



Overview of regulatory uncertainties with regard to offshore CCS

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1 Executive Summary

Due to the popular resistance in the Netherlands and other parts of Europe to subsoil permanent storage of CO₂ onshore, it has become more likely that permanent storage will instead take place under the North Sea. In comparison with onshore Carbon Capture and Storage (CCS) activities, the transport and storage of CO₂ offshore brings with it a whole new set of legal issues and uncertainties. The purpose of this report is to provide proper insight into the legal and regulatory framework that currently exists and is applicable to offshore CCS activities in the North Sea area.

The report starts off by providing the legal backdrop necessary for understanding the issues properly. Matters of international law, European law and national law are discussed, including their applicability offshore. In this regard, the maritime zones as defined by the United Nations Convention on the Law of the Sea (UNCLOS) are also explained, as well as some regional and global treaties relevant for offshore CCS.

The following substantive chapter provides an overview of the regulation of liability for, and supervision and enforcement of CCS activities onshore. This provides proper comparison material for the final and key substantive chapter, which deals with liability for, and supervision and enforcement of CCS activities offshore. The issue of liability is divided into liability for damage to the climate, to the environment, and to the health and property of third persons. In this, we find that especially the last two of the three categories of damage provide some legal complexities depending on which damage occurs in which maritime zone. A number of scenarios are discussed to clearly illustrate the issues that may arise in practice. Finally, the issue of supervision and enforcement is discussed, comparing the national implementation measures taken by the Netherlands, Germany, Denmark and the United Kingdom. We find that they have all taken a different approach and that the resulting sets of national legislation differ somewhat. However, to a large extent they are effectively very similar.



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2 Applicable/Reference documents and Abbreviations

2.1 Applicable Documents

(Applicable Documents, including their version, are the “legal” basis to the work performed)

	Title	Doc nr	Version

2.2 Reference Documents

(Reference Documents are referred to in the document)

	Title	Doc nr	Version

2.3 Abbreviations

CIL	Customary International Law
CJEU	European Court of Justice
DECC	UK Department for Energy and Climate Change
EC	European Commission
EEA	European Economic Area
EEC	European Economic Community
EERP	European Energy Programme for Recovery
EEZ	Exclusive Economic Zone
EFTA	European Free Trade Association
EHR	Enhanced Hydrocarbons Recovery
EOR	Enhanced Oil Recovery
EGR	Enhanced Gas Recovery
ELD	EU Environmental Liability Directive
EU	European Union
EU ETS	European Union Emissions Trading System
GISZ	Gas Importation and Storage Zone
ICJ	International Court of Justice
IPPC	Integrated pollution prevention and control
ITLOS	International Tribunal for the Law of the Sea
NER 300	New Entrance Reserve
OSPAR	Oslo/Paris Convention (for the Protection of the Marine Environment of the North-East Atlantic)
PCIJ	Permanent Court of International Justice
TCE	The Crown Estate
TEC	Treaty Establishing the European Community
TFEU	The Treaty on the functioning of the European Union
UNCLOS	UN Convention on the Law of the Sea



3 Introduction

The concept of Carbon Capture and Storage (CCS) is commonly viewed as one of the main possible contributors to reducing anthropogenic CO₂ emissions in the near future. Since local communities in the Netherlands have so far fiercely and successfully resisted the storage of CO₂ onshore¹, attention of policy makers has increasingly been drawn to the option of CO₂ storage offshore. In comparison with onshore CCS, the transport and permanent storage of CO₂ offshore brings with it a whole set of new regulatory questions. To what extent does national law apply offshore in the different maritime zones? What is the applicable regional and international law? Are there any specific legal barriers to offshore CCS? What can be done to break down those barriers?

The purpose of this report is to provide proper insight into the legal and regulatory framework that currently exists and is applicable to offshore CCS activities in the North Sea area. Particular focus will be directed to the interplay between national, regional, and international law. It will provide an overview of existing regulation and identify the gaps which pose a barrier to the proper execution of offshore CCS. In particular the issues of offshore liability, supervision and enforcement will be discussed.

Chapter 4 will discuss the legal backdrop of offshore CCS, giving insight into international and European law issues, the differences between the maritime zones, the content and amendment of relevant treaties, and the offshore applicability of law. Chapter 5 will subsequently discuss liability, supervision and enforcement with respect to CCS *onshore*, before Chapter 6 provides insight into the same issues *offshore*.

¹ Both the CO₂ storage project in Barendrecht as well as the one in Groningen were eventually cancelled due to local public resistance caused by perceived safety issues. This phenomenon is often referred to as NUMBY, which stands for *Not Under My Back Yard*, indicating that people may generally be in favour of a concept as long as it does not affect them personally.

4 Legal backdrop

4.1 General international law and European law

In order to create some clarity with respect to which international, European and national legal instruments are relevant for and applicable to CCS activities, it seems appropriate to first provide a brief insight into the matter.

4.1.1 International law

Generally referred to as International law, the concept of Public International Law or the Law of Nations refers to the body of legal rules, norms, and standards that apply between sovereign states and other entities that are legally recognized as international actors. This definition is provided by the Encyclopaedia Britannica, which further indicates that “[i]n its broadest sense, international law provides normative guidelines as well as methods, mechanisms, and a common conceptual language to international actors—i.e., primarily sovereign states but also increasingly international organizations and some individuals.”²

4.1.1.1 Sources of International law

The Statute of the International Court of Justice identifies the following four sources of international law: (1) customary international law, (2) treaties, (3) general principles of law, as well as (4) judicial decisions and writings of legal scholars.³

Throughout history, States adopted certain standard practices in their mutual relations which eventually distilled into obligatory rules. These international rules of law have (often) not been explicitly codified, yet are respected and viewed as legally binding by states around the world. For a rule to be accepted as Customary International Law (CIL), it is required that there is general State practice as well as *opinio juris*. The latter means that there should be agreement among states that the norm in question is accepted as law. ‘State practice’ refers to certain patterns of behaviour that are repeatedly adhered to over a long period of time without challenge. The old three-mile territorial sea limit, which will be discussed in chapter 4.2 below, is an example of a rule of customary state practice that developed into customary law.

Treaties are perhaps the most important source of international law. They provide more clarity than customary law, since their contents are actually written down in legally binding documents. A treaty is, however, only binding on the parties to that treaty; it cannot be enforced against those states that are not a party to it (Joyner 2005, p. 11). Treaties exist in various shapes and sizes with respect to the number of parties (two or more), the geographical scope (regional or global) as well as the subject matter. The treaties which are relevant for offshore CCS activities in the North Sea area will specifically be discussed in chapter 4.3 below.

