



Faculty of Law

## **State responsibility and liability in the context of Carbon Capture and Storage**

Assessing the Legal Landscape of Carbon Leakage in Third-Party Access to Foreign Carbon Capture and Storage Sites

Helle Bjerke

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## **Abstract**

Before the Northern Lights project, carbon capture and storage (CCS) were a matter between operator and State, whereas it now includes other parties in the equation. How does this change the rules regarding responsibility? And how do international environmental rules on environmental pollution liability and principles like the 'polluter pays principle' and 'no transboundary harm' relate to a transboundary carbon dioxide (CO<sub>2</sub>) graveyard? Is it fair holding the state of Norway liable for a carbon leakage when the source of emissions comes from a company based in another country? This thesis investigates the allocation of responsibility and liability in the third and fourth phases of carbon capture and storage, with a focus on third-party access of foreign companies to Norwegian CO<sub>2</sub> storage sites. Using the Northern Lights project as an example, the thesis argues that the capture, transport, and storage phases of CCS are interdependent, and that the legislators have neglected this interdependence when drafting the regulations. The thesis concludes that relying on existing legal provisions, such as the Environmental Liability Directive (ELD) may be inadequate for the CCS industry, which should develop its own liability scheme to address remedial action following environmental damage. The thesis argues that the incorporation of the Polluter Pays Principle (PPP) within the framework of the Northern Lights project poses significant challenges, with foreign capturing companies and their states of origin being the primary culprits. It suggests incorporating provisions of liability in solidum or a similar shared liability regime, where all stakeholders would share responsibility for any potential carbon leakage.

## **Abbreviations**

CCS - carbon capture and storage

CO<sub>2</sub> - carbon dioxide

EEA - European Economic Area

ETS – emissions trading system

EU – European Union

GHG – greenhouse gases

ILC – International Law Commission

IMO – International Maritime Organization

IPCC – Intergovernmental Panel on Climate Change

MoU – Memorandum of Understanding

MPE - the Royal Norwegian Ministry of Petroleum and Energy

NCS – Norwegian continental shelf

TEC – Treaty establishing the European Community

TFEU – Treaty of the Functioning of the European Union

TPA – third-party access

UN – United Nations

PPP – polluter pays principle

VCLT – Vienna Convention on the Law of Treaties

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# 1 Introduction

## 1.1 Topic and research questions

The research question in this thesis is whether third-party access (TPA) to foreign carbon capture and storage (CCS)<sup>1</sup> sites could or should imply some sort of responsibility for the third-party users irrespective of nationality, or if the state is best suited to be held liable in the case of a carbon leakage. Put differently, is the current regime sufficient to balance the risks taken by the storage site operator and ultimately the state after the transfer of responsibility? Furthermore, is it equitable to assign liability to the state of Norway for carbon leakage originating from a company situated in a different country? The need to address the issue arises from the fact that the CCS industry, prior to the Norwegian Northern Lights project, was characterized by a bilateral relationship between the operator of the carbon dioxide (CO<sub>2</sub>) storage site and the state. Due to the development in the CCS industry, which now entails the multiplication of actors along the value chain, and thereby raises questions as to how this transformation alters the legal framework pertaining to environmental liability for storage.

This thesis deliberately refers to both the terms ‘responsibility’ and ‘liability’, even though these terms are often used as synonyms. This distinction is two-dimensional. First, the terms serve as terminology for distinguishing between responsibility as a meta concept, as it is an abstract idea that encompasses various legal, ethical, and moral obligations, and the term liability, which rather refers to an actual, concrete legal regime. Second, and most important in the context of this paper, the terms welcome a *de lege ferenda* discussion. The aim of this paper is to critically analyze the legal regime for CCS from an environmental law point of view, whereby *de lege ferenda* suggestions will be provided.

Hereafter, the CCS value chain is introduced, providing a brief overview of its significance in addressing climate change. This section serves a threefold purpose: firstly, to present a case study analysis of the Norwegian Longship project, offering valuable insights into the practical implementation of CCS initiatives; secondly, to establish a terminological framework that will underpin the subsequent discussions; and finally, to highlight the profound importance of

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<sup>1</sup> The technology exists in several forms and is known by many names: Carbon [dioxide] capture and storage (CCS), carbon capture utilization and storage (CCUS), bioenergy with carbon capture and storage (BECCS), sequestration, anthropogenic removal, carbon dioxide removal (CDR).

this subject matter in shaping the trajectory of CCS development in Europe and Norway. At the conclusion of this chapter, a thorough understanding of the significance and relevance of the subject matter will have been attained, facilitating a detailed examination in the subsequent chapters.

## 1.2 Background

Anthropogenic climate change refers to those changes originating in human activity, especially related to emissions-intensive industries like the energy and transport sector.<sup>2</sup> In order to combat global warming and reach our net zero-targets under the Paris Agreement<sup>3</sup>, we need to either 1) stop emitting, or 2) in some way utilize the carbon deriving from these activities.

One possible solution to utilize the CO<sub>2</sub> is by using CCS technology, which involves the ‘process in which a relatively pure stream of carbon dioxide (CO<sub>2</sub>) from industrial and energy-related sources is separated (captured), conditioned, compressed and transported to a storage location for long-term isolation from the atmosphere.’<sup>4</sup> The 2022 Sixth Assessment Report (third instalment) of the Intergovernmental Panel on Climate Change (IPCC), underscores that CCS is a crucial climate change mitigation strategy to meet our Paris Agreement goals.<sup>5</sup>

This paper mainly focuses on the storage stage of CCS, meaning that the capturing and transport stages falls outside the scope. However, both of the latter will be touched upon to describe the development of CCS and to raise some critical questions about responsibility and liability along the value chain.

The storage stage can be further divided into four phases: 1) the preparation stage, 2) the operating stage where CO<sub>2</sub> is being injected into geological formations, 3) the after injections stage where monitoring is decreasing, and 4) the stage after responsibility has been transferred

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<sup>2</sup> IPCC Special Report on Carbon dioxide Capture and Storage, page 77

<sup>3</sup> United Nations (UNFCCC) Paris Agreement of 12 December 2015. Net zero is however not stated in the agreement per se but falls under the National Determined Contributions (NDCs).

<sup>4</sup> Glossary, Annex VII, IPCC 2021

<sup>5</sup> IPCC Climate Change 2022: Mitigation of Climate Change (Working Group III contribution to the Sixth Assessment Report). Summary for Policymakers, paragraph C.4.1 and C.4.6

from the operator to the state.<sup>6</sup> The scope of this paper is the third and fourth phases, namely before and after transfer of responsibility between the operator and the state, focusing on the state's responsibilities and liabilities.

There is consensus among environmental scientists globally that minimizing CO<sub>2</sub> emissions is the only way to combat climate change. The IPCC maintained its previous conclusion from 2022 in the 2023 Synthesis Report (AR6), reaffirming the critical role of CCS in the mitigation of climate change. Within the 2023 report, it is stated: 'If the geological storage site is appropriately selected and managed, it is estimated that the CO<sub>2</sub> can be permanently isolated from the atmosphere.'<sup>7</sup> In other words, CCS could be an alternative to how we minimize CO<sub>2</sub> emissions. However, it also follows from the report that '[i]mplementation of CCS currently faces technological, economic, institutional, ecological, environmental and socio-cultural barriers.'<sup>8</sup> This sentence does not harmonize well with the fact that a worst-case carbon leakage scenario could cost the liable operator or state 600 million euros.<sup>9</sup> The Zero Emissions Platform (ZEP) who calculated this scenario wanted to underscore that '[t]his scenario is very unlikely, however not unthinkable'.<sup>10</sup> If a 600 million euro incident is not unthinkable, discussing and ultimately removing some of these legal barrier is of uttermost importance.

Notwithstanding the aforementioned points, there exists a lack of consensus regarding the effectiveness of using CCS as a mitigation tool to combat climate change. Bradshaw sums up the controversy about CCS by describing it as both 'a 'magic bullet'; 'an uncomfortable but necessary option'; 'an expensive distraction'; and a 'false hope'.<sup>11</sup>

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<sup>6</sup> CCS Directive Art. 18 and CO<sub>2</sub> Storage Regulation Section 5-8

<sup>7</sup> AR6 Synthesis (IPCC-LVIII/Doc. 4), page 22

<sup>8</sup> Ibid.

<sup>9</sup> Zero Emissions Platform, 'CO<sub>2</sub> Storage Safety in the North Sea: Implications of the CO<sub>2</sub> Storage Directive', page 7

<sup>10</sup> Ibid. page 62

<sup>11</sup> Bradshaw; 'The New Directive on the Geological Storage of Carbon Dioxide'



The aim of this paper is not to answer the overarching inquiry of whether CCS is the ‘silver bullet to combat climate change’<sup>12</sup>, just an ‘arrow in the quiver’<sup>13</sup> or if ‘it cannot even be considered a bridging technology’<sup>14</sup> but rather to explore the rules regarding responsibility and liability in the event of carbon leaking from their storage sites.

### **1.2.1 Legal barriers to CCS**

The controversy around CCS could also be explained by the number of legal barriers and uncertainties. In the European Union (EU), Directive 2009/31/EC (CCS Directive) was adopted as a framework to address these obstacles. The CCS Directive, which became effective in 2009, represents a significant milestone in the legal framework governing CCS. However, it is essential to acknowledge that prior to the establishment of this directive, various legal obstacles were already present. These obstacles will be touched upon further on in this chapter. It is noteworthy that the CCS Directive did not directly address these preexisting legal barriers; instead, it necessitated amendments to other relevant legal instruments in order to achieve its intended objectives.

The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) adopted already in 2007 amendments related to CCS. First, Decision 2007/01, which prohibits the storage of CO<sub>2</sub> in the water column or on the seabed, and then more importantly, Decision 2007/02, which allows for storage of CO<sub>2</sub> in geological formations, same as the two years later CCS Directive. However, OSPAR is a regional instrument created to protect the environment within its jurisdiction, and the rules is therefore not applicable outside the territory.

The London Protocol<sup>15</sup> is nevertheless not bound by maritime borders, but rather Member State participation. The 1996 Protocol was made to eventually replace the earlier London Convention ‘on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter’

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<sup>12</sup> Expression inspired by Mary Griffiths, Paul Cobb, Tom Marr-Laing; ‘Carbon Capture and Storage: An arrow in the quiver or a silver bullet to combat climate change?’

<sup>13</sup> Ibid.

<sup>14</sup> NOAH Friends of the Earth Denmark, ‘Review of the CCS-directive’

<sup>15</sup> Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972) (as amended in 2006)

(1972) by modernizing it. Under the Protocol, all dumping of waste is prohibited.<sup>16</sup> Until it got excluded in 2006, even CO<sub>2</sub> was considered as waste under the Protocol, which made CCS impossible for the Contracting Parties.

## 1.2.2 Longship

Norway is one example of a nation that demonstrates unwavering faith in the potential of this technology, as evidenced by its substantial investment of approximately NOK 18 billion in the ambitious 'Longship' project, aimed at implementing a full-scale CCS infrastructure.<sup>17</sup> Longship consists of the three components: Hafslund Oslo Celsio (Celsio),<sup>18</sup> Norcem and Northern Lights.



Figure 1 – Illustration of the Longship project<sup>19</sup>

<sup>16</sup> London Protocol, Art. 4 (1)

<sup>17</sup> 'What are the cost estimates for Longship?'

<https://www.regjeringen.no/en/topics/energy/landingsider/ny-side/sporsmal-og-svar-om-langskip-prosjektet/id2863902/?expand=factbox2864130> Last updated: 13.10.2021. Read: 22.05.2023 08:38

<sup>18</sup> 'Fortum Oslo Varme' at the time the project launched.

<sup>19</sup> Meld. St. 33 (2019–2020) Longship – Carbon capture and storage — Meld. St. 33 (2019–2020) Report to the Storting (white paper) (Figure 4.1)

Celsio is an energy recovery plant. They provide both electricity and hot water for distribution to consumers in Oslo, using recovered heat from incinerated waste. However, the burning of waste is causing major emissions. With the financial support from the Longship project, Celsio is planning on capturing 400.000 tons of CO<sub>2</sub>.

An equal amount of CO<sub>2</sub> is planned captured by Norcem, a cement producer. Worldwide, the cement industry is responsible for about 5-7 % of the total emissions. Nevertheless, Norcem has a net zero vision by 2030, which can be attainable with the financial support from the Longship project.

Both of these components, Celsio and Norcem, are capturing carbon, then liquifying it and leaving the rest to the third and last component, Northern Lights, who is responsible for transporting the carbon and storing it in the deep seabed.

In the following, the Northern Lights project will be employed as a case study, providing a tangible illustration of the advancement of CCS initiatives in Europe. Throughout the paper it will also be used to discuss de lege ferenda suggestions for long-term liability in the event of carbon leakage.

### **1.2.3 The Northern Lights Project**

To this date, some legal barriers are still connected to the London Protocol. Article 6 prohibits the export of waste, to stop Parties exporting their waste to non-Parties.<sup>20</sup> For the Longship project, specifically the Northern Lights part of it, this was a major legal barrier. This is why Norway proposed in 2009 to exclude CO<sub>2</sub> also from the export rule. However, ratification has been slow, with only six of 53 Contracting Parties implemented the amendment. Therefore in 2019, Norway and the Netherlands investigated ways of applying the amendment provisionally.<sup>21</sup>

According to Article 25 of the 1969 Vienna Convention on the Law of Treaties (VCLT), a treaty in its entirety or specific parts of it can be applied provisionally before its entry into force if the negotiating States have agreed on it.<sup>22</sup>

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<sup>20</sup> IEAGHG Technical Review 2021-TR02 April 2021, page 2

<sup>21</sup> Ibid., page 6

<sup>22</sup> Vienna Convention on the Law of Treaties, Art. 25 (1) litra b

One could question the applicability of VCLT in this case, as the scope of the convention is ‘treaties’,<sup>23</sup> and not specifically ‘amendments’ or ‘protocols to conventions’ as in our case. However, the word ‘treaty’ is used in a wide and generic sense, including all types of ‘international agreements’ as long as they have been ‘concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation’.<sup>24</sup> In any case, the convention is considered a codification of customary international law concerning treaties. With that being said, when the International Law Commission (ILC) of the United Nations drafted VCLT, they only seemed to have meant that paragraph 1 of Article 25 represented customary international law.<sup>25</sup> In our case, it is paragraph 1 litra b that is applied. Subsequently, Norway and the Netherlands could apply the amendment provisionally.

