-by-case exceptions from the main rule on total removal. There are some thoughts in the OSPAR Decision 98/3 and the soft law IMO Guidelines which are in line with the waste hierarchy and the principles of circularity. There is still no direct legislation that ensures circularity and total removal is the main rule in the framework of public international law, which is compliant with the waste hierarchy.

In chapter 5, it was exposed that Norway's national law regarding decommissioning does not include circularity. There were also some shortcomings regarding liability which made it hard to maximize the material value of components in the decommissioning. There were many initiatives on circularity provided by the NOROG, which shows that even if the framework makes it hard to include circularity, it does not entirely prohibit it.

UK's national law considering decommissioning was discussed in chapter 6. There were discovered some guidance notes in the UK that foster circularity by including the waste hierarchy, cost-efficiency, reuse and repurposing. These findings are the ones that are closest to including circularity and maximizing the value in the decommissioning process, however they are not binding. In similarity with Norway, the UK Petroleum Act does not include circularity. Therefore, there is no hard law that includes the principles that circularity is based on.

The conclusion is that decommissioning framework for oil and gas structures in the North Sea does not include circularity.

This analysis has been important to discover the missing parts on circularity in decommissioning of oil and gas structures. One of the findings from the analysis and literature is the importance of circularity in the decommissioning process to ensure sustainable decommissioning. Including circularity in the decommissioning process has many benefits. Not only will it be beneficial for the environment, but it will also reduce the cost for the companies and be advantageous for the taxpayers and the society.¹⁴¹ It is important to remember that the decommissioning regime consists of complex regulations and highly technical operations that should not be underestimated. However, the framework should still ensure and present initiatives to include more circularity for the decommissioning of offshore installations.

Decommissioning has much potential, and if we manage to decommission while still investing, it will be beneficial for companies, be more cost-efficient, and better for the environment and future generations. As we have seen, neither the public international law nor the national law includes much circularity. There are, however, both some possibilities and shortcomings in the framework for ensuring circularity in the decommissioning process.

Despite these benefits, this thesis shows clear regulation shortcomings. Both the UK and Norway have an operative decommissioning framework, however, it is not of a newer date and reflects a lot of the concerns that were prominent in the 1990s.

Things are changing, since the 1990s when these rules were drafted, there has been a rapid change, the world is moving forward, and circularity has arisen as a solution that is more sustainable. As we have seen, both countries are aware of the benefits of circularity by reuse of oil and gas structures, however, they tend to occur in the soft law and guidance. It also puts the responsibility and power on the authorities since they are to accept or set conditions in the decommissioning plan, with a missing national strategy to ensure circularity, the authorities tend not to put focus or demand a circular approach in an efficient way. There will be more and bigger installations that have to be decommissioned, and therefore, the waste of opportunities will also be more significant if we are not to include more circularity.

¹⁴¹ Ibid. p. 16

Consequently, there is a need to have both a more coordinated, ambitious, and cost-effective approach toward reuse and repurposing of offshore installations.

Since the decommissioning in both countries through international and national law fosters the case-by-case evaluation when it comes to decommissioning, this can make every decommissioning circular in its own way and avoid the standardized practice. However, the Norwegian legislation regarding liability has to follow the development as well, to avoid secondhand materials being destructed to prevent problems regarding later liability.

After discussing some regulations and laws that both can foster and hinder circularity in decommissioning, we can sum up the main points and key findings discovered in this thesis in the following sub-sections.

7.1.1 National decommissioning rules and hard law approaches and strategies

Since it in practice still seem to be a favorize of total removal, it also has to be a public and policy debate to ensure a more circular approach can be made with the support of the society as a whole. Through the years, the public and policy seem not to accept the leaving in place debate.¹⁴² It is, therefore, essential to have a national strategy that is transparent and informative. A transparent process will also ensure that both third parties and others with interest or input can be involved to see new potential use for materials and components. Here also, the importance of cooperation comes in, cost-effectiveness in the decommissioning and reuse also requires cooperation.