General principles of Law provide a third source of international law. They are especially important in fields of law that have not been extensively codified in treaties nor have developed clear rules of customary law, and thus contain substantive gaps. The general principles can help to fill these gaps. They can also be relevant when there are two or more conflicting interpretations of a treaty or customary rule. Two distinct classes of general principles may be relied upon (Cassese 2005, p. 189). The first consists of general principles of international law, which are the rules that can be induced from conventional and customary rules of law. The second class consists of principles that are peculiar to a particular branch of law, meaning the general legal standards overarching the whole body of law governing a specific area (e.g. environmental law). As we will find in this report, certain legal aspects of offshore CCS activities are still unclear because they have not been explicitly dealt with in treaties or jurisprudence. Until that happens, principles of international law will have to guide

² <<http://www.britannica.com/EBchecked/topic/291011/international-law>> (last viewed on 14 January 2013).

³ Statute of the International Court of Justice, Article 38(1).

the decisions made in this field. In the box below, some of the principles that may be relevant for offshore CCS are discussed.

Box 4.1: General Principles of law relevant for offshore CCS

Sovereignty is the principle of supreme authority within the territory of a State. It has many aspects, but the most important for the purpose of this report are (1) the power to wield authority over all the individuals living in the territory and (2) the power to freely use and dispose of the territory under the State's jurisdiction and to perform all activities deemed necessary or beneficial for the population living there (Cassese 2005, p. 49-51.). Whereas this meant in the past that the highest political power in a State was free to do as it pleased within the confines of its borders, absolute sovereignty like that disappeared since States started entering into treaties which limit their sovereignty. For instance, through the adoption of the UN Convention against Torture, States have voluntarily limited their freedom on how to treat their citizens.

Pacta sunt servanda⁴ is one of the most universally accepted general principles of international law, which provides that treaties shall be adhered to by the parties. Sovereign States can agree to limit their sovereignty, *i.e.* to limit their basic freedom to do as they please within their own borders, through concluding international agreements. If a State decides to do so, it can, as a consequence, no longer invoke rules of its own national law to refrain from performing the international legal duties that it has agreed to. Treaties which are in force are binding upon the parties and must be performed.

Due diligence in international law refers to the duty of States to endeavour to reach the result set out in the obligation that they have taken on. A breach of this duty does not consist of failing to achieve the desired result but of failing to take the necessary, diligent steps towards that end. Due diligence duties have developed primarily in the field of international environmental protection.⁵

Lex posterior derogat legi anteriori means that a more recent law prevails over an inconsistent earlier law.

Lex specialis derogat legi generali means that a special law, specifically dedicated to a certain subject, prevails over a general law.

The harm prevention principle⁶ entails the obligation of States not to cause transboundary harm. It is especially relevant in the field of environmental law. A State must ensure that activities conducted within its borders do not cause serious damage to the environment of other States, nor to territory outside any national jurisdiction such as Antarctica and the high seas (Nollkaemper 2009, p. 350). This general principle has been elaborated through several treaties, including a draft convention by the International Law Commission in 2001 as well as the OSPAR Convention, which will be dealt with in chapter 4.3 on relevant treaties. The principle is concerned with prevention rather than State responsibility (Brownlie 2008, p. 280-283).

The polluter-pays principle is best indicated as an 'emergent legal principle'⁷, as it is much rather an economic principle which indicates that the polluter should 'in principle' bear the cost of pollution, 'with due regard to the public interests and without distorting international trade and investment'. This principle can be found in the Rio Declaration on the Environment and Development of 1992, but this Declaration is not legally binding which means that the ordinary principles of State responsibility are applicable if damage affects the legal interests of another State (Brownlie 2008, p. 280). Significant is that the EU Environmental Liability Directive explicitly mentions the polluter-pays principle and makes it the fundamental principle of that Directive.⁸ Prime example of this principle on a national level is the excise fuel tax (*brandstofaccijns*) in the Netherlands.

⁴ A. Aust, 'Pacta Sunt Servanda', in R Wolfrum (ed), *The Max Planck Encyclopedia of Public International Law*, Oxford University Press, 2008-, online edition, [www.mpepil.com], visited on 4 September 2012.

⁵ T. Koivurova, 'Due Dilligence', in R Wolfrum (ed), *The Max Planck Encyclopedia of Public International Law*, Oxford University Press, 2008-, online edition, [www.mpepil.com], visited on 17 September 2012.

⁶ ICJ, *Legality of Threat or Use of Nuclear Weapons*, Advisory Opinion, I.C.J. Reports 1996, para. 29. See Nollkaemper 2009, p. 349.

⁷ This principle has been referred to as an 'emergent legal principle' (Brownlie 2008, p. 279) and as a 'general guideline' for protecting the environment (Cassese 2005, p. 491-492).

⁸ Directive 2004/35/EC, recitals 2 and 18; article 1.

The precautionary principle is, like the polluter pays principle, an emergent legal principle (Brownlie 2008, p. 277). It refers to the norm that, in its exercise of due diligence to ensure that no harm comes to the environment, States have to make some form of prior assessment to permit appropriate measures to prevent or mitigate pollution. It concerns the decision making regarding a certain activity and its potential environmental consequences in the face of scientific uncertainty. Types of activities that pose more serious environmental risks than others should be avoided out of cautiousness. On the other hand, action to protect the environment should be taken even if it precedes full scientific certainty of environmental damage (Joyner 2005, p. 207-208).

The fourth source of modern international law consists of two elements. The first is judicial decisions taken by courts and tribunals. This encompasses international institutions such as the International Court of Justice (ICJ) in The Hague and the International Tribunal for the Law of the Sea (ITLOS) in Hamburg, but also national courts. The decisions function mainly as guidelines, in that they cannot be held as a binding authority for determining subsequent court decisions. The second element consists of the teachings and writings of the most highly respected legal scholars. Although these writings can provide a good insight into the law, they are not legally binding (Joyner 2005, p. 14) and generally considered to carry less weight than judicial decisions (Malanczuk 1997, p. 57). It is thus important to underline that this fourth source of international law is subsidiary, meaning that in cases where the first three abovementioned sources leave room for discussion and interpretation, this fourth source can provide clarity and guidance, and as such help develop international law.

4.1.1.2 Subjects and applicability of international law

Whereas national law has a wide spectrum of subjects,⁹ the primary of which are individuals, international law traditionally only applied to States. States remain in fact the primary subject of international law to this day. However, over time other subjects have acquired some rights and obligations under international law, the most important of which are international organizations and to a lesser extent also individuals. These comparatively new subjects do not possess all international rights and obligations, nor do they have full capacity to enforce these rights or put them into effect in judicial proceedings (Cassese 2005, p. 72). In order for an individual to be able to invoke a provision of international law against the State, much will depend on the content and the wording of the concerned treaty as well as the nature of the rights and obligations invoked.¹⁰

In general, one can say that international law applies primarily to States and does not directly create rights and obligations for subjects of the State. When States agree to achieve a certain result through signing a treaty, they normally decide themselves how this will be brought about. The law of a State dictates whether a rule of international law is to be applied as part of its national legal system. Whether a State needs to adopt national legislation in order to make the obligations of, for instance, a treaty applicable to its subjects, depends on whether their legal system is primarily 'monist' or 'dualist' in nature. In 'monist' States, international law and national law are viewed to be part of one legal order, making direct effect possible. Direct effect means that alteration of the national law follows directly from the entry into force of a treaty. In 'dualist' States, international law and national law are viewed to be legal orders existing independently from each other. Direct effect is thus not possible in such States, meaning that new national legislation will be necessary to achieve the desired result of the treaty. Such legislation may take various forms. Oftentimes, it will simply amend national law to bring it into line with the treaty, perhaps without even referring to it (Hartley 2010, p. 204).