Furthermore, the two countries came together to finalize a Resolution for the provisional application.<sup>26</sup> As a result, the last legal barrier for the Northern Lights project was removed, meaning that Dutch companies can start negotiating agreements with Northern Lights to start exporting their CO<sub>2</sub> to the Norwegian continental shelf (NCS) for permanent storage in geological formations. To this date the only example is Yara<sup>27</sup>, who in August 2022 signed a Memorandum of Understanding (MoU) with Northern Lights, agreeing to transport and permanently store their emissions in the NCS.

#### **1.2.4 Topicality**

The ongoing negotiations between Northern Lights JV and Yara for an agreement among the parties serve as a compelling impetus for undertaking this analysis. The contemporaneous nature of these negotiations underscores the timeliness and relevance of conducting the present study.

By undertaking this analysis, the aim is to address the barriers mentioned so far, and place CCS into the already existing regime of environmental law. How is the long-term liability in the event of a carbon leakage reflected in the field of CCS? While the industry keeps

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<sup>23</sup> VCLT Art.1

<sup>24</sup> Art. 2 (1) litra a

<sup>25</sup> Dörr, O., Schmalenbach, K. "Vienna Convention on the Law of Treaties: A Commentary.", page 412

<sup>26</sup> Resolution LP.5(14)

<sup>27</sup> Yara Sluiskil, an ammonia and fertiliser plant in the Netherlands

developing with larger full scale CCS projects, it is of my view that the legislation is not equally dynamic. Before the Northern Lights project for instance, CCS were a matter between operator and State, whereas it now includes other parties in the equation. How does this change the rules regarding responsibility? Is it fair holding the state of Norway liable for a carbon leakage when the source of emissions comes from a company based in another country? Throughout the course of this paper, it will become evident that the legal status of the activity in question is subject to considerable uncertainty.

A substantial amount of literature has been devoted to the subject of CCS, much of which constitutes a critical assessment of the system. However, it mostly focuses on incentivizing the industry. Whereas I agree with those authors, I raise the question of what will be the consequences if the legal aspects of liability remain ambiguous despite the proliferation of such projects? The intricate nature of the CCS value chain, which is subject to legal constraints at each stage, underscores the urgent need for a comprehensive analysis of long-term liability. Placing a complex topic within an already complex field of environmental law, with its own conflicting considerations, urges us to take a step back and breaking it down to a moral perspective: who should be held responsible for a potential carbon leakage?

### **1.3 Terminology**

The title of this thesis, namely ‘State responsibility and liability in the context of carbon capture and storage’ could be broken into smaller pieces like ‘State’, ‘responsibility and liability’ and ‘carbon capture and storage’, each of which will be expounded upon hereafter. As this paper questions responsibility/liability in the event of ‘carbon leakage’, this term needs to be explained as well. Lastly, because Northern Lights will be used throughout the thesis, and a central concept connected to this project is ‘third-party access’, this will also be explained.

#### **1.3.1 State**

Under international law, a ‘state’ is defined as something that possesses ‘a) a permanent population; b) a defined territory; c) government; and d) capacity to enter into relations with the other states.’<sup>28</sup> This definition is from 1933 and does in most cases describe what we mean

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<sup>28</sup> Montevideo Convention on the Rights and Duties of States, Art. 1

when we think about modern states. Today the most common characteristic of a state is that it is recognized as one by the UN and possesses a membership in the UN.

As both the European and Norwegian CCS model deals with transfer of responsibility from the operator to the state, the term state is often used in opposition to the operator. In this paper, the term state will also be used in opposition to the third-party user(s). When discussing why the state should or should not be responsible, I am equally saying that the operator and/or third-party user(s) should or should not be responsible instead.

In the legislation we often find the wording ‘competent authority’, which in this thesis will be used synonymously with state. Nonetheless, it is important to note that a clear distinction exists between the two; however, for the sake of simplification, the terms will be utilized interchangeably as the competent authority operates on behalf of the state.

### **1.3.2 Responsibility and liability**

Responsibility and liability are two terms that is often used interchangeably, both referring to being accountable or to blame for something. However, there is a difference important to establish for further discussion. In legal terms, responsibility can be seen as a broader concept than liability, as it covers a wider range of duties and obligations beyond those that may give rise to legal liability. On a general note, one could say that liability is a concept in law, whereas responsibility belongs to the ethics.<sup>29</sup> This distinction between law and morality could also be described with the legal terms ‘de lege lata’ and ‘de lege ferenda’. The former is used to describe the law ‘as it is’, whereas the latter welcomes a normative discussion of ‘what the law ought to be or may [be] in the future’.<sup>30</sup>

In my approach, I elect to conceptualize responsibility in conjunction with de lege ferenda. In my perspective, a functional correlation exists between these two terms. Responsibility and de lege ferenda is here connected in a legal philosophical manner, both with an undertone of asking the simple but very complicated question of ‘what is fair?’ However, while legal philosophy will not serve as a standalone methodology in this paper, its role will primarily be

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<sup>29</sup> Easily put, if I cheat on my beloved one, I would be responsible for the potential break up, but not legally liable for breaking their heart.

<sup>30</sup> Law, Jonathan. "A Dictionary of Law." (2015).

to substantiate and defend the aforementioned interpretation. In the further, I will use the term liability when describing *lex lata*, and responsibility when discussing *lex ferenda*. Where other legal instruments have used the terms in a different manner it will be addressed.

In summary, while responsibility is a broader moral and ethical concept, liability is a legal concept that refers to the specific legal obligation to compensate for harm caused to others.

**1.3.3 Carbon capture and storage**

CCS has already been explained to enough detail for this paper under Chapter 1.2 to follow the later discussions. For reasons of clarity, the underneath figure can serve as a visual representation of where we are in the value chain. Text in cursive is outside the scope of this paper, and the bold text is inside.

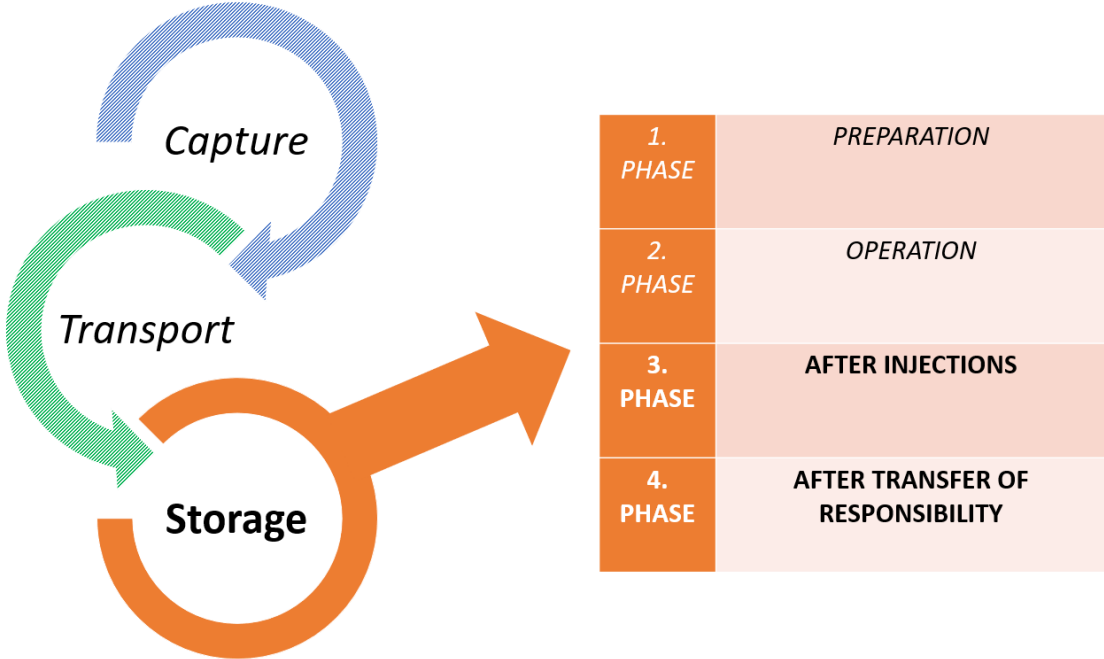


Figure 2. Visualization of the CCS value chain with emphasis on the storage phases

The fourth storage phase holds particular significance within the context of this paper, as it is during this phase that the responsibility inherently shifts to the state. However, there are cases where the state could or should be responsible also during the third phase and is therefore included inside the scope of this thesis.<sup>31</sup>

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<sup>31</sup> See for instance Chapter 2.1.1 and 2.1.2

### 1.3.4 Carbon leakage

The CCS Directive defines ‘leakage’ as ‘any release of CO<sub>2</sub> from the storage complex’, whereas the ‘storage complex’ includes both the storage site itself and the surrounding areas.<sup>32</sup>

The storage of CO<sub>2</sub> works on the same premises as with fossil fuels, whereby the carbon is injected into geological formations of similar nature to those in which oil and gas are trapped. Had the fossils not been extracted, they would have remained securely stored in these formations.<sup>33</sup> The NCS has seen the safe storage of 26 million tons of CO<sub>2</sub> since 1996 via the Sleipner and Snøhvit projects, demonstrating the absence of significant risk of leakage. In essence, empirical evidence suggests that CCS is a secure method for carbon storage.

While this might be true, there are also reasons to discuss responsibilities in the event of a carbon leakage. While carefully selecting storage sites and continuous monitoring can reduce the risk of leakage, other scenarios are totally out of the operator/states control, for instance earthquakes and/or acts of war.<sup>34</sup> As already mentioned in Chapter 1.2, a worst-case scenario could cost the responsible actor 600 million euros.

The IPCC 2005 Special Report on CCS concludes that ‘the fraction retained in appropriately selected and managed reservoirs is very likely to exceed 99% over 100 years, and is likely to exceed 99% over 1000 years.’<sup>35</sup> However, in the footnotes they specify that by ‘very likely’ they mean a probability between 90-99%. What percentage that then falls under the scope of ‘likely’ is not specified. The questionable language underlines the importance of researching the responsibility and liability in the event of carbon leakage.

### 1.3.5 Third-party access

Third-party access (TPA) in EU law refers to the legal right of third parties to access certain infrastructures or services that are owned or operated by a regulated company, but which are

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<sup>32</sup> CCS Directive, Art. 3 paragraph 5 and 6. Whether this inclusion of the surrounding areas is also applicable under Norwegian law depends on which legal basis you interpret. The Pollution Regulation include a larger terrestrial scope than the CO<sub>2</sub> Storage Regulation.

<sup>33</sup> Global CCS Institute: CCS Explained: Storage <https://www.globalccsinstitute.com/ccs-101-storage/>  
Read 03.03.2023 12:34

<sup>34</sup> Force majeure will be specifically discussed in Chapter 3.2.3

<sup>35</sup> IPCC Special Report on Carbon Dioxide Capture and Storage, page 34



considered essential facilities for the functioning of a competitive market. The concept of TPA is typically used in the context of the energy sector, including electricity and gas transmission networks, but it can also apply to other sectors.<sup>36</sup>

The principle of TPA is based on the idea that competition in certain markets can only be effective if all market participants have equal access to essential facilities or services, regardless of their ownership or control.

In the context of CCS projects, TPA refers to the ability of a party other than the operator and the state to gain access to the storage site for the purpose of storing CO<sub>2</sub>. TPA is a key element of the EU CCS legal framework, which aims to promote the development of CCS technology and the use of this technology for mitigating greenhouse gas emissions. Regarding the Northern Lights project, TPA enables the involvement of additional entities in the value chain, specifically in the process of CO<sub>2</sub> capture.

## **1.4 Methodology**

The legal doctrinal method will be used in this paper to analyze and explain the legal regime governing the storage phase of the CCS chain. This method involves analyzing existing legal materials, including statutes, case law, and scholarship, with the objective of extracting legal principles, rules, and norms. Additionally, relevant materials from other disciplines, such as tort law and economics, will be analyzed to answer the research questions. Comparative analysis with other jurisdictions will also be made when discussing liability. The focus will be on identifying and analyzing legal norms relevant to the storage phase of the CCS chain and carbon leakages.

When examining the Northern Lights project, the focus of the discussions could primarily be based on national legislation. However, it is important to consider that as a member of the European Economic Area (EEA), Norway is intricately linked to the EU's internal market. Consequently, Norway is obligated to adhere to the environmental legislation of the EU that is incorporated into the EEA Agreement. Hence, this paper incorporates EU law as a significant component. Furthermore, given the field of environmental law, it necessitates an assessment of global factors, resulting in the inclusion of internationally applicable principles.

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<sup>36</sup> The principle is enshrined in several EU directives, such as the Third Energy Package for gas and electricity.