To ensure circularity in the North Sea, there is a need to cooperate in a holistic approach between the countries as well.¹⁴³ If there is no complete overview of what happens in the different countries or parts of the decommissioning process, it is hard to ensure circularity in the management and includes others. A national strategy can help foster circularity since it, through authorities, can be included initiatives on circularity and cooperation in a decommissioning plan. By inviting other countries as well, it will have a broader approach, and countries and companies can learn from each other. This can be done as in the Netherlands, with a national circularity plan. This has worked well and can be something that

¹⁴² Ibid. p. 12-13.

¹⁴³ Ibid. p. 217 and 556.

can ensure circularity in the decommissioning process if the way is to go with a softer law approach.

The shortcoming when it comes to soft law is that there can be many ambitions, but without consequences or the possibility to react, as we have seen, there is soft law that includes circularity without the opportunity to ensure it. On the other hand, since the authorities must approve the decommissioning plan, this makes it possible to ensure circularity by rejecting a plan or setting circularity criteria. Therefore, the national strategy has to be developed to ensure circularity through a soft law approach. The benefits of using soft law regulated by the authorities can be beneficial, since the decommissioning and new technologies are fast-changing, and each platform has its own challenges and opportunities that have to be determined case-by-case.

On the other hand, a hard law approach can also be done, by including the waste hierarchy in the framework. Since the waste hierarchy is a flexible approach, this will provide with different alternatives and possibilities. Including the waste hierarchy in the legislation will also give a different view on the “favored” total removal regime, since that is not consistent with the hierarchy.

7.1.2 Technology

On the other hand, to make a sustainable decommissioning possible, one fundamental thing has to be in place, technology.¹⁴⁴ One of the benefits discovered in the Norwegian framework was the long time limit for delivering the decommissioning plan according to the Petroleum Act 5-1, which ensures time to evaluate the best available technique regarding decommissioning disposal and waste management. However, Norway has no solid database to get knowledge about materials or the conditions of the structures, making it hard to include or consider what is best available techniques.

As we have seen, the UK has one of the most complex databases and a significant focus on technology. Using technology will extract additional value, at a lower cost and more predictable process when decommissioning. Technology plays a crucial role in realizing circularity. These days there are much better knowledge and techniques to collect data from

¹⁴⁴ Akinyemi, A, Sun, M & Gray (2019)

platforms, however, it needs to be taken advantage of this opportunity. Here the UK has an advantage since they have developed a solid database. This makes it easier to determine what the structures consist of and their condition, this leads to more precise decisions and makes it more attractive and less risky for a secondhand market. There is also a need to develop and promote a secondary local market, to gather interest and show opportunities, so that we can ensure the upside and the profit that are possible when decommissioning.

By using technology and develop a database on the material, it is possible to efficiently use the waste hierarchy and ensure a sustainable decommissioning of offshore installations.

7.1.3 Framework and residual liability rules

If we are to promote circularity, we will also have to be open to innovation and legal innovation too. This also sets some requirements for the framework, if we want to foster circularity by innovation, we also need flexibility in the framework and the authority's decisions. It is also essential for the framework to be more consistent, there are a lot of variables in the cost of decommissioning when it comes to cutting, shipping, and reselling. Therefore, it is essential to ensure regulations that do not backfire if the companies underestimate the cost or the value of the materials, it is important to make it a predictable process that is attractive for others and in that way, avoid the winner's curse is the seller's curse.¹⁴⁵

There is also a need to change the residual liability rules, since ensuring circularity requires commitment from others. Again, this will not ensure if there is a risk of getting liable for something others have done. Commitment from the companies can be provided by contract clarity or a framework that promotes a secondhand market and liability rules that do not go too far. This again seems to be the challenge in the decommissioning of the petroleum framework. Since there are huge risks involved in a lot of the processes that regard petroleum and in a historical view, there have been some challenges,¹⁴⁶ the petroleum framework in the North Sea is putting out a set of strict, broad and complex rules, however, they also hinder a lot of circularity. As we see in OSPAR, it sets out strict rules, and functions as a commitment device, it does not promote innovation and there is a huge chance that companies do the bare

¹⁴⁵ Anchustegui, and others (2021) p. 25-27.