The Netherlands has a predominantly monist legal system. In fact, few countries have such an overall internationalist outlook on international rules as the Netherlands does. Here, "international treaties override the constitution" (Cassese 2005, p. 234). This is stipulated in Article 93 and 94 of the Dutch Constitution. Article 93 states that "[p]rovisions of treaties and of decisions by international institutions, which may be binding on all persons by virtue of their contents, shall become binding after

⁹ Individuals, companies, religious institutions, state institutions etc.

¹⁰ It is relevant to note here that companies are not necessarily viewed as individuals under international law, which will make it more difficult for companies to successfully base a claim on international law.

they have been published.” However, such treaties and decisions are usually implemented into Dutch law anyway since citizens are expected to know their rights and obligations under national law and not necessarily under international law.

4.1.2 European Law

European Law finds its origins in the treaty of Rome of 1957, which created the European Economic Community (EEC). This later developed into the European Community through the Maastricht Treaty of 1992, which created the EU.¹¹ Over the years, the EU has increased in number of Member States as well as in its legislative activities. Many issues which were traditionally dealt with and regulated at a national level are nowadays handled by Brussels.

European Law is part of public international law, since it is based on a source of international law, *i.e.* the EU Treaty, and since it regulates the conduct of public authority of the EU itself as well as that of its Member States (Nollkaemper 2009, p.42). It is, however, very different from general public International Law. Member States have transferred powers to the EU to such an extent, that the legal order of the EU is more similar to national law than to international law. The legal order of the EU is therefore often referred to as a *supranational* legal order instead of an *international* legal order (Nollkaemper 2009, p.42). European Law has thus become a separate field of law, which merits a separate discussion *infra*.

4.1.2.1 Sources of European Law

The most fundamental source of European Law are the treaties giving powers to the EU institutions. More importantly, though, the European Union can and frequently does create legislation itself. Three of the EU institutions can adopt such measures: The Council, the Commission, and the Council acting jointly with the Parliament. The Treaty on the functioning of the European Union (TFEU) lists five types of measures that may be adopted by the legislative institutions of the EU. Two of those measures, *i.e.* recommendations and opinions, have no legal impact but the remaining three are legally binding: Regulations, Directives and Decisions (Hartley 2004, p. 45). Regulations set general rules and they apply to everybody within the EU. The fact that they create uniform rules which apply throughout the EU is the main advantage of Regulations. Directives, such as the CCS Directive of 2009, are not as strong as Regulations; they describe a result that needs to be achieved by the Member States but leave it up to them how to do so. The advantage of Directives is that they provide the individual Member States with a certain degree of freedom to adapt the rules to local conditions as well as to the national legal system at hand. Decisions, finally, have a different character altogether, in that they are of a more executive nature. They are legally binding, but only to the person they are addressed to. This ‘person’ can be a Member State, but also a company or even an individual (Hartley 2004, p. 45-46).

For offshore CCS activities, the main European Law sources are the CCS Directive (2009/31/EC), the Environmental Liability Directive (2004/35/EC), the Waste Framework Directive (2008/98/EC), the Environmental Impact Assessment (EIA) Directive, and the Integrated pollution prevention and control (or IPPC) Directive (2008/1/EC). It is beyond the scope of this report to discuss these at length.

4.1.2.2 Subjects and applicability of European law

The relationship between European Law and national law is vastly different from the relationship between general public international law and national law (Nollkaemper 2009, p. 479). With respect to Regulations, for example, article 288 of the TFEU dictates that they are directly applicable in all Member States. This means that there is usually no need to enact national legislation to give them

¹¹ The EU consists of three pillars. The first pillar consists of the Communities (*i.e.* the EC and Euratom); the second pillar is the Common Foreign and Security Policy; and the third pillar is Police and Judicial Co-operation in Criminal Matters.

effect, and the European Court actually laid down a general rule that, except where they are necessary, national implementing measures giving effect to Regulations are inappropriate. The reason for this is that the Court does not want the content of Regulations to be obscured. The provisions must be applied as European Union law, not as national law (Hartley 2010, p. 215-216).

Unlike Regulations, Directives are not directly applicable. This follows from the wording of the same article of the TFEU, which provides that a Directive sets an objective and leaves it to the Member States to achieve that objective through the methods and in the form that they deem appropriate. This means that the Member States will have to take legislative measures in order to implement the Directive correctly and on time into national law. The result of this national legislation process should be the same in every Member State, but in practice small details of the national legislation may differ. This is the essential difference between Regulations and Directives (Hartley 2010, p. 218).¹² When an unconditional and sufficiently precise Directive is not implemented in time, or when it is implemented incorrectly, a national of the Member State in question may invoke that Directive in a national court of law.¹³ Directives cannot, however, create direct obligations for nationals of a Member State. That will have to be done through implementing the Directive into national law (Ambtenbrink & Vedder 2010, p. 177-186). As mentioned in the section above, European legislation on CCS has until now primarily been issued in the form of (the amendment of) Directives, making the above relevant in respect of CCS.

Judicial decisions by the European Court clearly provide that EU Treaty provisions and directly applicable measures of the EU institutions, e.g. Regulations and those Directives which are unconditional and sufficiently precise, always prevail over provisions of national law. If there is a conflict, the provision of national provision must give way, even if it is more recent than the European provision it conflicts with (Hartley 2010, p. 243). In the relationship between European Law and national law of Member States, the *lex posterior*-rule which was discussed in box 4.1 above is thus not applicable.

Each Member State has found its own way of how to give effect to European Law. In the Netherlands, this process was not very problematic due to the predominantly monist legal system provided by its constitution. As we have found earlier in this chapter, this approach permits international agreements to have direct effect in certain circumstances. When there is a conflict with national law, the supremacy of the treaty is recognized. This provides a rather convenient mechanism for giving effect to European Law (Hartley 2010, p. 259).

In conclusion it is important to underline that, unlike general international law, important parts of European legislation have direct effect in national law, and, above all, they have precedence over conflicting rules of national law. It is important to note in this respect, however, that in case of conflict international law ranks higher than secondary European law (Nollkaemper 2009, p. 480). So, for instance, if there is a conflict between on the one hand an EU Directive, and on the other an international convention which is binding for the community, the international convention has precedence.

4.2 Maritime zones and their implications for CCS

The Law of the Sea¹⁴ has traditionally identified several maritime zones,¹⁵ which in 1982 have been codified in the UN Convention on the Law of the Sea (UNCLOS).¹⁶ Each maritime zone has its own

¹² Recently, the European Court has developed a doctrine which states that Directives can provide direct effect under specific conditions, one of which is that the Member State in question has not implemented the Directive in time. See Hartley 2010, p. 218-222.