Therefore, the sources utilized in this paper encompass a combination of international law, EU law, and Norwegian legislation. The following legislation will be of importance for this paper:

- Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide (CCS Directive)
- Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage (ELD Directive)
- Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community (EU ETS Directive)
- Regulations relating to exploitation of subsea reservoirs on the continental shelf for storage of CO<sub>2</sub> and relating to transportation of CO<sub>2</sub> on the continental shelf (CO<sub>2</sub> Storage Regulation)
- Act of 13 March 1981 No.6 concerning Protection Against Pollution and Concerning Waste (Pollution Control Act) and its belonging Regulations of 1 June 2004 No. 931 on pollution control (Pollution Regulations)

Although the legal doctrinal method aims to describe the existing law, it also has a prescriptive voice which legitimize proposing new suggestions and changes to the current legislation. By using the Northern Lights project as a common thread throughout the paper, the aim is to suggest potential changes to the CCS framework to make it more coherent with environmental law and principles provided with a practical example.

#### **1.4.1 Delimitation**

Although it is important to keep in mind that there are different rules connected to responsibility depending on which part of the value chain we are in (capture, transport or storage), these three phases of CCS are separate but related. It is of my view that the legislators have neglected their interdependence when drafting the regulations we see today. Consequently, this study will incorporate de lege ferenda deliberations on responsibility, extending the analysis to encompass the capture and transport phases as needed. The formulation of de lege ferenda proposals is grounded in fundamental environmental law principles and doctrines.

When conducting research on state responsibility and liability in the context of CCS, there are several limitations that should be acknowledged. First, CCS is a relatively new technology, and the full-scale Longship project is a first of its kind. This may limit the availability of legal cases or regulatory guidance for analysis. Additionally, the research may be limited by the specific legal and regulatory frameworks of the jurisdictions being studied. It is also important to recognize that the analysis is focused on the storage phase of the CCS chain and does not address potential impacts of CCS such as transportation or capture in great detail. Risks associated with CCS are more than just those connected to carbon leakage, for instance fugitive emissions. Although responsibilities for remedial action could be relevant, I limit myself to go further into these sorts of compensation claims.

Damage to the environment could be further addressed by analyzing the different legal tools we find within the international environmental regime, for instance damage to the marine environment under the UN Law of the Sea, degradation of species and habitats under the Convention on Biological Diversity or the prevention of dangerous anthropogenic interference with the climate system under the UN Framework Convention on Climate Change. These frameworks will not be the subject of discussion within the scope of this paper. However, international environmental principles, in conjunction with CCS legislation at EU and national level, will be the main legal basis for this paper.

## **1.5 Structure**

This paper aims to answer the question of whether the current legal framework is appropriate enough as is to allocate liabilities in a potential situation of carbon leakage from an environmental law point of view. The Northern Lights project will be used throughout the paper to serve as a practical example. The current chapter have included the necessary background information needed for further reading.

The purpose of Chapter 2 is to answer the research question by analyzing EU law. This section presupposes basic knowledge of EU law and its connection to international law. The starting point of the analysis is the CCS Directive, which redirects us to the EU ETS and ELD Directive. In discussing responsibility *de lege ferenda*, international principles will be central.

Chapter 3 analyzes the domestic Norwegian regulations. Whereas it serves as legal basis for the Northern Lights project, and therefore more relevant in the context of this thesis, it is in this paper thoughtfully placed after reviewing EU law as this section presupposes knowledge

from the previous chapter, given that the Norwegian legislation is more or less an implementation of the EU framework.

In both Chapter 2 and 3 other considerations will be addressed, as not all relevant discussions can be drawn from the main legal basis connected to CCS.

Finally, Chapter 4 provides a summary of conclusions and recommendations.

## **2 Liabilities arising from EU law**

Havercroft distinguishes between what he calls civil liability, administrative liability, and climate change liability in his examination of liability in different legal frameworks.<sup>37</sup> Under the CCS Directive we find a more specific approach under Chapter 4 ‘Operation, closure and post-closure obligations’:

- Monitoring, reporting and corrective measures (regulated by the CCS Directive, working as a framework for i.e., the Norwegian CO<sub>2</sub> Storage Regulation)
- The surrender of CO<sub>2</sub> allowances in the event of leakages (regulated by the EU ETS Directive)
- Remedial action related to damage to the local environment and the climate (regulated by the ELD Directive)

In the following these obligations will be addressed by analyzing directive by directive.

### **2.1 The CCS Directive**

Under the CCS Directive, the main rule is that the operator is liable<sup>38</sup> for ‘all obligations’ until 20 years post-closure.<sup>39</sup> However, there exist exceptions within the directive that could potentially attribute responsibility to the state prior to the aforementioned time frame. Such exceptions may arise when the validity of the permit is called into question or in cases where

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<sup>37</sup> Havercroft, Ian, Richard Macrory, and Richard B. Stewart. "Carbon Capture and Storage: Emerging Legal and Regulatory Issues." (2018) page 309

<sup>38</sup> The CCS Directive operates with the term responsible instead of liable.

<sup>39</sup> CCS Directive, Art. 18 (1) litra b

the permit is revoked or withdrawn. These circumstances give rise to situations in which the state assumes responsibility for the corresponding obligations related to the CCS project.

### **2.1.1 Existence of a permit**

One could argue that the existence of a permit in itself could be a reason *ipso facto* to allocate responsibilities to the state even during the third storage phase. As we have seen, in this after injections stage, the ultimate responsibility would typically lie with the operator. From a more philosophical point of view, one could ask if it was not for the allocation of the permit, one would not have the carbon leakage, hence the state should be partly responsible for the consequences. According to *de lege lata*, despite the fact that a CCS project, such as the Northern Lights project, is approved and regulated by the Norwegian government, it does not automatically make the government liable for any carbon leakage that may occur.

However, there are several examples of cases in international environmental law where a state has been held responsible for transboundary environmental damage caused by an industrial activity that was approved by the state. One example is the Trail Smelter case, which is considered a landmark case in international environmental law; first of its kind to address transboundary pollution.

The case involved a smelter located in Trail, British Columbia, Canada, owned and operated by a US-based company. The smelter emitted sulfur dioxide and other pollutants into the air, which traveled across the border into the state of Washington, United States, causing damage to crops and property. The US government filed a complaint to the International Joint Commission (IJC) to address transboundary water and air pollution issues. The IJC found that the smelter was causing harm to the environment and that the Canadian government had a responsibility to take measures to prevent the harm. The Canadian government argued that it could not control the actions of a private company and that it was not responsible for the harm caused by the smelter. However, the IJC rejected this argument and held that the Canadian government had a duty to prevent the pollution and could be held responsible for any damage caused by the smelter. By imposing conditions on the permit, the state assumed a duty to ensure compliance with those conditions and to prevent harm to others. In this case, the state's

failure to effectively regulate and control the smelter's emissions resulted in its liability for the transboundary environmental damage.<sup>40</sup>

The Trail Smelter case is also significant because it established the principle of ‘no transboundary harm’ in international environmental law, which holds that states have a duty to prevent, control, and reduce environmental harm that originates within their territory and causes harm to neighboring states or their environment.<sup>41</sup> This discussion continues in Chapter 2.4.

### 2.1.2 Withdrawal of permit

Article 11 (3) includes the possibility for the state to withdraw the storage permit in cases of leakages or ‘significant irregularities’. The latter is defined in Article 3 (17) as something that ‘implies the risk of a leakage or risk to the environment or human health’. According to the wording, it sounds like a low threshold for withdrawal of the permit. Nevertheless, Article 11 points out that it is only a ‘last resort’ solution.

If the storage permit is withdrawn, the ‘storage site shall be closed’ according to Article 17 (1) litra c. In the same article, paragraph 4, we read that when a storage site has been closed due to a withdrawal pursuant to Article 11 (3), all obligations shall be transferred to the ‘competent authority’, alias the state.

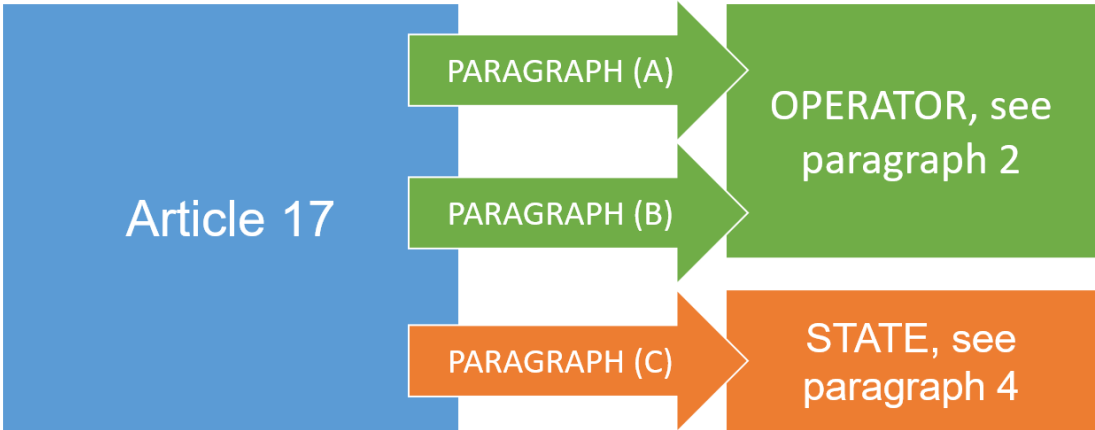


Figure 3 - Closure and post-closure obligations

<sup>40</sup> Trail Smelter Arbitration, p. 1965-1966

<sup>41</sup> Birnie, Patricia; Boyle, Alan and Redgwell, Catherine. International Law and the Environment, 3rd ed., Oxford 2009. Page 137.

Paragraph a and b of Article 17 is used when the storage site has been closed organically, without any errors occurring along the way. In these cases, the main rule of 20 years continued liability with the operator after closure applies.<sup>42</sup>

### **2.1.3 Transfer of responsibility**

Article 18 deals with what the directive refers to as the transfer of ‘responsibility’. The utilization of the term responsibility within the context of the CCS Directive can be attributed to its nature as a framework directive, which does not directly prescribe specific consequences in the event of carbon leakage. Rather, it refers us to the ELD and the EU ETS Directive, which impose obligations on operators or states to compensate for emissions through allowances and undertake remedial measures for environmental harm. However, in the following the term liability will be used instead of responsibility.

According to Article 18 (1), the storage site ‘shall be closed’<sup>43</sup> when ‘the relevant conditions stated in the permit have been met’,<sup>44</sup> for instance when ‘the total quantity of CO<sub>2</sub> authorised to be geologically stored, [or] the reservoir pressure limits’<sup>45</sup> have been reached. The liability is then transferred to the state after a minimum period of 20 years.<sup>46</sup>

Nevertheless, this minimum period is not absolute. If the state is convinced that ‘all available evidence indicates that the stored CO<sub>2</sub> will be completely and permanently contained’<sup>47</sup> a shorter period can be made possible.

The language chosen in this Article has been discussed in literature. It is especially the ‘all available evidence’ that seems particularly stringent, where one could argue that a literal interpretation would result in an impossible or close to impossible task to fulfil.<sup>48</sup> Weber discuss the choice of wording under his chapter named ‘criticism of the European system’,

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<sup>42</sup> Art. 18 (1) litra b

<sup>43</sup> Art. 17 (1)

<sup>44</sup> Art. 17 (1) litra a

<sup>45</sup> Art. 9 (3)

<sup>46</sup> Art. 18 (1) litra b

<sup>47</sup> Art. 18 (1) litra a

<sup>48</sup> Havercroft, Ian; Macrory, Richard; ‘Legal Liability and Carbon Capture and Storage; A Comparative Perspective’ (2014) Page 38.

describing the criterion as for being ‘too onerous and cannot be met’.<sup>49</sup> However, Macrory conclude that the wording ‘may require some common sense rather than literal interpretation if it is ever to be exercised’.<sup>50</sup> Bradshaw has another perspective on it, arguing that ‘all available evidence indicates’ is less stringent than for instance ‘proof of’.<sup>51</sup>

A less stringent interpretation is probably the most appropriate, if one read Article 18 in conjunction with for instance Article 4 (4). When selecting the storage site, the site is appropriate if there are ‘no significant risk of leakage’. Because it includes ‘significant’, an antithetical interpretation would be that minor risk of leakage is okay. Following this train of thought, if it is accepted that a storage site poses a minor risk of leakage, the same should apply when closing the storage site.

To conclude, Article 18 concerns the transfer of liability from the operator to the state. Even though the provision could be read in a manner that would imply that the state will never take over the liability, this must be said to be a wrong interpretation. After the closure of the storage site, a 20-year minimum period will follow, before the operator eventually transfer the liability to the state. As noted above, this minimum period can be amended if the criteria are met.

#### **2.1.4 Rationale for the necessity of liability transfer**

In order to comprehensively address the topic, it is essential to delve into the necessity of transitioning the responsibility from the operator to the state. As previously indicated in Chapter 2.1, after a minimum period of 20 years post-closure, all liabilities will be transferred from the operator to the state. This follows from the CCS Directive Article 18 and is further implemented in national Norwegian law through the CO<sub>2</sub> Storage Regulation Section 5-8. Nonetheless, it is crucial to examine the justification behind this transfer and evaluate the underlying factors that led to the determination of a minimum timeframe of 20 years. An in-depth exploration of these aspects enables us to acquire valuable insights into the significance and justifications underpinning these provisions within the prevailing legal framework.

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<sup>49</sup> Weber, Viktor. ‘Uncertain Liability and Stagnating Ccs Deployment in the European Union: Is It the Member States’ Turn?’ (2018)

<sup>50</sup> Ibid.

<sup>51</sup> Ibid.