¹⁴⁶ Alexander L Kielland and Piper Alpha oil platform in the North Sea. Pereira, and others (2020) p. 192-193.

minimum to fulfill these requirements, because by the framework it seems that this is what is expected by them.

The reason for strict residual liability rules is that if the licensee cannot pay the damages, the state must pay the damages, or the damages will be unremedied. Also, through the UNCLOS, the state is committed to and is responsible for taking all necessary measures to prevent pollution of the marine environment.¹⁴⁷ Further on, the IMO Guidelines recommend that the state provide responsibility and liabilities for future dangers caused by disused installations,¹⁴⁸ which indirectly gives initiatives to the states to regulate the residual liabilities. However, there is no international law that holds the liability, therefore, it is up to the coastal state to consider the regulation. If we look at the United States, the general rule is that if the offshore structure is to be used as an artificial reef, the state is the one that assumes ownership and liabilities over the installations since they are the one to approve it,¹⁴⁹ this might explain the reason that there are a lot more rigs used as artificial reefs in the US.

Since the residual liability rules hold the operator liable if damages occur later, it seems that the removal obligation also benefits the operator by avoiding possible future economic consequences.¹⁵⁰ However, a removal obligation does not foster circularity, it is an obligation that is firm and demands the most basic decommissioning from companies. It is of course important to take care of the installations, on the other hand, it is not particularly ambitious and does not set out particularly high expectations. If there is no demand to include circularity, companies will naturally do what they are told and remove the installation. It is important to remember that these companies that operate in the North Sea are capable of doing a lot more than just removing an installation. However, it must also be beneficial for them, and the residual liability rules here do not foster circularity but rather a total removal to avoid further responsibility.

7.2 Thoughts for the future offshore decommissioning: oil, gas and wind

¹⁴⁷ UNCLOS and also see Torabi, Nejad (2021)

¹⁴⁸ Pereira, and others (2020) p. 154.

¹⁴⁹ Ibid. p. 164.

¹⁵⁰ Ibid. p. 225-226.

The need to incorporate circular thoughts into decommissioning of oil and gas installations is clear: there will be more installations in the North Sea in the future and many more operations to come. There is untapped value and resources that can be reutilized but are not. On the other hand, issues regarding future decommissioning of installations and challenges concerning circularity are also important. The blue economy ensures that the ocean is of high interest to others,¹⁵¹ this means more installations in the sea, and they may vary in form, structure, and purpose. Still, they will all be of a solid size and include many materials that have a circularity potential.

There will be a need to decommission many windmills in the future, and here there are many opportunities for the decommissioning of offshore windmills. However, there is a need to learn from the decommissioning of the oil and gas structures to ensure circularity in the process and law. Since the windmills consist of blades with many challenges regarding recycling,¹⁵² it is even more critical to have good initiatives that ensure reuse and repurposing.

The regulations of decommissioning of offshore windmills are inexistence compared to the (minor) we have on petroleum,¹⁵³ this gives both opportunities and challenges, there are not the same liability rules, which might be beneficial. However, there is also nothing on circularity in the offshore wind decommissioning. There should also be presented a framework that commits the industry to not put offshore structures in the ocean that cannot be involved in a circular economy, so we can prevent structures that cannot serve in a circular economy from being placed out in the sea in the first place.

If the international and national law includes a specter of broad rules on circularity and a better enshrining of the waste hierarchy principles in the decommissioning legislation, there is a better chance that also new and future sectors can be ahead of their time.

¹⁵¹ Norwegian Ministry of Trade, Industry and Fisheries (2019)

¹⁵² Topham, McMillan (2017)

¹⁵³ Ibid.

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