¹³ An example of this is provided by the case C-8/81 *Ursula Becker v Finanzamt Münster-Innenstadt*. In this case, Germany had not implemented Directive 77/388/EEC on turnover taxes in time. Ursula Becker wanted to invoke that Directive in a national court. The CJEU decided that, as the provisions of the Directive were unconditional and sufficiently precise, they may be relied upon against any national provision which is incompatible with it (see paragraph 25 of the judgment).

¹⁴ "The law of the sea is that law by which States, coastal, landlocked, and/or international organisations regulate their relations in respect of those areas subject to coastal State jurisdiction and

geographical demarcation and legal implications. For the purpose of this research paper, six zones can be identified as potentially relevant: Internal Waters, the Territorial Sea, the Contiguous Zone, the Exclusive Economic Zone (EEZ), the Continental Shelf, and the High Seas. In the following section they will be discussed briefly, to provide a proper background for subsequent chapters discussing offshore CCS.

4.2.1 Internal Waters

Not being part of the sea and therefore not a maritime zone as such, the internal waters of a State are comprised of the rivers, lakes, harbours, estuaries and all other waters which lie on the landward side of the so called baseline.¹⁷ The baseline is the low-water line of the coastal State.¹⁸ In principle, the coastal State has full sovereignty and territorial jurisdiction within the confines of its internal waters (Aust 2010, p. 279). Unlike in the territorial sea, there is no right of innocent passage in internal waters and States can and do impose conditions on the entry of ships (Aust 2010, p. 280). It has been established, for example, that EU Law may be applied to vessels registered in a non-Member State when they are sailing through internal waters. This is a consequence of the generally unlimited jurisdiction of the coastal State in its internal waters.¹⁹

The legal regime in internal waters could be relevant for transport of CO₂. For instance, one could imagine a scenario where CO₂ is produced in the harbour of Rotterdam and loaded onto a ship. Leakage might occur from the ship before it has reached the sea. Storage of CO₂ under internal waters will not be discussed as this does not seem feasible at the moment.

4.2.2 Territorial Sea

The first maritime zone off the coast is the territorial sea, sometimes also referred to as territorial waters, and it consists of the part of the waters outside the baseline up to a distance not exceeding 12 nautical miles.²⁰ It forms part of the territory of the coastal State, meaning that the sovereignty of the coastal State extends to it. UNCLOS further stipulates that the sovereignty of the coastal State not only extends to the waters of the territorial sea but also to its bed and its subsoil.²¹ This is thus relevant for both the transport as well as the permanent storage of CO₂.

The sovereignty of the coastal State is not absolute, however, as it is subject to the rules of UNCLOS, such as those regarding innocent passage, and to other rules of international law.²² The national legislation of the coastal State thus applies to the territorial sea, although its enforcement regarding foreign ships is limited by the right of innocent passage. This concept is comprehensively codified in UNCLOS, but for the purpose of this paper it suffices to state that it means navigation

in relation to those areas of the sea and seabed beyond national jurisdiction." R. Wallace and O. Martin-Ortega, *International Law*, Sixth edition, Sweet & Maxwell 2009, p. 152.

¹⁵ For a graphic illustration of the different maritime zones, see Annex I of this report.

¹⁶ The European Union itself as well as all States bordering the North sea are parties to this convention. See: <http://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm> (last viewed on 14 January 2013).

¹⁷ UNCLOS, Article 8(1).

¹⁸ UNCLOS, Article 5.

¹⁹ Case C-347/10, Judgement of the Court, 17 January 2012, *A. Salemink v. Raad van Bestuur van het Uitvoeringsinstituut werknemersverzekeringen*, paragraph 28.

²⁰ In the past this used to be 3 nautical miles, a distance which was equal to the maximum range of canons at that time in history and therefore the range of possible enforcement by the coastal State. Cornelius Bynkershoek, a famous Dutch jurist from the 18th century known for his importance in the development of the law of the sea, states in his work *De Dominio Maris Dissertatio* of 1703: "*terrae dominium finitur ubi finitur armorum vis*", i.e. the power of the state over territory ends where the range of weapons ends. The current limit of 12 nautical miles is codified in article 3 of UNCLOS, and is now also accepted as customary international law, see R. Wallace and O. Martin-Ortega 2009, p. 155.

²¹ UNCLOS, Article 2(1).

²² UNCLOS, Article 2(3).

through the territorial sea for the purpose of traversing it while being non-prejudicial to the peace, good order or security of the coastal state.²³ Article 21 of UNCLOS further provides what kind of laws and regulations a coastal State may adopt relating to the innocent passage through the territorial sea, including, for example, the safety of navigation and maritime traffic.²⁴ Important to note in this respect is that innocent passage may not be impaired by the coastal State merely on the basis of the cargo of the ship (Kraska 2011, p. 118). This means that transport of CO₂ by ship should in principle be considered as innocent.

4.2.3 Contiguous Zone

The internal water and territorial sea form part of the territory of the coastal State, which means that the State exercises sovereignty in those zones. All maritime zones lying beyond them are not part of the territory of the coastal State, which consequentially means that it is not granted sovereignty there and it can only exercise limited competences.

The first of these functional maritime zones is the contiguous zone. Geographically, it extends beyond the territorial sea to a maximum distance of 24 nautical miles measured from the territorial baseline. The coastal state has limited jurisdiction here, more specifically reduced to four functional realms. The coastal state may merely exercise the control necessary to “prevent infringement of its customs, immigration, fiscal and sanitary laws and regulations within its territory or territorial sea, or punish infringement of the above laws and regulations committed within its territory or territorial sea.”²⁵ Depending on whether any CCS related activities may be viewed as being controlled by customs, immigration, fiscal and sanitary laws and regulations, the contiguous zone will be relevant. It is clear, however, that it was conceived at the time to enable the coastal State to prevent those who commit offences in its territorial waters from fleeing all too easily to the high seas and thereby avoiding prosecution (Cassese 2005, p. 87). The contiguous zone therefore appears to be only of limited legal relevance for CCS.

Unlike the territorial sea, the contiguous zone needs to be established and only about one-third of coastal States have done so (Aust 2010, p. 284). The Netherlands established its contiguous zone in 2005 through the *Besluit instelling aansluitende zone*, which entered into force in 2006.²⁶

4.2.4 Exclusive Economic Zone

The Exclusive Economic Zone (EEZ) is an area beyond and adjacent to the territorial sea, subject to the specific legal regime established in UNCLOS under which the rights and jurisdiction of the coastal State and the rights and freedoms of other States are governed.²⁷ It extends up to a maximum of 200 nautical miles measured from the baseline.²⁸ Before UNCLOS was adopted, this part of the sea was viewed as high seas (see below). Unlike the territorial sea, the EEZ does not fall under the sovereignty of the coastal State but the coastal State does enjoy certain sovereign rights and/or jurisdiction for certain purposes in it. More specifically, the coastal State has sovereign rights:

“for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, or the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds”

and jurisdiction with regard to, among other things,

²³ UNCLOS, Articles 18, 19.

²⁴ More specific information about shipping will be provided in Deliverable D4.1.11.