On the one hand, Wilson argues that by transferring the responsibility from the operator to the state, 'it transfers today's private profits into a future public burden'.<sup>52</sup> This argument emphasizes with taxpayers, as they would potentially be affected by a major carbon leakage financially. On the other hand, Wilson argues that '[c]ompany lifetimes are too short for private liability to be an acceptable long-term solution'.<sup>53</sup> Here the relatively short life span of most companies advocates for the state eventually being liable.

A comparative analysis of long-term CCS liability schemes in several jurisdictions was done in 2010.<sup>54</sup> It compares the liability schemes from the US, Canada, Australia, and the EU, in order to conclude by recommending a long-term liability model for North America.

In Wyoming, Kansas, and the Victoria State, they have chosen a scheme where the operator remains liable in the long run, in conjunction with their chosen insurance scheme. A problem with this solution is that the risks and ambiguity connected with CCS makes pricing insurance complicated, and therefore it does not incentivize CCS for either the operators or the insurance companies. The authors point out that this approach removes the potential situation where the taxpayers pay for the long-term costs connected to a carbon leakage, in line with Wilsons argument above.

Further, they analyze the models used in the EU and the State of Montana. Here the state overtakes the long-term liability. Continuing the taxpayer discussing, they argue: 'the fact that CCS is a societal good may justify the potential cost being borne by taxpayers.'<sup>55</sup> Because taxpayers are people with gas cars, annual travels by plane to their vacations, red meat eaters, fast fashion buyers etc., they are equally responsible for our emissions, and therefore also to be held (indirectly) liable for remedial actions.

The conclusion of the comparative analysis was a proposed model of long-term liability in North America, where the authors followed the European model of transfer of liability to the

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<sup>52</sup> Wilson, Elizabeth Joan. "Managing the Risks of Geologic Carbon Sequestration: A Regulatory and Legal Analysis." (2004). Page 39

<sup>53</sup> Ibid.

<sup>54</sup> Ingelson, Allan, Anne Kleffner, and Norma Nielson. "Long-Term Liability for Carbon Capture and Storage in Depleted North American Oil and Gas Reservoirs - a Comparative Analysis." Page 467.

<sup>55</sup> Ibid. Page 468.

competent authority after a given time post closure. Because there is always the risk of an operator becoming insolvent, having a government that is conditionally prepared to assume long-term liability is a more stable solution than the government needing to pay the remedial actions unprepared.

In researching why the minimum period is set to 20 years post closure, no answers were provided. From an outside perspective, it can then seem to be a random number. Because both the CCS Directive and the CO<sub>2</sub> Storage Regulation offer leeway's to avoid the main rule, by both extending and reducing this period, I will not go further into discussions about why the minimum period is set to 20 years.

In conclusion, based on the analysis above and the perspectives of other scholars, the European model, which encompasses the transfer of liability from the operator to the state after a minimum period of 20 years following closure, emerges as the most favorable and effective solution. This model provides stronger incentives for CCS compared to the alternative option, it prepares the state for long-term liability, and has the potential to encourage taxpayers to adopt environmentally sustainable lifestyle choices. However, in the upcoming chapters (starting from 2.3.2) I will discuss whether this also applies in the case of the Northern Lights project by asking: is it fair holding the state of Norway liable for a carbon leakage when the source of emissions comes from a company based in another country?

### **2.1.5 Transfer of responsibility in the Northern Lights project**

The Norwegian government has made a significant financial investment of NOK 17 billion in the Northern Lights project, indicating its strong commitment to the initiative. Questioning the 'transfer of responsibility' regime in the given project is might not necessary, as questions about the fairness of burdening taxpayers with the project's potential liabilities may not arise. However, the fact that the analyses that has been made primarily address only the operator-state relationship, and not including third-party users, underscores the need for the following discussion.

### **2.1.6 Third-party access under the CCS Directive**

TPA is a significant element in fostering competition and a free market in the EU. According to Article 21 (2) of the CCS Directive, the only requirements are that access to the infrastructure must be done in a 'transparent and non-discriminatory' manner. The latter requirement is recognizable from the World Trade Organization (WTO), which created the

non-discriminatory requirement as a fundamental principle of international trade. It is enshrined in Article I of the General Agreement on Tariffs and Trade (GATT), which states that ‘any advantage, favor, privilege or immunity granted by any contracting party to any product originating in or destined for any other country shall be accorded immediately and unconditionally to the like product originating in or destined for the territories of all other contracting parties.’ This principle is commonly referred to as the Most-Favored-Nation (MFN) principle. Because the EU is a member of the WTO, the MFN principle is applicable also within the Union.

TPA is compulsory under the CCS Directive. Nevertheless, the directive does not offer any instruction regarding long-term liability in the event of leakage.

Under EU law, the allocation of liability for TPA generally depends on the specific legal framework governing the activity or project in question. In cases where TPA is required by law, like the CCS Directive, the operator or owner of the relevant infrastructure or facility may be held liable for any damages caused by the third party.

For example, under the EU Gas Directive,<sup>56</sup> TPA to natural gas infrastructure is mandatory, and the owner or operator of the infrastructure is responsible for ensuring that access is provided on non-discriminatory and transparent terms. The owner or operator may also be held liable for any damages caused by the third party, such as damage to the infrastructure or harm to third parties.

The rationale behind assigning responsibility to the operator, rather than the user, lies in the fact that the former exercises control over the infrastructure and could be argued to be best placed to ensure conformity with the applicable regulations and safety protocols.

Additionally, the owner is usually the party that benefits financially from the use of the infrastructure, so it is seen as fair that they assume the associated risks and liabilities.

A potential argument could be raised that a distinction exists between the direct involvement of a third-party user in a natural gas infrastructure situated on site i.e., versus the Northern

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<sup>56</sup> Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC

Lights project, where the third-party user solely undertakes the capture of their emissions and entrusts the remaining activities to the operator.

Nevertheless, in the 'Guidelines on State aid for environmental protection' the European Commission explains that 'the third party who may access the infrastructure will usually be responsible for the environmental harm or damage that it causes' but 'this does not rule out that the operator of the infrastructure may be held liable as well in case of damage caused by the third party if the operator was aware of the risks and failed to take necessary precautions'.<sup>57</sup> This statement underscores the openness of the liability regime, and implies that the liability will be based on a concrete overall assessment of the given situation.

## 2.2 EU ETS Directive

The EU ETS is the Unions emissions trading system and the world's first carbon market. It is a cap-and-trade scheme, where a maximum cap of emissions is set for each period, and the relevant sectors buy and trade allowances. As the EU have no competence over taxes and the principle of 'no taxation without representation' is strong also within the EU, the EU ETS operates with allowances rather than taxes. An allowance is defined as a permit to 'emit one tonne of carbon dioxide equivalent during a specified period, [...] and shall be transferable in accordance with the provisions of this Directive'.<sup>58</sup> The scheme does cover several greenhouse gases (GHG) beyond CO<sub>2</sub> however.<sup>59</sup> Activities listed in Annex I falls under the scope of the Directive and includes inter alia electricity generation and emissions intensive industries. The aim is to 'promote reductions of greenhouse gas emissions in a cost-effective and economically efficient manner'.<sup>60</sup>

In relation to CCS and carbon leakages, there are some challenges connected to the EU ETS. For instance, the anticipated costs of avoided CO<sub>2</sub> versus the anticipated costs of CO<sub>2</sub>

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<sup>57</sup> European Commission (2017), 'Guidelines on State aid for environmental protection and energy 2014-2020', Section 4.4.2

<sup>58</sup> EU ETS Directive, Art. 3 litra a

<sup>59</sup> Art. 2, GHGs listed in Annex II

<sup>60</sup> Art. 1

allowances.<sup>61</sup> Without knowing the future price of carbon, a leakage happening decades from now can have detrimental consequences for the liable actor.

### 2.2.1 Longship and the EU ETS

The relationship between Longship and EU ETS gets further complicated as it includes emissions from both ETS and non-ETS sectors.<sup>62</sup> Norcem falls under the category of ‘mineral industry’ as it includes the production of cement, whereas Celsio falls outside the scope of ‘energy activities’ as it excludes municipal waste installations.<sup>63</sup>

However, because Norway is a part of the Effort Sharing Regulation (ESR)<sup>64</sup>, a policy framework by the EU targeting those sectors that falls outside the scope of the EU ETS regime, activities done by Celsio is also included. With that being said, the EU ETS Directive is a legal tool which applies directly to the emitters, whereas the ESR is a policy framework setting overall targets for the Member States.

It is noteworthy to mention that the European Parliament have approved a reform of the EU ETS to include municipal waste installations starting from 2026.<sup>65</sup> Consequently, the full-scale Longship project in its entirety will fall under the purview of the EU ETS. Prior to 2026, the ESR will encompass Celsio.

In addition to this, the current legislation assumes that the CO<sub>2</sub> will be transported by pipelines, whereas with Northern Lights the transportation is happening by liquifying the CO<sub>2</sub> and transporting it by ships. These complications are however just visible during the capturing and transport phases of the CCS chain. No matter how interesting these questions are, they fall outside the scope of this paper and will not be further addressed. For the long-term storage, risks of leakage and economic liabilities moreover, it is a risk the operator have

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<sup>61</sup> CCS Directive, preamble paragraph 47

<sup>62</sup> CCS Norway; Responsibility for CO<sub>2</sub> in the chain; <https://ccsnorway.com/responsibility-for-co%E2%82%82-in-the-chain/> Latest edit: 28.12.2022 Read 08.03.2023 09:45

<sup>63</sup> EU ETS Directive, Annex I

<sup>64</sup> Regulation (EU) 2018/842

<sup>65</sup> European Parliament 22 June 2022; Amendment 506/rev, Proposal for a directive, Article 1 – paragraph 1 – point 7 Directive 2003/87/EC Article 3h

accepted. According to the CCS Directive, the competent authority shall only issue a storage permit when it is proved that ‘the operator is financially sound’.<sup>66</sup>

Financial security is regulated under Article 19 of the CCS Directive, which requires that obligations following from the EU ETS regime can be met. It does not provide any guidelines for how to calculate an estimate, nor a description of whether this amount has to be absolute or if providing financial security for a partial contribution is enough, other than it ‘shall be valid and effective before commencement of injection’.<sup>67</sup> A quick calculation based on today’s carbon price (about 100 euros per ton) and Northern Lights maximum storage capacity (5 megatons = 5.000.000 tons) shows that a complete carbon leakage from the entire storage site would cost the liable 500 million euros for allowances. This is only the liabilities following from the EU ETS regime, and as we will see in the next chapter, environmental damages could imply remedial actions as well.

However, the financial security provision opens up for ‘arrangements to be decided by the Member States’<sup>68</sup> which then means that Northern Lights can by giving third-party access agree on sharing the liabilities.

It is also worth noting that paragraph 2 of the provision requires that the financial security shall be periodically adjusted. In that way the Directive comes forward as being dynamic, following the development of carbon prices under the EU ETS regime. With that being said, the liable actor cannot remove their responsibilities if they suddenly cannot follow the evolution in carbon price anymore, other than the operator’s possibility of becoming insolvent. In those cases, the transfer of responsibility option serves as a pitfall.

## **2.3 Environmental Liability Directive**

From the name, one could think that this directive establishes civil rights. Instead, it imposes an administrative law regime, aiming to prevent and remedy environmental damages to

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<sup>66</sup> CCS Directive, Art. 8 (1) litra b

<sup>67</sup> CCS Directive, Art. 19 (1)

<sup>68</sup> Ibid.

natural resources,<sup>69</sup> whereas damage ‘means a measurable adverse change in a natural resource’.<sup>70</sup>

‘Environmental damage’ is by Article 2 divided into three categories; litra a) damage to protected species and natural habitats; litra b) water damage, and; litra c) land damage.<sup>71</sup> To litra b it is important to highlight that by water they are referring to drinking water, not the ocean and deep seabed where the CO<sub>2</sub> is injected into – this falls under litra a, where the ocean acts as habitat for different species. In other words, the ocean is not protected in itself by this directive. However, there are other international legal instruments relevant in the case of the oceans, for instance the general ‘obligation to protect and preserve the marine environment’<sup>72</sup> under the UN Convention on the Law of the Sea. This will not be further addressed.

The directives three different categories entail different thresholds, varying from ‘any damage that has significant adverse effects’<sup>73</sup> on species, habitats or water, to any ‘land contamination that creates a significant risk of human health being adversely affected’<sup>74</sup> by a given activity. The distinction between damage and contamination shows that even though this directive is meant to protect the environment, it will go greater lengths to protect human health.<sup>75</sup>

### **2.3.1 Risks associated with CCS**

The potential hazards of CCS and carbon leakage have been addressed in the IPCC Special Report. According to the report, ‘[l]eakage of CO<sub>2</sub> could potentially degrade the quality of groundwater, damage some hydrocarbon or mineral resources, and have lethal effects on plants and sub-soil animals. Release of CO<sub>2</sub> back into the atmosphere could also create local health and safety concerns.’<sup>76</sup> Related to the latter, the report specifies that ‘[r]isks to human

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<sup>69</sup> Broek, G. M. van den. ‘Environmental Liability and Nature Protection Areas Will the Eu Environmental Liability Directive Actually Lead to the Restoration of Damaged Natural Resources?’. (2009). Page 117

<sup>70</sup> ELD Art. 2 (2)

<sup>71</sup> ELD Art. 2 (1)

<sup>72</sup> United Nations Convention on the Law of the Sea, Art. 192

<sup>73</sup> Art. 2 (1) litra a and b

<sup>74</sup> Art. 2 (1) litra c

<sup>75</sup> Contamination does not necessary entail damage and is therefore a lower threshold.