²⁵ UNCLOS, Article 33.

²⁶ *Besluit instelling aansluitende zone*, Staatsblad 387 (2005).

²⁷ UNCLOS, Article 55.

²⁸ UNCLOS, Article 57. In practice this may be less, due to opposing EEZs of the neighbouring States. This is particularly relevant in the North Sea, see Annex II indicating the EEZs in the North Sea region.

*“the establishment and use of artificial islands, installations and structures (...) and the protection and preservation of the marine environment”.*²⁹

With regard to artificial islands, installations and structures in the EEZ, UNCLOS further makes clear that the right of the coastal State to construct, authorize and regulate them is exclusive.³⁰

Like the contiguous zone, the EEZ needs to be established but unlike the contiguous zone, many States have in fact done so. The importance of its establishment is, as the title indicates, an economic one as it gives substantial rights over the natural resources within it (Aust 2010, p. 284). The main economic activity for many coastal States in this respect is fishing, since the majority of fish stocks are within 200 nautical miles from the coast. The other major economic activity which the drafters had in mind when codifying its details in UNCLOS, was the extraction and exploitation of hydrocarbons like oil and gas.

As mentioned above, an EEZ does not exist by default but needs to be established through express declaration. All States bordering the North Sea have done so, including the Netherlands which established its EEZ in the year 2000. Every State has the right of free navigation and the laying of submarine cables and pipelines in the EEZ, provided that it has due regard to the rights and duties of the coastal State and complies with the laws and regulations adopted by the coastal State.³¹ The matter of whether the EEZ legal regime is relevant for the purpose of permanent storage of CO₂ is debatable. It appears that the general understanding during the drafting of UNCLOS was that the activities in the water column (such as fishing) were regulated by the part on the EEZ, and that the activities regarding the subsoil (such as drilling for oil and gas) were regulated by the part on the continental shelf. This indicates that storage of CO₂ is best handled on the basis of the legal rules for the exploitation of the continental shelf (Brus 2009, p. 31-32).

4.2.5 Continental Shelf

Originally a geographical term indicating the gradually sloping ledge covered by shallow water projecting from the coastline, the Continental Shelf was first codified as a legal concept in the 1958 Convention on the Continental Shelf.³² More extensive rules were subsequently created in UNCLOS, which provides that it comprises “the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines (...) where the outer edge of the continental margin does not extend up to that distance.”³³ This means that in principle every coastal State has a continental shelf of 200 nautical miles, but the geographically favoured States will have one that is larger. Unlike an EEZ, it does not need to be established but exists by default.³⁴ The outer limit of it may not be more than 350 miles from the baseline, but, given the limited size of the North Sea, for most states the limits of the EEZ coincide with the limits of the continental shelf.³⁵ For instance, the outer limits of the EEZ of the Netherlands match the exact outer limits of its continental shelf.

Over the continental shelf, the coastal State exercises sovereign rights for the purpose of exploring it and exploiting its natural resources.³⁶ These rights are exclusive, meaning that if the coastal State decides not to exercise this right, no one may undertake these activities without the

²⁹ UNCLOS, Article 56(1).

³⁰ UNCLOS, Article 60.

³¹ UNCLOS, Article 58(3).

³² 1958 Convention on the Continental Shelf, article 1.

³³ UNCLOS, article 76(1).

³⁴ UNCLOS, Article 77(3).

³⁵ One major exception is Norway, which has a continental shelf which extends beyond 200 nautical miles. See <<http://www.regjeringen.no/en/dep/ud/selected-topics/civil-rights/spesiell-folkerett/continental-shelf--questions-and-answers.html?id=448309>> (last viewed on 14 January 2013).

³⁶ UNCLOS, Article 77(1).

express consent of the coastal State.³⁷ The coastal State further has the exclusive right to authorize and regulate drilling on the continental shelf for all purposes.³⁸ The rights of the coastal State with respect to artificial islands, installations and structures on its continental Shelf are the same as to those within its EEZ.³⁹ Also, it is important to note that the rights to the continental shelf only include the seabed and the subsoil, not the superjacent waters. The waters covering the continental shelf are to be considered high seas, unless if they are part of the EEZ of the coastal State.

As indicated in the subsection on the EEZ, it appears that the storage of CO₂ is best approached on the basis of the legal rules regarding the continental shelf. The main question is then whether permanent geological storage of CO₂ can be viewed as 'exploiting national resources' of the coastal State. It can be argued that geological storage capacity should be viewed as such a natural resource, as it could effect "further generation of human wealth and/or reducing degradation of the human environment" (Brus 2009, p. 33). However, this matter of interpretation has not yet been determined by any legal authority and thus remains unclear. Either way, under both the regime of the EEZ and that of the continental shelf, States have the exclusive right to explore and exploit the national resources within it, but also a duty to prevent any harmful effects to the marine environment.⁴⁰

4.2.6 High Seas

Beyond the EEZ lie the high seas which are free and may not be claimed in any respect by any state, meaning they are beyond the national jurisdiction of any coastal State.⁴¹ UNCLOS provides a non-exhaustive list of freedoms of the high seas, including, *inter alia*, the freedom of navigation and the freedom to lay submarine cables and pipelines.⁴² There is thus no jurisdiction of any state over the high seas, but jurisdiction over ships on the high seas lies exclusively with the flag State.⁴³

4.2.7 UNCLOS and the concept of transport and storage of CO₂

A problem with UNCLOS is that at the time of its conception in 1982, the whole idea of permanent storage of CO₂, or of any substance for that matter, had not been envisaged yet. As we will find in this report, the same goes for other treaties on, for instance, dumping and pollution.⁴⁴ As a result, UNCLOS and other treaties are silent on the subject of CCS, creating legal uncertainty as to its legality and regulation. This undesirable situation resulted in two processes which we will discuss further below: the amendment of existing international legal instruments (e.g. the London Protocol and OSPAR) and the adoption of new legal instruments (e.g. the CCS Directive).

4.3 Relevant treaties with respect to offshore CCS

UNCLOS does not explicitly cover CO₂ storage. In fact, permanent geological storage of CO₂ has not been specifically regulated at a global level by any legal instrument. This means that regulation must be assessed on the basis of existing rules of international law. As indicated in the chapter on maritime zones, there are several global and regional legal instruments which are relevant for offshore CCS

³⁷ UNCLOS, Article 77(2).

³⁸ UNCLOS, Article 81. This may be relevant for permanent storage of CO₂.

³⁹ UNCLOS, Article 80.

⁴⁰ UNCLOS, Article 80. This duty is not only dealt with in UNCLOS but also in specific treaties which will be dealt with in the next subchapter.

⁴¹ Specified in UNCLOS, article 86, as "all parts of the sea that are not included in the exclusive economic zone, in the territorial sea or in the internal waters of a State or in the archipelagic waters of an archipelagic state." The idea of freedom of the high seas was first articulated by Dutch legal scholar Hugo Grotius (Hugo de Groot) in his *Mare Liberum* (1609).

⁴² UNCLOS, Article 87(1).

⁴³ UNCLOS, Article 92(1).

⁴⁴ The London Convention, the London Protocol and the OSPAR Convention in particular.

activities in the North Sea area. The main subject matter of these treaties is protection from pollution and dumping. This subchapter will provide an overview of what these treaties entail, how they are relevant for offshore CCS activities and what, if any, barriers they pose to the exercise of envisaged CCS activities in the North Sea area. Moreover, this subchapter will indicate what steps have been taken to remove those barriers and to what *status quo* they have led.

4.3.1 The London Convention (1972)

The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention) was signed in 1972 and entered into force in 1975. Its main purpose is “to promote the effective control of all sources of marine pollution” and “to take all practicable steps to prevent pollution of the sea by dumping of wastes and other matter.”⁴⁵ Annexed to the Convention are lists of substances which are either banned from dumping or require a special permit. This means that any substance not named on the list is free to be dumped at sea.⁴⁶

As CO₂ is not listed in any of the annexed lists, one could argue that the London Convention is not applicable to storage of CO₂, and that it is therefore not prohibited for the parties to it (Brus 2009, p. 38). On the other hand, it can also be argued that offshore storage of CO₂ is indirectly prohibited under the Convention. According to this line of reasoning, captured CO₂ from industrial activities should be regarded as industrial waste, making it illegal to dump according to an amendment to the list of banned substances in 1996 (Armeni 2011, p. 147). A conclusive answer on the legality of offshore permanent storage of CO₂ under the Convention is still pending, but as we will find below the outcome will be of limited relevance to the North Sea area.

4.3.2 London Protocol (1996)

Due to the obvious shortcomings of the London Convention, State Parties decided to create a Protocol replacing the Convention. The London Protocol was signed in 1996, came into force in 2006 and replaces the London Convention for those 42 States who have ratified it, which includes all North Sea bordering States.⁴⁷ The Protocol takes a fundamentally different approach compared to the Convention, in that it adopts a ‘prohibited unless permitted’ approach rather than the ‘permitted unless prohibited’ approach of the Convention that it replaces (Armeni 2011, p. 147). In addition, whereas the Convention was unclear on this matter, the Protocol explicitly extends the definition of dumping at sea to include storage in the seabed and subsoil.⁴⁸ The Protocol in its original form thus provided a more stringent approach to dumping and also clearly made offshore storage of CO₂ illegal, since Annex 1, which lists substances that are allowed to be dumped when a permit is granted, did not mention CO₂ streams. The Protocol thus posed a legal barrier to offshore CCS activities.

As States warmed to the idea of offshore CO₂ storage, the parties to the London Protocol negotiated and eventually adopted two amendments to the Protocol in 2006 in order to eliminate the legal barrier that it had inadvertently created with respect to offshore CCS.

The first amendment alters Annex 1 of the Protocol, adding ‘carbon dioxide streams from carbon dioxide capture processes for sequestration’ to the list of materials that may be considered for

⁴⁵ Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (hereafter London Convention), Article I.

⁴⁶ Whether dumping “at sea” includes dumping in the subsoil or seabed is not clear, but for the sake of argument in this report we will assume that it does.

⁴⁷ Number of ratifications as on 14 January 2013, <<http://www.minbuza.nl/producten-en-diensten/verdragen/zoek-in-de-verdragenbank/1996/11/007463.html>>.

⁴⁸ 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (hereafter London Protocol), Article 1(4.1.3).

dumping.⁴⁹ In addition, it includes conditions with respect to the CO₂ stream that have to be met before it may be considered for dumping.⁵⁰ This amendment entered into force in 2007.⁵¹

The second amendment concerned article 6 of the Protocol which prohibits the export of wastes for dumping and thereby poses a legal boundary to transboundary transport of CO₂. In order to remove this barrier, the second amendment provides that CO₂ may be exported as long as the concerned States have agreed to do so.⁵² This amendment was adopted in 2009 but as of yet it has not entered into force, as it has so far not reached the required number of ratifications.⁵³

This means that under the London Protocol, the legal status quo under the London Protocol is the following. CCS activities are permitted for States who have ratified the amendment of Annex 1. Transboundary transport of CO₂ is, however, still prohibited due to the lack of ratifications of the amendment of article 6. This means that States who have ratified the first amendment may permanently store CO₂ within their national boundaries, but transporting and/or storing it outside their boundaries is still prohibited.

4.3.3 The OSPAR Convention (1992)

Both the convention and the protocol discussed above are global treaties. For the North Sea region there is also a regional treaty with significant importance with respect to CCS. The Convention for the Protection of the Marine Environment of the North-East Atlantic, hereinafter referred to as the OSPAR Convention, was signed in 1992 and it covers some of the same issues as the London Protocol. It aims to 'protect the maritime area against the adverse effects of human activities', as well as requires parties to prevent and eliminate pollution as much as possible.⁵⁴ The OSPAR Convention entered into force in 1998 and has 16 Contracting Parties, including all States bordering the North Sea.⁵⁵ In 2004, an internal legal report by OSPAR indicated that placement of CO₂ is prohibited under the dumping regime of Annex II of the OSPAR Convention if such placement "is undertaken for the purpose of mitigating climate change or other mere disposals". In addition, the legal report indicated that dumping of CO₂ from offshore installations into the seabed for the purpose of mitigating climate change is prohibited by Annex III of the OSPAR Convention (Armeni 2011, p. 148).

In a similar fashion to the London Protocol, in 2007 the States parties to OSPAR adopted amendments in order to remove the existing legal barriers to CCS activities. The first amendment alters Annex II of the OSPAR Convention, adding 'carbon dioxide streams from carbon dioxide capture processes for storage' to the list of substances which can by exception be allowed for dumping when a number of requirements has been met.⁵⁶

⁴⁹ London Protocol, Annex 1, Article 1(8).

⁵⁰ London Protocol, Annex 1, Article 4. The three conditions are that (1) disposal is into a sub-seabed geological formation; (2) that the CO₂ stream consist overwhelmingly of carbon dioxide; and (3) that no wastes or other matter are added for the purpose of disposing of those wastes or other matter.

⁵¹ Notification of entry into force of the 'CO₂ Sequestration' amendments to Annex 1 to the London Protocol 1996, 16 February 2007. IMO Doc. LC-LP.1/Circ.11.

⁵² Report of the 31st Consultative Meeting and the 4th Consultative Meeting of Contracting Parties, 30 november2009, IMO Doc LC 31/15, Annex 5: Resolution LP 3(4) on the amendment of Article 6 of the London Protocol (as described by C. Armeni in Havercroft, Macrory and Stewart 2011, p. 151).

⁵³ Article 21(3) of the London Protocol provides that an amendment cannot enter into force before two thirds of the Contracting Parties have deposited an instrument of acceptance of the amendment.

⁵⁴ Convention on the Protection of the Marine Environment of the North-East Atlantic, Article 2(1)(a). Hereinafter referred to as the OSPAR Convention.

⁵⁵ The Contracting Parties are Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the European Union. Luxembourg and Switzerland are Contracting Parties due to their location within the catchments of the River Rhine. See

<http://www.ospar.org/content/content.asp?menu=01481200000026_000000_000000> (last viewed on 14 January 2013).