<sup>76</sup> IPCC Special Report on Carbon Dioxide Capture and Storage, page 197

health and safety arise (almost) exclusively from elevated CO<sub>2</sub> concentrations in ambient air, either in confined outdoor environments, in caves or in buildings. Physiological and toxicological responses to elevated CO<sub>2</sub> concentrations are relatively well understood [...]. At concentrations above about 2%, CO<sub>2</sub> has a strong effect on respiratory physiology and at concentrations above 7–10%, it can cause unconsciousness and death.’<sup>77</sup> The Global CCS Institute underscores that ‘there is very little human health risk when pure CO<sub>2</sub> is released into ambient air because it is not flammable or explosive, nor is it toxic to humans unless the release is catastrophic – very rapid and in extremely high quantities.’<sup>78</sup> As we read, the consequences arising from a carbon leakage depends on the amount of CO<sub>2</sub> that is released into the atmosphere. Varying from little to no risks to human health, to unconsciousness and death, it is safe to say that the potential remedial costs can be enormous.

### **2.3.2 The Polluter Pays Principle**

Article 5 and 6 of the ELD is two of the most central provisions, laying down the framework for prevention and remedying environmental damage, which should be implemented through the polluter pays principle (PPP).<sup>79</sup>

The PPP builds upon the simple logic that the one who is polluting should also be held liable for the consequences arising from the pollution. The principle has been associated with the environmental movement since the beginning. Under the 1972 UN Conference on the Environment in Stockholm, with the Stockholm Declaration as an outcome, the principle took form as ‘liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction’.<sup>80</sup> 20 years later, under the Earth Summit<sup>81</sup> in Rio de Janeiro, the principle got further precise with the formulation ‘the polluter

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<sup>77</sup> Ibid. page 246

<sup>78</sup> Global CCS Institute. CCS Mythbusters: Dispelling myths around Carbon Capture and Storage (CCS). [https://www.globalccsinstitute.com/wp-content/uploads/2022/06/MythBusters-Flyer\\_FINAL-5.pdf](https://www.globalccsinstitute.com/wp-content/uploads/2022/06/MythBusters-Flyer_FINAL-5.pdf) Read 29.03.2023 12:41

<sup>79</sup> See preamble paragraph 2 and Art. 1

<sup>80</sup> Stockholm Declaration, Principle 22

<sup>81</sup> The United Nations Conference on Environment and Development (UNCED)



should, in principle, bear the cost of pollution'.<sup>82</sup> Today the PPP must be said to be customary international law; a cornerstone of environmental law.

In Union law, the principle is implemented in Article 192<sup>83</sup> of the Treaty of the Functioning of the European Union (TFEU), the legal basis for all environmental matters, and therefore an integrated part of any environmental actions. As we can tell from the preamble of the ELD, and the CCS and EU ETS Directives for that matter, they all build upon Article 175 of the Treaty establishing the European Community (TEC), which is now amended by Article 192 of TFEU.

### **2.3.3 The PPP and Northern Lights**

In relation to the Northern Lights project, it is my perspective that neither Northern Lights JV nor the state of Norway can be categorically identified as the polluter or emitter. It should be noted that the project's collaborative efforts have been primarily focused on Dutch Yara Sluiskil, making them a relevant practical example for further examination.<sup>84</sup>

Yara Sluiskil is an ammonia and fertilizer plant in the Netherlands. If they were not to capture their CO<sub>2</sub> emissions and ship them to Norway, they would be emitting it into the atmosphere. A logic reasoning implies that Yara is the polluter. One could probably pull this train of thought one step further, by arguing that the Dutch state have given Yara the permission to pollute, and as a second solution, Netherland could be considered an alternative polluter.<sup>85</sup>

However, the Northern Lights project implies that as soon as the captured CO<sub>2</sub> is transported onto the Northern Light ship and later injected into geological formations in the NCS, the polluter is no longer Yara, but Northern Lights instead. The simple logic of PPP is no longer so simple. While Yara, the emitter of the captured CO<sub>2</sub>, may be considered the initial polluter, the transfer of responsibility to Northern Lights JV following the transportation and injection of the CO<sub>2</sub> into geological formations complicates the issue. Thus, a redefinition of the term 'polluter' in legal discourse may be necessary if the PPP is to be applied in such situations.

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<sup>82</sup> Rio Declaration, Principle 16

<sup>83</sup> Paragraph 5

<sup>84</sup> But also as mentioned, they have only entered into a MoU.

<sup>85</sup> As discussed in Chapter 2.1.1

This redefinition could be done by either explicitly including third-party users or by expanding the term ‘polluter’ to include the receiver of CO<sub>2</sub>.

There are also arguments for Northern Lights (and eventually the state of Norway) being the ‘polluter’. Applying the logic of the PPP on a climate change mitigation measure not meant to increase, but remove pollution, does not make sense in itself. However, by adding a fiscal layer, it makes more sense. Ingelson, Kleffner and Nielson applies the PPP by saying that the ‘operator which profit from CCS must also pay the long-term costs from CO<sub>2</sub> leaks, site remediation, and reclamation.’<sup>86</sup> The way of thinking is that because the operator is well aware of the risks connected to the activity, and is also profiting from it, he must be regarded as the polluter. Whereas I partly agree with the argument by connecting it to profits, I do not agree with the conclusion. If the term ‘polluter’ had a wider scope on the other hand, it would be more appropriate. My conclusion is nevertheless that according to international environmental law and the literal understanding of the PPP, Northern Lights and eventually the state of Norway, should not be responsible for the pollution occurred in another country from a foreign company.

A compromise between the two arguments could be appropriate. Dutch Yara is the actual polluter under the PPP, but Northern Lights has as the operator accepted the risks connected to the activities. If Yara and Northern Lights were the only parties in the equation, this would not have been as complicated as it will become in the following.

#### **2.3.4 Liability in solidum**

Moreover, one could question the issues connected to causality over time. As Northern Lights is supposed to eventually receive CO<sub>2</sub> from emitters all over Europe and/or the world, not just Dutch Yara, how do you trace the carbon leaked to one specific emitter? This was one of the critical questions in the *People v Arctic Oil* case, which will be discussed later on in Chapter 3.2.2. However, as there are currently just one MoU connected to the project, and no agreements to interpret, the following will be speculations.

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<sup>86</sup> Footnote 71, page 465

A de lege ferenda proposition could be liability in solidum, ‘that is, they are liable in full for the damage done by all.’<sup>87</sup> Whereas this solidary liability is common in national tort law, it is less used in international law. Aust argues that consequences arising from multiple states responsibility is underdeveloped.<sup>88</sup> The ILC stresses that ‘[i]t is important not to assume that internal law concepts and rules in this field can be applied directly to international law. Terms such as “joint”, “joint and several” and “solidary” responsibility derive from different legal traditions and analogies must be applied with care.’<sup>89</sup> Improving international standards on shared responsibility would then be the most appropriate solution, but alternatively, the states involved in the Northern Lights project should enter into bilateral agreements laying down the framework for liability in solidum or another similar shared responsibility scheme.

Alternatively, liability caps could be implemented as well, putting an upper limit on the maximum amount of damages any part of the project can be held liable for. A company could be responsible for a percentage of the carbon stored at the Northern Lights site, and therefore a percentage of the EU ETS allowances and ELD remedial action. An upper limit could be set which means that any damages above this amount will be covered by Northern Lights and eventually the state of Norway.

### **2.3.5 Reliance on other legal instruments**

In some cases, it may be necessary to rely on other legal instruments to address a particular issue, and this can be done in a way that does not undermine the overall legitimacy of the legal regime. Ultimately, the legitimacy of a legal regime will depend on a variety of factors, including its coherence, clarity, and effectiveness in addressing the issues it is designed to regulate. Where the ELD provide a very general and overall responsibility for remedial action for environmental damage, the EU ETS consists of a more specific regime connected to

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<sup>87</sup> Murray, Odette. ‘Liability In Solidum in the Law of International Responsibility: A Comment on Guiding Principle 7’ *European Journal of International Law*, Volume 31, Issue 4, November 2020, Page 1250.

<sup>88</sup> Aust, Helmut Philipp. “The Consequences of Complicity.” Chapter. In *Complicity and the Law of State Responsibility*. Cambridge Studies in International and Comparative Law. Cambridge: Cambridge University Press, 2011. Page 276.

<sup>89</sup> International Law Commission (ILC), *Articles on the Responsibility of States for Internationally Wrongful Acts*, UN Doc. A/56/10 (2001), reprinted in 2 *International Law Commission Yearbook* (2001) 31, Art. 47, commentary paragraph 3. Page 124

emission caps, trading, pricing, permit periods etc. Including the latter regime inside an already comprehensive industry would probably be more confusing than for the CCS Directive to rely on the ETS Directive. From my understanding, the ELD seems to be an inadequate framework for the CCS industry as it is based on the PPP, which I concluded may not be well-suited for the CCS industry by its given definition. Therefore, it may be more appropriate for the CCS industry to develop its own liability scheme to address remedial action following environmental damage, rather than relying on an external framework.

## 2.4 Other international principles

The ‘no transboundary harm’ (NTH) principle is commonly expressed with the Latin maxim ‘sic utere tuo ut alienum non laedas’ meaning that you should ‘use your own property in such a way that it does not harm others’.<sup>90</sup> Similar to the PPP, the NTH principle can be read into the Stockholm Declaration’s Principle 21 and the Rio Declaration’s Principle 2, and also as stating customary international law. The principle of NTH is a fundamental principle of international environmental law, which holds that states have a duty to prevent, reduce, and control pollution and environmental damage that may cause harm to other states or their environment.<sup>91</sup>

The Pulp Mills case<sup>92</sup> is a locus classicus case in the field of environmental law and transboundary issues. In its decision, the ICJ reaffirmed the principle of no transboundary harm, which holds that states have an obligation not to cause significant harm to the environment of other states. The Court also recognized that the principle applies not only to states, but also to private actors who may cause harm to the environment. The Court noted that the principle is based on the principle of good neighborliness and the duty to prevent harm to others.

The Pulp Mills case was significant because it clarified the scope and application of the principle of no transboundary harm, which had previously been recognized in international

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<sup>90</sup> Bratspies, Rebecca M., and Russell A. Miller. “Introduction.” Introduction. In *Transboundary Harm in International Law: Lessons from the Trail Smelter Arbitration*, edited by Rebecca M. Bratspies and Russell A. Miller, 1–10. Page 3.

<sup>91</sup> Birnie, Patricia; Boyle, Alan and Redgwell, Catherine. *International Law and the Environment*, 3rd ed., Oxford 2009. Page 137.

<sup>92</sup> *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, I.C.J. Reports 2010, p. 14

environmental law<sup>93</sup> but had not been the subject of a comprehensive analysis by an international court. The case also highlighted the importance of international cooperation in addressing environmental issues that cross national borders.

Perhaps the most significant precedent arising out of the Pulp Mills case is the due diligence obligation to carry out an environmental impact assessment (EIA) for projects that are likely to have significant effect on the environment, and how this applies in transboundary issues.<sup>94</sup> The due diligence aspect is of importance, as it determines that it is an obligation of conduct, not of result.

The case has been subject to criticism for various reasons. One aspect of the criticism is that the decision does not provide clear guidelines or criteria for assessing the environmental impact of a proposed project. The court's analysis was based on a general evaluation of the potential harm, without specifying what factors should be taken into account or how the harm should be quantified, and therefore criticized for not laying down a minimum threshold for what an EIA should contain. In the case of Northern Lights it is however not relevant, as Directive 2014/52/EU (EIA Directive) applies to 'storage sites pursuant to' the CCS Directive.<sup>95</sup> It follows from the EIA Directive Article 4 (1) that 'projects listed in Annex I shall be made subject to an assessment in accordance with Articles 5 to 10.' For storage sites with an annual storage capacity less than 1.5 megatons of CO<sub>2</sub>, the Member State can determine themselves if carrying out an EIA is to be done.<sup>96</sup> Northern Lights has a set storage capacity of maximum 1.5 megatons to begin with, but the plan is to expand up to 5 megatons in the future.

One could question whether the planned capacity is set to exactly 1.5 megatons to avoid falling under the EIA regime or not. However, the wording in Annex I is '1.5 megatons or more', if Northern Lights actually wanted to avoid an EIA, they would have to set their maximum capacity at 1.49 megatons. Moreover, the CCS Directive include in its Annex I detailed 'criteria for the characterization and assessment of the potential storage complex and surrounding area referred to in Article 4 (3)' and in Annex II 'criteria for establishing and

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<sup>93</sup> For instance, the earlier mentioned Trail Smelter case

<sup>94</sup> Judgement paragraph 203

<sup>95</sup> Directive 2011/92/EU. Annex I, paragraph 22.

<sup>96</sup> EIA Directive, Art. 4 (2)

updating the monitoring plan referred to in Article 13 (2) and for post-closure monitoring'. Following from the Pulp Mills case as well, if Norway wants to fulfill their due diligence obligations, they should carry out an EIA in any case. Because the NTH principle is an obligation to conduct and not about results, no one can blame Norway for causing transboundary environmental harm if it occurs. Overall, a due diligence obligation can be a useful tool for promoting environmental protection, but it is not a panacea and must be designed and implemented carefully in order to be effective.

### **3 Liabilities arising from Norwegian law**

Under Norwegian law, there are two sets of regulations applicable to CCS activities, this be the general CO<sub>2</sub> Storage Directive applicable to all CCS activities, and the more specific Petroleum Act for CCS in the fossil fuels sector.

The Petroleum Act and its Regulations to Act relating to petroleum activities 'applies to capture, transport and storage of CO<sub>2</sub> in the petroleum activities'.<sup>97</sup> In other words, it applies in cases where the CO<sub>2</sub> is captured at the oil or gas platform and instantly injected back into the deep seabed, for instance at the two other Norwegian projects Sleipner and Snøhvit. However, as the Longship and Northern Lights projects are not connected to petroleum activities per se,<sup>98</sup> this will not be further covered either.