⁵⁶ See Article 3(2)(f) of Annex II of the OSPAR Convention, as updated by the amendment in 2007.

The second amendment concerned Annex III, which as a result now excludes 'carbon dioxide streams from carbon dioxide capture processes for storage' from the general prohibition of dumping from offshore installations. In addition, the second amendment imposes an obligation on parties to guarantee that no CO₂ stream is permanently stored without a proper permit by their competent authority.⁵⁷

The 2007 amendments to the OSPAR Convention were not swiftly ratified by many States, but eventually entered into force in the summer of 2011 when Denmark was the seventh party to ratify the amendments after Norway, Germany, The United Kingdom, Spain, The European Union and Luxembourg.⁵⁸ That same year, the amendment also entered into force for the Netherlands when it finished its ratification procedure.^{59 60}

The legal status quo is thus that the OSPAR Convention allows CCS activities for those parties which have ratified its 2007 amendments, and that it thus poses no further barrier to such activities in the North Sea area for said States.

4.3.4 Conclusion

In view of the above, it is clear that the mentioned treaties were devised without CCS in mind, meaning they inadvertently contained certain restrictions which turned out to be problematic for the deployment of offshore CCS activities. In response to this, amendment procedures were set in motion which led to the following *status quo*.

The relevance of the London Convention is low, as it only applies to the parties who have not ratified the subsequent London Protocol and the fact that all of the North Sea States have indeed ratified the London Protocol.⁶¹ The OSPAR Convention was successfully amended and thus no longer poses a barrier to CCS activities in the North Sea for those States, currently eight, who have ratified the 2007 amendments.⁶² The London Protocol, however, still contains a legal barrier with regard to offshore CCS activities. Although the first amendment to the Protocol has entered into force, enabling CCS activities in general, the second adopted amendment has not yet entered into force, and is not expected to enter into force in the near future. This means that under the London Protocol as it stands today, States parties are still prohibited from transporting CO₂ across borders due to the lack of ratifications of the amendment of article 6.

In addition, scholars warn that the amendments to the aforementioned international agreements should not be viewed in isolation. It is still unclear how these interact with other relevant conventions, such as UNCLOS (Armeni 2011, p. 158). With this in mind, it is remarkable that the EU CCS Directive boldly states in its recitals that "at the international level, legal barriers to the geological storage of CO₂ in geological formations under the seabed have been removed (...) under the 1996 London Protocol (...) and under the Convention for the Protection of the Marine Environment of the

⁵⁷ See Article 3(4) of Annex III of the OSPAR Convention, as updated by the amendment in 2007.

⁵⁸ Thereby reaching the required amount of ratifications for entry into force. See Article 15(5) OSPAR Convention.

⁵⁹ See OSPAR Press release of 28 October 2011, <http://www.ospar.org/html_documents/ospar/news/ospar_pr_11_ratification_of_ccs_measure_en.pdf> (last viewed on 14 January 2013).

⁶⁰ For an up to date overview of parties that have ratified the 2007 amendments to the OSPAR Convention, consult the treaty database on the website of the Ministry of Foreign Affairs of the Netherlands: <<http://www.minbuza.nl/producten-en-diensten/verdragen/zoek-in-de-verdragenbank/2007/6/011711.html>>

⁶¹ See Annex 1 of the "IEA Report 2011: CCS and the London Protocol" for a list of ratifications: <http://www.iea.org/publications/freepublications/publication/CCS_London_Protocol.pdf> (last viewed on 14 January 2013).

⁶² Considering that storing Dutch CO₂ under the Danish EEZ is one of the scenarios under revision, OSPAR provides no obstruction since the Netherlands, Germany and Denmark are among the parties who have ratified the amendments.

North-East Atlantic (OSPAR Convention)".⁶³ Although it does not literally claim that *all* legal barriers have been removed, it does insinuate that that is the case even though at the time when the Directive was issued, neither the second amendment of the London Protocol nor the amendments of the OSPAR Convention had entered into force yet.

4.4 The applicability of national law offshore

One of the main questions that results from the subchapter about maritime zones, is to what extent national law applies to the different maritime zones. This question is addressed below. It will also provide a list of applicable Dutch laws which may be relevant for the parties who are intent on undertaking CCS activities in the North Sea.

4.4.1 Internal waters

Within internal waters, the coastal State has unlimited jurisdiction. As we discussed in chapter 4.2, even the right of innocent passage, which exists in territorial waters, does not exist in internal waters. All national law thus applies within the confines of the internal waters of a State.

4.4.2 Territorial Waters

As discussed earlier in this report, the territorial waters form part of the territory of the State. National legislation is therefore in principle equally applicable to the territorial sea as it is to its mainland territory. We have seen however that international law provides one main exception to this, *i.e.* the right of innocent passage of ships passing through the territorial waters of a coastal State. On land, there clearly is no such equivalent right of innocent passage for automobiles.

Evidently, there are also national laws which because of their substance are not applicable to the territorial sea, such as the Road Traffic Act (*Wegenverkeerswet 1994*). Others explicitly exclude their applicability to certain legal subjects within territorial waters. The Working Hours Act (see below), for instance, excludes its application to the personnel of foreign registered ships sailing through Dutch territorial waters.⁶⁴

Relevant Dutch laws which apply in the territorial waters but not in the EEZ or on the continental shelf include the *Wet Bodembescherming*, *Wet bestrijding ongevallen Noordzee*, *Wet algemene bepalingen omgevingsrecht (Wabo)*, *Natuurbeschermingswet 1998*, and *flora- en faunawet 1998*. It is interesting to note that there is a draft Act under negotiation, called the *Natuurwet* (Nature Act) which will combine the aforementioned *Natuurbeschermingswet 1998* and the *flora- en faunawet 1998* with the *Boswet* (Forrest Act). In the draft text of this new Nature Act, article 1 (2) provides that it will to a large extent also be applicable to the EEZ.⁶⁵ The draft text is, however, controversial and has not been adopted by parliament yet so it is unclear at this point how the final version will turn out.

4.4.3 Contiguous Zone

The contiguous zone is not part of the territory of the coastal State, but within its confines the State does have functional jurisdiction to prevent infringement of its customs, immigration, fiscal and sanitary laws and regulations within its territory or territorial sea. The Netherlands established a contiguous zone, which came into force in 2006. It is not clear whether CCS activities would fall under any of these four categories, nor whether any specific legislation in these fields would be applicable to

⁶³ Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the Geological Storage of Carbon Dioxide, O.J.L. 140/114 (hereinafter CCS Directive), Recital 12.

⁶⁴ *Arbeidstijdenwet*, article 2:9 (1).

⁶⁵ Draft text of the *Natuurwet*, version of 6 October 2011:

<www.tweedekamer.nl/images/33348%20002_tcm118-229197.doc> (last viewed on 14 January 2013).

it. It is clear, however, that the contiguous zone falls within the geographic confines of the EEZ and continental shelf. The laws applicable to those maritime zones thus also apply to the contiguous zone.