Except from legislation that directly regulate CCS, we also have more general legislation applicable to CCS activities. The Pollution Control Act and its Pollution Regulations is meant to 'protect the outdoor environment against pollution and to reduce existing pollution'.<sup>99</sup> Reading from the Acts Section 4, it is also applicable to the NCS. The Regulations also has its own chapter regarding CO<sub>2</sub> storage in geological formations.<sup>100</sup> The liabilities that are arising regarding monitoring under the Pollution Regulations are almost identical to the ones we find in the CO<sub>2</sub> Storage Regulation Section 5-4. The only difference is that where both regulations include monitoring 'injection facilities, the storage complex, including the CO<sub>2</sub> spread where

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<sup>97</sup> Regulations to Act relating to petroleum activities, Section 30c.

<sup>98</sup> Northern Lights JV are owned by Equinor, Shell and TotalEnergies, three energy companies that among other things work with oil and gas.

<sup>99</sup> Pollution Control Act, Section 1

<sup>100</sup> Regulations to Act relating to petroleum activities, Chapter 35

possible’,<sup>101</sup> the former also include ‘if relevant, the surroundings’. We recognize this formulation from the CCS Directive Article 13 as well. This means that the Pollution Regulations (and the CCS Directive) potentially could include a larger terrestrial scope than the CO<sub>2</sub> Storage Regulation.

Both the CCS Directive<sup>102</sup> and the Pollution Regulations<sup>103</sup> include provisions regarding reporting by the operator at least once a year. The CO<sub>2</sub> Storage Regulation does not provide a similar provision, except in the case of risk of leakage or significant irregularities.<sup>104</sup> In that case the operator has to inform the Royal Norwegian Ministry of Petroleum and Energy (MPE) immediately. It is worth mentioning that reporting must take place to the MPE under the CO<sub>2</sub> Storage Regulation, whereas the Pollution Regulations reports to the sub-organ the Norwegian Environment Agency. With that being said, it is most likely an equal report sent to both authorities. However, because these differences are minor, I will not go further into these provisions.

### **3.1 CO<sub>2</sub> Storage Regulation**

The CCS Directive is implemented in Norwegian legislation under the Regulations relating to exploitation of subsea reservoirs on the continental shelf for storage of CO<sub>2</sub> and relating to transportation of CO<sub>2</sub> on the continental shelf (CO<sub>2</sub> Storage Regulation). Whereas the scope of the CCS Directive is limited to ‘geological storage’,<sup>105</sup> the scope of the Regulation is a bit narrower, as it specifies ‘subsea reservoirs for storage of CO<sub>2</sub>’.<sup>106</sup> This formulation excludes storing CO<sub>2</sub> on land.

#### **3.1.1 Obligations**

Section 5-8 regarding ‘Transfer of responsibility’ mirrors the CCS Directives Article 18. However, the Regulation refers to this responsibility with the term ‘liability’ later on, i.e., Chapter 8 ‘Liability for pollution damage’. Based on the same reasoning as in the terminology discussion, one might argue that ‘responsibility’ is used when allocating responsibilities with

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<sup>101</sup> CO<sub>2</sub> Storage Regulation, Section 5-4 and Pollution Control Regulations, Section 35-9

<sup>102</sup> CCS Directive, Art. 14

<sup>103</sup> Pollution Regulations, Section 35-10

<sup>104</sup> CO<sub>2</sub> Storage Regulation, Section 5-6

<sup>105</sup> CCS Directive, Art. 2 (1)

<sup>106</sup> CO<sub>2</sub> Storage Regulation, Section 1-3 paragraph 1

reliance on other legal framework, and liability when there is a tangible obligation in the given legislation. As we will see in the following, the CO<sub>2</sub> Storage Regulation consists of both.

Table 1. Comparison of the CCS Directive and the CO<sub>2</sub> Storage Regulation, first paragraph

<b>Article 18</b>	<b>Section 5-8</b>
<p><i>Where a storage site has been closed pursuant to points (a) or (b) of Article 17(1), all legal obligations relating to monitoring and corrective measures pursuant to the requirements laid down in this Directive, the surrender of allowances in the event of leakages pursuant to Directive 2003/87/EC and preventive and remedial action pursuant to Articles 5(1) and 6(1) of Directive 2004/35/EC, shall be transferred to the competent authority on its own initiative or upon request from the operator, if the following conditions are met:</i></p>	<p><i>Following shutdown of a storage location pursuant to Section 5-7(1)(a) or(b), all obligations concerning monitoring and corrective measures pursuant to these Regulations shall be transferred to the State, represented by the Ministry of Petroleum and Energy or the entity it authorises, either on its own initiative or upon application from the operator, given that the following conditions have been fulfilled:</i></p>

The CCS Directive refers to the EU ETS Directive and the ELD Directive, whereas the CO<sub>2</sub> Storage Regulation does not. In fact, the Regulation does not mention CO<sub>2</sub> quotas or any references to the ETS at all, nor remedial actions for environmental damage. The liabilities arising from the national legislation are covered in Section 5-4 and 8-2, in conjunction with special rules concerning compensation to Norwegian fishermen in Chapter 9. With regards to CO<sub>2</sub> quotas, the only mentioning one can find throughout the national CCS legislation is in the Pollution Regulation Section 35-15, where it states that the operator must guarantee that they are financially sound to potentially submit quotas corresponding to their emissions, i.e., in the event of a carbon leakage. One could argue that the legislator might chose to leave out the CO<sub>2</sub> quotas from the CO<sub>2</sub> Storage Regulation, because a legal basis already existed. Moreover, since CCS activities are divided into two legal frameworks – those who fall under the CO<sub>2</sub> Storage Regulation and those under the Petroleum Act – it might be easier to lean on the Pollution Regulation. However, the CO<sub>2</sub> Storage Regulation would be applicable even for



CCS activities in the petroleum industry, so the exclusion of CO<sub>2</sub> quotas does not completely add up.

The initial phrasing employed in the Norwegian version may be considered problematic, as the term ‘all obligations’ remains ambiguous and lacks clarity as to its specific scope and meaning. The wording ‘monitoring and corrective measures pursuant to these’ could be interpreted as excluding EU ETS and ELD obligations, as these are not explicitly mentioned. Does ‘these’ point to monitoring, or the consequences of inadequate monitoring leading to a carbon leakage? If it is the former, the scope of the obligations seems to be very narrow. However, a holistic view of the regulation as a unified entity, in addition to other applicable frameworks, rather than limiting the interpretation to a singular section, the coherence within the legislative framework would suggest that the term ‘all obligations’ encompasses those arising from Section 5-4, 8-2, Chapter 9 and the Pollution Regulation.

### **3.1.2 Compensation to fishermen**

The provisions contained in Chapter 9, pertaining to the special rules applicable to fishermen, represent a notable deviation from the CCS Directive. This can be elucidated by the fact that it constitutes a liability regime that is exclusively applicable to the state, as opposed to the operator, which is the case for other corresponding obligations. Section 9-2 obliges the state to provide compensation for economic losses ‘caused by transport and storage of CO<sub>2</sub> for Norwegian fishermen as a result of the activities occupying fishing grounds or causing pollution and waste or that facilities or measures in connection with placement thereof cause damage.’<sup>107</sup>

With that being said, the special rules ‘does not concern pollution damage caused by pollution as a result of discharges or CO<sub>2</sub> emissions from a facility’,<sup>108</sup> and does therefore not apply to any carbon leakages as discussed in this paper. After this wording, in the case of a carbon leakage from the Northern Lights site, Norwegian fishermen would not be considered subject to compensation under the special rules’ regime. However, these claims could potentially have legal ground in Section 8-1, which establish liability for environmental damage, similar to the ELD.

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<sup>107</sup> Section 9-1 (1)

<sup>108</sup> Section 9-1 (2)

Both Section 9-1 (2) and 8-1 (1) consists of the same sentence: ‘[p]ollution damage also includes damage or loss suffered by a fisherman due to reduced fishing opportunities.’ However, in the context it is written under in Section 9-1 (2) it could be interpreted as excluding fishermen from the compensation rights after a carbon leakage. One could argue that this particular paragraph exhibits deficiencies in its composition and written expression. Does Section 9-1 (2) second period point to the first period, which would then exclude economic loss due to reduced fishing opportunities after a carbon leakage? Or should Section 9-1 (2) second period be read in conjunction with Section 8-1, which defines ‘pollution damage’ to include those economic losses suffered by a fisherman as a result of reduced fishing opportunities after a carbon leakage? The former interpretation lacks cogency, as it raises the question as to why the legislature would deliberately provide additional security to fishermen, only to subsequently exclude them from compensation in the event of a carbon leakage. Furthermore, in order to maintain coherency within the framework, it is imperative that the latter interpretation prevails as the governing principle.

Section 8-1 and the ELD are both based on the PPP, under which the operator of an industrial activity is responsible for the costs of environmental damage caused by their activity. The key differences to the two frameworks are that Section 8-1 apply specifically to the storage of CO<sub>2</sub>, while the ELD applies more broadly to industrial activities.<sup>109</sup> Under the CO<sub>2</sub> Storage Regulation the operators are liable for damage even if they have not acted negligently. The ELD, on the other hand, establishes fault-based liability, meaning that operators are only liable if they have acted negligently or in violation of applicable laws and regulations, like the CCS Directive. See Chapter 2.3 for further discussions on the ELD. Reading from this, the Norwegian framework goes further when it comes to remedial action after environmental damage, as it also gives fishermen a statutory right to compensation. Adding to the discussion in 2.3.5 about reliance on other legal instruments, an explicit regime regarding liability for pollution damage within the CCS framework seems appropriate.

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<sup>109</sup> See Annex III of the ELD

### 3.1.3 Transfer of liabilities

Table 2. Comparison of the CCS Directive and the CO<sub>2</sub> Storage Regulation, second paragraph

<b>Article 18</b>	<b>Section 5-8</b>
<i>(a) all available evidence indicates that the stored CO<sub>2</sub> will be completely and permanently contained;</i>	<i>a) All available information indicates that the stored CO<sub>2</sub> will remain entirely and permanently enclosed. The operator must e.g. be able to document that the actual behaviour of the injected CO<sub>2</sub> matches the modelled behaviour, that leakage cannot be proven and that the storage location is developing toward a condition of permanent stability,</i>

As to the requirements for the transfer of liabilities, a literal interpretation of the provision shows that the Norwegian version is less stringent than the equivalent provision in the CCS directive. Where the CCS Directive operates with ‘evidence’, the Regulation uses the term ‘information’. Even though it also requires permanent storage, the Norwegian version provides thresholds for what that entails. As discussed under Chapter 2.1.3, the CCS Directive could by wording be understood as an impossible task to fulfill. Nevertheless, the conclusion was that this interpretation is wrong. In the Norwegian version anyways, it is enough to prove that ‘storage location is developing toward a condition of permanent stability’. This must be said to be a less stringent.

### 3.1.4 Third-party access under the CO<sub>2</sub> Storage Regulation

Article 21 of the CCS Directive regarding TPA is implemented in the CO<sub>2</sub> Storage Regulation under Section 5-12. In the Norwegian legal framework, a decision is required to be made under conditions that are deemed 'objective and non-discriminatory', which differs slightly from the EU’s approach where the term 'transparent' is used in lieu of 'objective'. Nevertheless, the principle of non-discrimination is a common feature in both frameworks, as it is underpinned by the MFN principle.

As previously discussed in Chapter 2.1.6, the provision in the CCS Directive does not offer any instructions regarding long-term liability, and neither does the CO<sub>2</sub> Storage Regulation.

The exclusion of a liability regime is relevant to the Northern Light project as the project is meant to be a ‘transboundary carbon graveyard’, where foreign companies can store their captured emissions. So far, the only foreign company to cooperate with Northern Lights for TPA to facilities for storage of CO<sub>2</sub> are Dutch Yara. In correspondence with the Director of the MPE, I requested information about long-term liability in their agreement. The Director wrote me this:

*‘Agreements on third-party use must in accordance with the CO<sub>2</sub> Storage Regulation Section 5-12 be submitted to the MPE for approval. It will only be relevant for the MPE to take a position on such an agreement when it is a complete and binding agreement that is submitted to the ministry. Yara and Northern Lights have so far only entered into a MoU.’*

The Ministry's decision regarding the Northern Lights project is governed by the only requirement of being based on ‘objective and non-discriminatory conditions’.<sup>110</sup> Interestingly, the provision does not explicitly address the issue of long-term responsibility or liability, which, in my view, presents an ironic situation considering that the ultimate liability will eventually be transferred to the state. Incorporating provisions that establish a framework for long-term shared responsibility in the event of a carbon leakage would be advantageous for the state's position in the context of the project.

### **3.1.5 Financial security**

Financial security under Norwegian CCS law can be divided into two categories. First, it is the general obligation for the operator to ensure that they are financially sound.<sup>111</sup> This financial guarantee is a part of the application for a storage permit.<sup>112</sup> Section 5-9 redirects us to the Pollution Regulations, which in Section 35-15 elaborates what is meant by financial obligations under the CO<sub>2</sub> Storage Regulations. These obligations include shutdown procedures, post-operations, and any obligations under the Greenhouse Gas Emission Trading Act,<sup>113</sup> which is the Norwegian implementation of the EU ETS Directive. Neither the Pollution Regulations, nor the CCS Directive include remedial action for environmental

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<sup>110</sup> CO<sub>2</sub> Storage Regulation, Section 5-12 paragraph 1

<sup>111</sup> CO<sub>2</sub> Storage Regulation Section 5-3 b)

<sup>112</sup> Ibid. Section 5-9

<sup>113</sup> Act of 17 December 2004 No. 99 Relating to Greenhouse Gas Emission Allowance Trading and the Duty to Surrender Emission Allowances

damage in the financial security scheme. Nevertheless, under Norwegian law this is covered in the CO<sub>2</sub> Storage Regulation Chapter 8, which regulates liability for pollution damage.

Second, there is the obligation of financial contribution. Also after the transfer of responsibility, the operator has to bear the cost of anticipated monitoring expenses for a period of minimum 30 years.<sup>114</sup> However, in the event of an operator becoming insolvent, the state could potentially have to cover the post closure monitoring cost. This scenario is attempted avoided by adjusting the anticipated costs at regular intervals to take into account the changes in the risks of leakage and assumed costs. It does not change the fact that the operator by law only has to document their financial status until the actual transfer of responsibility, and not actually paying anything to a future fund or something similar. The EU Commission have published a guidance document to Article 19 of the CCS Directive, where they assess the relevant instruments potentially used in ensuring financial security.<sup>115</sup> Among other instruments, funds, bank guarantees and insurance schemes, are mentioned. Related to the latter, the CO<sub>2</sub> Storage Regulation Section 11-14 requires the operator to be insured at all times. With that being said, this insurance policy is limited to ‘ensure reasonable insurance coverage based on the consideration for risk exposure’. According to the IPCC Special Report on CCS, the risks of carbon leakage is low which could lead to a low insurance coverage.<sup>116</sup> In the event of a natural disaster or act of war leading to a carbon leakage, the risk is unforeseen, and therefore the insurance coverage might not cover the duty to surrender allowances pursuant to the Greenhouse Gas Emission Trading Act.

## **3.2 Other relevant aspects**

### **3.2.1 Resolution for provisional application**

As already established, the state of Norway will end up with the long-term liability in the Northern Lights project under the CO<sub>2</sub> Storage Regulation and CCS Directive. For reasons of clarity and reminding, the transport stage of CCS is in the following discussed in allocating long-term liability *de lege ferenda*.

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<sup>114</sup> CO<sub>2</sub> Storage Regulation Section 5-10

<sup>115</sup> ‘Implementation of directive 2009/31/EC on the geological storage of carbon dioxide; Guidance document 4, Article 19 Financial Security and Article 20 Financial Mechanism’

<sup>116</sup> See Chapter 1.3.4

As discussed in Chapter 1.2.3, for Northern Lights and Yara to be able to enter into a MoU, Norway and the Netherlands had to apply the 2009 amendment to exclude CO<sub>2</sub> from the export rule in Article 6 of the London Protocol provisionally. For Norway and the Netherlands this resulted in removing the last legal barrier to finalize the Northern Lights and Yara cooperation.

However, for the rest of Europe and the world it is not that straightforward. Since ratification has been slow, with only six of 53 Contracting Parties implementing the amendment, this has a couple of practical consequences. First, Norway could, in the same way as they did with the Netherlands, apply the amendment provisionally with the remaining 4 Contracting Parties, to further meet the Northern Lights storage capacity. Alternatively, Norway could urge the other 47 Contracting Parties to accept the amendment. As a last resort, Norway could potentially enter into agreements with non-Contracting Parties to the London Protocol. However, this alternative depends on how you interpret the amendment to Article 6. Paragraph 2.2 refers to export 'to' a non-Contracting Party. In the case of Northern Lights, it would export 'from' a non-Contracting Party. To my knowledge, this distinction has not been discussed in literature or among legislators.

As mentioned in 1.2.3, the main objective of this Article is to stop Contracting Parties using non-Contracting Parties as a backdoor to dumping. It is then of my understanding that receiving 'waste' (CO<sub>2</sub>) for the benefit of the environment must fall outside the scope of what Article 6.2 intended to protect. My conclusion is that Northern Lights can cooperate with non-Contracting Parties to the London Protocol to meet their storage capacity.

In the 'Guidance on the implementation of Article 6.2 [...]'<sup>117</sup> developed by the International Maritime Organization (IMO), they discuss that in all practicality, it is most likely the exporting country who will be the most appropriate option to distinguish and be responsible for characterizing the quality and quantity of the CO<sub>2</sub> stream. As for the storage site and stage on the other hand, the receiving country is most likely in a better position to select the storage site and assess the potential effects, and long-term liability should therefore be with the receiving party. On the other hand, compliance with the Protocol's provisions remains the full

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<sup>117</sup> Guidance on the implementation of Article 6.2 on the export of CO<sub>2</sub> streams for disposal in sub-seabed geological formations for the purpose of sequestration. LC 35/15 Annex 6

responsibility of its Contracting Parties.<sup>118</sup> With exporting to a non-Contracting Party, one could say that the exporting/Contracting Party is responsible for making sure the same control conditions needed is applied as if the receiving country was a party to the Protocol, while the receiving/non-Contracting Party is liable for the storage site and potential carbon leakage. As our case is the other way around, Northern Lights would be responsible for both the procedural pre-work and the substantive long-term liability. This conclusion is however not in line with previous discussions, as it does not take the *inter alia* polluter pays principle into account.

### **3.2.2 People v Arctic Oil**

One could raise the question of whether it is risky allocating the liability to the state, based on the experiences from the *People v Arctic Oil*<sup>119</sup> case from the Norwegian Supreme Court. The case is a landmark case in Norwegian environmental law that involved a group of environmental organizations and individuals suing the Norwegian government over its decision to grant oil licenses in the Arctic. The plaintiffs argued that the Norwegian government's decision to grant oil licenses in the Arctic violated several provisions of the Norwegian Constitution, including the right to a healthy environment and the principle of intergenerational equity. They also argued that the decision violated Norway's obligations under international environmental law, including the Paris Agreement on climate change.

Tracing the CO<sub>2</sub> emissions to its source was one of the critical issues in discussing the main question: Does Article 112 of the Constitution confer rights on individuals that may be asserted in court?

Both the previous rounds of court, the District Court, and the Court of Appeal, voted in favor of the state. Supreme Court Justice Høgetveit Berg concluded that 'Article 112 of the Constitution is not merely a declaration of principle, but a provision with a certain legal content. However, one can only to a limited extent build directly on a constitutional provision in a case before the court.'<sup>120</sup> One of the major discussions in the case was 'whether it is relevant to consider greenhouse gas emissions and effects outside Norway'.<sup>121</sup> Because

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<sup>118</sup> LC 35/15 Annex 6, page 1

<sup>119</sup> HR-2020-2472-P 'Klimasøksmålet' in Norwegian

<sup>120</sup> Ibid. Paragraph 144

<sup>121</sup> Ibid. Paragraph 149

Article 112 is a constitutional right, it only applies to environmental damages to the realm. With Norwegian oil and gas, '[a]round 95 percent of greenhouse gas emissions from petroleum production are mostly from combustion abroad after export.'<sup>122</sup> How do you trace these emissions back to Norway once they are in the atmosphere, making Norway responsible for them? It can be inferred that the statement made by Justice Høgetveit Berg regarding the limited extent to which Article 112 can be directly invoked in court proceedings suggests that the application of the article in legal cases is subject to certain constraints. The doubt regarding the efficacy of the responsibility regime enshrined in the CO<sub>2</sub> Storage Regulation is raised by the apprehension that if the Constitution fails to guarantee substantive rights, it would be difficult to rely on the regulatory framework to ensure environmental protection.

Although the case has been subject to extensive criticism, it is important to note that the consequences of a carbon leakage can have both local and transboundary impacts.<sup>123</sup> If the impacts are predominantly local, a scenario akin to the *People v Arctic Oil* case could emerge, this time potentially with a positive outcome for the environment, where the Supreme Court could be precluded from disregarding the fundamental right to a healthy environment. In the event of a transboundary impact, the conclusion in 2.4 asserts.

### **3.2.3 Force majeure**

What neither the EU nor the Norwegian CCS frameworks provides, are provisions concerning the event of carbon leakage due to force majeure. 'Force majeure' does not have one general legal definition in international law, but could be defined as in the draft treaty<sup>124</sup> created by the ILC as 'the occurrence of an irresistible force or of an unforeseen event, beyond the control of the State, making it materially impossible in the circumstances to perform the obligation.'<sup>125</sup> As mentioned in Chapter 1.3.4, some situations are outside the control of states, i.e. natural disasters, often described as 'acts of God', like earthquakes, and/or man-made constraints like acts of war. A nuclear bomb could for instance have an impact on CO<sub>2</sub> stored 2600 meters deep into the seabed. A force majeure clause could exempt the licensee

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<sup>122</sup> Ibid. Paragraph 155

<sup>123</sup> See Chapter 2.3.1

<sup>124</sup> It is worth mentioning that the draft treaty has not been adopted, but the legitimacy of the ILC is reason ipso facto to use their interpretation even from a non-adopted piece of legislation.

<sup>125</sup> Responsibility of States for Internationally Wrongful Acts (2001), Art. 23



from liability in a situation like that. From an environmental protection point of view, it is presumably for the better, as no one would then pay the CO<sub>2</sub> allowances under the EU ETS, nor remedial action for environmental damage under the ELD. However, the fairness of Northern Lights JV or the state of Norway paying for the obligations following from EU ETS and ELD in the event of an earthquake or nuclear bomb has in this paper been questioned. The CO<sub>2</sub> Storage Regulation does in fact include a provision that stands in contrast to the concept of force majeure. More specifically, Section 8-3 of the regulation stipulates that the 'licensee is liable for pollution damage regardless of guilt'. Nevertheless, the exclusion of force majeure could be explained by at least two reasons.

First, it can be due to the fact that force majeure claims are very rare, to the point of outdated. Robinson describes it as a 'largely overlooked and even less understood nineteenth century legal term'.<sup>126</sup>

Second, force majeure is inherently associated with contract law, and no universally recognized legal mechanisms exist to establish force majeure. In the context of the Northern Lights project, this implies that Northern Lights JV and the state of Norway must either enter into bilateral agreements that absolve them of responsibility in the event of a carbon leakage, although such agreements would only pertain to the parties involved and would not completely exempt them from liability globally. Alternatively, since force majeure is not regarded as customary international law,<sup>127</sup> a universally recognized agreement must be proposed at an international level, which would exempt all contracting parties from obligations stemming from irresistible forces beyond the control of the state.

However, if such an agreement would be proposed, a few other questions arise based on the ILC definition. 1) Does it only apply to states, or corporations as well? 2) Does it only excuse

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<sup>126</sup> Robinson, J. Hunter; Selman, J. Christopher; Steineker, Whitt; Thrasher, Alexander G. Use the Force? Understanding Force Majeure Clauses. (2020) page 1

<sup>127</sup> With customary law, practice must be coupled with *opinio juris*, meaning that the majority acts in a certain way because they believe it is the lawful way to act. As we have already seen, there are not much practice connected to force majeure, which also could explain the lack of homogeneity in *opinio juris*.

non-performance, or does it also include freedom of liability from other consequences of the unforeseen event?

To the first question, under international law there are no general rule giving corporations obligations, because corporations are normally not recognized as subjects of international law. Although it may not be entirely suitable within the context at hand, which focuses on the correlation between corporations and international law rather than states and international law, it is possible to draw an analogy from the VCLT. Article 34 tells us that a ‘treaty does not create either obligations or rights for a third State without its consent.’ Because corporations have not agreed to fall under the regime of international law, they cannot be bound by it. Nevertheless, if a corporation consented to be bound by it, would it then be applicable? Internationally, we find more and more examples of international law and principles which apply to corporations as well. Nevertheless, as the definition clearly say ‘state’ it could be an argument for not including corporations. In that case it would only apply after the transfer of responsibility, usually 20 years post closure of the storage site.

To the second question, force majeure could by definition excuse the liable for not performing their obligations, hence give freedom of liability. As mentioned, the obligations under the CCS Directive are monitoring, surrender of CO<sub>2</sub> allowances and remedial actions for environmental damage. Whereas for instance a nuclear explosion would make it ‘impossible in the circumstances to perform’ monitoring, this definition does not apply that well to the two other obligations. It can be argued that in the event of a nuclear explosion leading to a lack of monitoring, which in turn causes a carbon leakage, the principle of force majeure should exempt liability for the leakage. Failing to do so would render the principle moot. However, it is probably more plausible that the nuclear explosion itself would cause the leakage, rather than the absence of monitoring arising from the explosion. As this scenario does not meet the criteria from the above definition, it does not make it an ideal fit for the storage stage of CCS. The most appropriate solution in the event of a nuclear explosion would be for the licensee to demand compensation from the tort feisor for pollution damage inflicted upon the licensee. For the capturing and transport stage it could probably be more appropriate with a force majeure clause, however I limit myself from going further into that discussion.

### **3.2.4 Compensation claims**

Throughout this paper, it has been discussed whether the third-party user, the operator and/or the state should be held responsible for a potential carbon leakage. In this section, it will be

discussed whether rather regression claims in retrospect are the best solution. Regression claims are in this context meant as the operator/state as claimant, and the third-party user(s) and/or their competent authority as defendants, in opposition to for instance the compensation claim a fisherman could have under the special rules under Norwegian legislation. In that case the fisherman is the claimant, and the state is the one bearing the financial burden. This section takes this scenario one step further, by analyzing the possibilities for the operator/state to seek reimbursement for the compensation they already paid the injured party, back from the third-party user. However, to discuss regression, one must use the compensation rules in the framework as a starting point, as these will be the base of a regression claim. This section builds upon the unsatisfying finds after analyzing the current legal tools, where the liability regime seems somewhat unresolved. There are a number of changes needed to the framework to unleash the knots regarding liability. One could argue that the legislation should be left as is, leaving the responsibility to the operator or state, for them to later demand compensation from the third-party user(s). Choosing this solution could welcome a concrete overall assessment for the given situation, because the current regime is based on an abstract responsibility scheme rather than a strict liability regime. The risk is that it leaves the third-party users without any direct legal liability, which may not provide adequate incentives for third-party users to comply with their obligations under the legal framework. Instead of questioning responsibility, questions about the compensation regime arises in exchange.

The compensation regime under the CCS Directive is designed to ensure that adequate financial resources are available to cover any damages that may result from CCS activities, both in terms of insurance or other forms of financial security and other financial mechanisms.<sup>128</sup> However, the financial security does not involve remedial action under the ELD. The Norwegian implementation, found in the Pollution Regulation Section 35-15, does also exclude compensation claims following from environmental damage. However, this does not mean that compensation is excluded from the framework, just that it is not covered by the financial security regime. The Norwegian framework goes a bit further in the context of compensation with special rules regarding fishermen, however the wording in the said provision was previously in this paper discussed and concluded to be ambiguous. The availability of legal cases and regulatory guidance for analysis in this context is limited. In the

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<sup>128</sup> CCS Directive Art. 19 and 20

following, a compensation claim is presupposed, which leads us to the discussion of a retrospective regression claim. As neither the CCS Directive, nor EU law for that matter, include one specific regime for compensation and regression claims within the Union, the different possibilities will be touched upon in the following.

Tort law has been developed to some extent in international law, but it remains primarily a matter of domestic law. In the case of the project, depending on the time of the dispute, either Northern Lights JV or the state of Norway could potentially claim compensation from Yara or the Netherlands. Here Yara is only used as an example, as it is the only corporation with a MoU at the time writing. It is possible for a corporation to claim compensation from another foreign corporation in certain circumstances. A claim like that would depend on the fact that a shared responsibility clause is incorporated into the bilateral agreement between Northern Lights JV and Yara. Corporations can also claim compensation from foreign states through investor-state dispute settlement (ISDS) mechanisms, however the legal status of whether the Netherlands can be objectively responsible for Yara's emissions is unclear.<sup>129</sup> Subjectively one could argue that since there is a transfer of responsibility regime from the operator to the state, it should equally be a transfer of responsibility from the third-party user to their own competent authority. In addition, countries may also claim compensation from each other in cases where one country's actions have caused harm or damage to the other. This option opens up for Norway to claim compensation from the Netherlands. However, this is not a common occurrence as most disputes between countries are usually resolved through diplomatic means, such as negotiations or mediation.

In addition, with tort law in mind, claims usually expire after a given time. With CCS this could be problematic, as a central question would be when the injury would count as happened under tort law. For the third-party user, his damage to the environment could either count from the moment he captured the CO<sub>2</sub> (because if it was not captured, it would be emitted into the atmosphere immediately instead) or objectively he could count as partly responsible the moment the operator injected the CO<sub>2</sub> into the storage site (because if the operator did not have the third-party's CO<sub>2</sub> to inject, nothing would be injected). In both of these scenarios, there is a risk the claim would expire before the actual carbon leakage, given that the CO<sub>2</sub> is meant to be stored permanently, and a leakage could happen decades from

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<sup>129</sup> As discussed in Chapter 2.1.1, states can be held responsible for activities they have permitted.

now. Alternatively, the harm can count as when the carbon leakage is happening, however arguing for the causality connected to the third-party user in this case is more challenging.

Based on the questions brought up in this section, changing the current CCS framework regarding liability seems to be less of a hassle than to rely on the compensation and regression possibilities, as these also lack a concrete regime. Therefore, a shared responsibility regime that include third-party users could be a more effective approach to address the potential risks and challenges associated with CCS.

## 4 Conclusion

The research question in this thesis is whether third party access to foreign CCS sites could or should imply some sort of responsibility for the third-party users, or if the state is best suited to be held liable in the case of a carbon leakage. The Northern Lights project have been used as an example to illustrate some of the issues connected to the storage stage of CCS, which I question is too separate from the capturing and transporting phases. It is of my view that the legislators have neglected their interdependence when drafting the regulations we see today. Before the Northern Lights project for instance, CCS were a matter between operator and State, whereas it now includes other parties in the equation. With the involvement of other parties, questions arise regarding the allocation of responsibility among the different actors in the CCS chain. Whereas full scale CCS projects including TPA was already in the planning when the CCS Directive was negotiated, it seems to me that the legislators left out some important aspects.

This paper has examined responsibility and liability in the 3<sup>rd</sup> and 4<sup>th</sup> storage phases of CCS, with focus on the state. Responsibility and liability are two terms that is often used interchangeably. In this paper ‘responsibility’ have been used when discussing *de lege ferenda* and ‘liability’ when discussing *de lege lata*. Nevertheless, in the legislation examined here we mostly find the term ‘responsibility’. I concluded that the reason for this is that neither the CCS Directive nor the CO<sub>2</sub> Storage Regulation provides a liability regime, but rather redirects us to other legal tools, like the ELD and EU ETS Directive. This reliance upon existing provisions could deteriorate the already confusing situation regarding liability. From my understanding, the ELD seems to be an inadequate framework for the CCS industry as it is based on the PPP, which may not be well-suited for the CCS industry by its given definition. Therefore, it may be more appropriate for the CCS industry to develop its own

liability scheme to address remedial action following environmental damage, rather than relying on an external framework.

The Norwegian CO<sub>2</sub> Storage Regulation contains its own liability scheme for pollution damage and special provisions for fishermen, but the language used in the regulation is somewhat unclear and could benefit from clarification. Furthermore, the regulation's failure to make any reference to CO<sub>2</sub> quotas or the EU ETS Directive is viewed as insufficient. To find reference to the Norwegian implementation of the Directive, one must consult the Pollution Regulation, where it is referenced in the context of financial security. However, the financial security provision excludes coverage for remedial action related to environmental damage, which may be viewed as inadequate from an environmental protection perspective.

After discussing the 'transfer of responsibility' rule and its existence, I came to the conclusion that the European model that does involve a transfer of responsibility from the operator to the state (usually) 20 years post-closure is the best solution based on a couple of reasons: company lifetimes are often too short to provide permanent financial security, and because CCS is a societal good it makes sense that a potential carbon leakage would be paid off partly by taxes from members of the society. Drawing from the ruling in the *People v Arctic Oil* case, a pertinent inquiry is whether it is prudent to transfer responsibility to the state, given the unfavorable outcome for the environment. The precedent-setting case raised doubts about the effectiveness of the national Constitution in providing substantive rights, which inevitably prompts apprehension over an ambiguous liability provision emerging from a regulation. Consequently, it was deduced that the *People v Arctic Oil* ruling could establish a binding precedent for environmental harm within the jurisdictional domain, but not for transboundary harm. Nonetheless, it should be emphasized that the transfer of responsibility principle serves multiple objectives, including economic considerations, in addition to environmental protection.

Moreover, with the Northern Lights project in mind, we are including more actors into the typical CCS regime. Whereas the previous CCS projects in Norway have been about capturing carbon at the fossil fuels sites, then instantly pumped it back into the deep seabed, with Northern Lights they are now planning on transporting carbon from emitters all over Europe and/or the world, to then store it in the NCS. In my opinion, this development in the industry rises some questions connected to core environmental law and principles.

Primarily, the incorporation of the PPP within the framework of the Northern Lights project poses a significant challenge. The PPP principle posits that the party responsible for the pollution must be held accountable for the resulting damages. However, in the case of the Northern Lights project, neither Northern Lights JV nor the state of Norway can be identified as the polluter. Instead, the foreign capturing companies, along with their state of origin, are the primary culprits. Furthermore, given the absence of any current agreements between Northern Lights and a cooperating capturing company, the issue of long-term liability remains ambiguous. In light of this, it is suggested that the agreements incorporate provisions of liability in solidum or a similar shared liability regime, where all stakeholders would share responsibility for any potential carbon leakage. Liability in solidum would distribute the responsibility equally among all actors involved in the project, providing a more comprehensive solution to the issue of long-term liability. Liability caps could balance out the equal distribution.

Second, there is the NTH principle. According to this principle, an actor who execute an activity with a risk of significant environmental damage have a duty to prevent, reduce, and control pollution and environmental damage that may cause harm to other states or their environment. With regards to the Northern Lights project, one could both argue that for instance the Netherlands and Yara have an obligation to not cause harm to Norway, but the obvious and overweighting argument is nevertheless that Norway and Northern Lights JV have an obligation to not cause harm to the environment by undertaking this project.

Under this principle, it implies that the responsible must adhere to international and national laws and regulations, including those related to environmental impact assessment, risk assessment, and monitoring and reporting of potential environmental harm. The project must also establish effective communication and cooperation mechanisms with relevant stakeholders, including neighboring states and international organizations, to ensure that potential risks are identified and addressed in a transparent and timely manner. This is however a due diligence obligation, which only requires an obligation of conduct, not of results. If the result is a carbon leakage, then it is enough to prove the conduct. It is of my view that the principle is not enough in itself to protect the environment. For effective protection of the environment a legal framework addressing all the above obligations must be implemented through bilateral agreements with the stakeholders involved in the project.

Further on, force majeure clauses have been discussed. In the context of the Northern Lights project, the conclusion is that Northern Lights JV and the state of Norway must either enter into bilateral agreements that absolve them of responsibility in the event of a carbon leakage, although such agreements would only pertain to the parties involved and would not completely exempt them from liability globally. Alternatively, since force majeure is not regarded as customary international law, a universally recognized agreement must be proposed at an international level, which would exempt all contracting parties from obligations stemming from irresistible forces beyond the control of the state. However, the main conclusion is that by definition, force majeure clauses is not an ideal fit for the storage stage of CCS.

For further clarification, these recommendations can be summed up with a few bullet points distinguishing between international, EU and national level. As for the latter, it is specifically written with Norway in mind. Some of these recommendations could benefit at several levels, for instance the further clarification of terminology.



Table 3. Conclusion

<b>International level</b>	<b>EU level</b>	<b>National level</b>
<p><i>Terms like responsibility and liability are used interchangeably under international law, even though they entail different obligations and thresholds.</i></p> <p><i>Creating a standard legal definition of the terms responsibility and liability seems adequate, whereas the latter should be the main choice of wording.</i></p> <p>Establishing a liability regime for transboundary environmental harm, maybe include a force majeure clause.</p>	<p><i>Interdependence of the carbon capture and storage chain has been neglected when drafting the framework. Improving the connection</i></p> <p>The polluter pays principle needs to be redefined to fit into the CCS industry. Either by explicitly including third-party users or expand the term ‘polluter’ to include the receiver of CO<sub>2</sub>.</p> <p><i>Third-party access is fundamental in EU law, but the liability scheme is not written with CCS in mind.</i></p> <p>Reliance on other legal tools might not be sufficient in all cases. Especially the Environmental Liability Directive, which seems to be neglected in the financial security regime.</p>	<p><i>Clearer obligations in the provisions.</i></p> <p>For the Northern Lights project, it is suggested that the agreements between the TPA users and operator incorporate provisions of liability in solidum or a similar shared liability regime, where all stakeholders would share responsibility for any potential carbon leakage.</p>

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1933 Montevideo Convention	Montevideo Convention on the Rights and Duties of States
1957 TFEU	Treaty of the Functioning of the European Union
1969 VCLT	Vienna Convention on the Law of Treaties
1972 Stockholm Declaration	Declaration of the United Nations Conference on the Human Environment
1981 Pollution Control Act	Act of 13 March 1981 No.6 concerning Protection Against Pollution and Concerning Waste
1982 UNCLOS	United Nations Convention on the Law of the Sea
1992 Rio Declaration	United Nations Rio Declaration on Environment and Development
1992 OSPAR Convention	Convention for the Protection of the Marine Environment of the North-East Atlantic
1996 London Protocol	Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972) (as amended in 2006)  (IMO Guidance on the implementation of Article 6.2 on the export of CO2 streams for disposal in sub-seabed

	geological formations for the purpose of sequestration. LC 35/15 Annex 6)
1996 Petroleum Regulations	Laid down by Royal Decree 27 June 1997 pursuant to Act of 29 November 1996 No. 72 relating to petroleum activities
2003 EU ETS Directive	Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC
2004 ELD	Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage
2004 Pollution Regulations	Regulations of 1 June 2004 No. 931 on pollution control
2009 CCS Directive	Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006
2014 CO <sub>2</sub> Storage Regulation	Regulations relating to exploitation of subsea reservoirs on the continental shelf for storage of CO <sub>2</sub> and relating to transportation of CO <sub>2</sub> on the continental shelf
2018 Effort Sharing Regulation (ESR)	Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013

2019 Resolution on the provisional application

Resolution LP.5(14) on the Provisional Application of the 2009 Amendment to Article 6 of the London Protocol, adopted 11 October 2019

### **Web resources**

Global CCS Institute  
CCS Explained: Storage

<https://www.globalccsinstitute.com/ccs-101-storage/> Read 03.03.2023 12:34

CCS Norway  
Responsibility for CO<sub>2</sub> in the chain

<https://ccsnorway.com/responsibility-for-co%E2%82%82-in-the-chain/> Latest edit: 28.12.2022 Read 08.03.2023 09:45

Global CCS Institute:  
CCS Mythbusters: Dispelling myths around Carbon Capture and Storage (CCS).

[https://www.globalccsinstitute.com/wp-content/uploads/2022/06/MythBusters-Flyer\\_FINAL-5.pdf](https://www.globalccsinstitute.com/wp-content/uploads/2022/06/MythBusters-Flyer_FINAL-5.pdf)  
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