4.4.4 Exclusive Economic Zone and the Continental Shelf

The EEZ and the continental shelf are not part of the territory of the coastal State, but the State does enjoy functional jurisdiction and sovereign rights in some fields as discussed earlier in this report. The geographical location of the outer boundaries of the Dutch continental shelf have been negotiated and agreed in treaties with Belgium, the United Kingdom and Germany, the last of which entered into force in 1972. The Dutch EEZ was established by the *Rijkswet Instelling Economische Zone*, which came into effect in 2000. Conveniently, the outer boundaries of the Dutch EEZ coincide with the outer boundaries of the Dutch continental shelf, as indicated by the *Besluit grenzen Nederlandse exclusieve economische zone*.⁶⁶ This means we can discuss these two maritime zones under the same heading. In the following, we will provide an overview of relevant Dutch legislation applicable in the EEZ. These laws cover a number of categories: rules on mining, rules on installations and equipment, and rules on the environment.⁶⁷

4.4.5 Relevant national legislation applicable in the EEZ

Mijnbouwwet (Mining Act)

The Mining Act was enacted in 2003. It replaced a plethora of national mining legislation, including the 1810 *Loi concernant les Mines, les Minières et les Carrières*, which was the last legislative remnant from the Napoleonic times in the Netherlands. With the necessity of implementing the CCS Directive in national law, the 2003 Mining Act was crucially updated in October 2011. The Mining Act now contains an entire chapter dedicated to CCS, and it explicitly states that it is also applicable to the continental shelf.⁶⁸ We will discuss the Mining Act in more detail in the upcoming sections about supervision and enforcement onshore and offshore.

Wet Installaties Noordzee (North Sea Installations Act)

This relatively old piece of legislation (1964) provides some valuable provisions relating to the applicable law on the Dutch continental shelf. First, it stipulates that the Dutch criminal code applies to crimes committed on or with regard to installations on the continental shelf.⁶⁹ Secondly, it provides that other Dutch legal rules can be made applicable to such installations if designated to do so by Statutory Order (in Dutch: *Algemene Maatregel van Bestuur* or in short *AMvB*). Thirdly, it provides for a subsequent Statutory Order which has established that offences committed on installations on the Dutch part of the North Sea fall under the jurisdiction of the prosecuting office and court of Amsterdam.⁷⁰ Fourthly, aforementioned Statutory Order explicitly provides that police officers and special investigators have the same authority to perform their tasks offshore as they do onshore. The same goes for bailiffs and civil servants tasked with the implementation of court orders.⁷¹

Warenwet (Commodities Act)

The Commodities Act is mainly known for dealing with health and safety issues in respect of food, but it also regulates the technical requirements for equipment used in professional activities. Article 1a (a) explicitly states that it applies to technical products used in the EEZ with work on or on behalf of civil

⁶⁶ *Besluit grenzen Nederlandse exclusieve economische zone*, 13 March 2000, article 1 (b).

⁶⁷ Other Dutch laws which apply to CCS related activities in the EEZ include rules on workers (*arbeidstijdenwet*, *arbeidsomstandighedenwet*) and rules on shipping (*Wet voorkoming verontreiniging door schepen*, *Scheepvaartverkeerswet* and the *Schepenwet*), but these are too general in nature to merit discussion in this section. Rules on shipping will be discussed in an upcoming CATO-2 report dedicated to transport of CO₂ by ship.

⁶⁸ Mining Act, article 2 (1).

⁶⁹ *Wet installaties Noordzee*, article 2.

⁷⁰ *Besluit ex artikel 4 Wet installaties Noordzee*, Staatsblad 460 (1964), article 2.

⁷¹ *Besluit ex artikel 4 Wet installaties Noordzee*, Staatsblad 460 (1964), article 3-4.

technical constructions, as well as in the decommissioning of such constructions. As one author puts it, “[i]t safeguards the technical quality of equipment and tools used during professional activities of any kind. The Commodities Act deals with the hardware aspects of professional activities, whereas the Working Conditions Act deals with the software aspects such as human behavior.” (Verwer 2011, p.386).

Waterwet (Water Act)

The Water Act provides the legal framework for all water management in the Netherlands, particularly in the field of pollution and the protection of water infrastructure. To that extent, Article 1.2 and 1.4 stipulate explicitly that its realm of application includes not only the territorial sea but also the EEZ. Article 8.9 further provides that the Dutch Criminal code applies to whoever violates legal provisions under or by virtue of the Water Act in or above the EEZ. Importantly for potential CCS activities, article 6.12 (d) provides an exception with regard to water permits under this act for offshore activities to which the Mining act is already applicable. The Mining Act can thus be seen as the *lex specialis*⁷² in respect of permitting, meaning that the relevance of the Water Act is limited in respect of CCS activities in the North Sea.

Besluit milieu-effectrapportage 1994 (Environmental Impact Assessment Decree)

The Dutch Environmental impact assessment Decree contains detailed procedural rules for the Environmental Impact Assessment (EIA). More general rules about the EIA can be found in the Environmental Management Act as well as in the EIA Directive.

Wet Milieubeheer (Environmental Management Act)

The Environmental Management Act (EMA) aims to provide some general rules with respect to the protection of the environment. The EMA does not apply to the EEZ in its entirety, but some of its provisions explicitly make parts of the Act applicable to the EEZ under certain circumstances. For instance, article 9.1.1 provides that chapter 9 on substances and products are equally applicable to actions within the EEZ, if indicated by a Statutory Order. Article 12.19 further indicates that some reporting duties are also applicable to certain installations within the EEZ. More importantly for CCS, article 16.3 dictates that section 16.2 on greenhouse gases and emission rights applies equally to installations in the Dutch EEZ.

4.4.6 Conclusion

The Law of the Sea concepts of limited rights and functional jurisdiction in the EEZ and on the continental shelf as stipulated in UNCLOS make it clear that these areas do not fall under the full sovereignty of the State and that therefore not all national laws apply there. The list of legislation above shows, however, that there are a number of laws relevant to CCS that explicitly extend their applicability to these maritime areas. As we have found, the Dutch Penal code is in part applicable to the EEZ through some of these laws. Conversely, the Dutch Civil code is not mentioned in any of these laws to be applicable to the EEZ or the continental shelf. On the basis of the Dutch and other national studies, Moira McConnell makes the observation with respect to the EEZ that “[d]espite the codification and development of the international regime, the ‘applicable law’ still remains uncertain, fragmented and in general undeveloped or certainly misunderstood, particularly with respect to application of private law” (McConnell 2011, p. 246). The (non-)applicability of private law to the EEZ could provide a serious legal obstacle to CCS activities beyond the territorial sea. We will delve deeper into this subject in the following chapters.

4.5 The applicability of European Law offshore

The matter of the application of European Law to the maritime zones of its Member States is not unambiguous. This is in part due to the fact that the Treaty Establishing the European Community

⁷² See Box 4.1 above on general principles of law relevant for offshore CCS.

(TEC) lacks specificity with regard to the geographical scope of European Law. The provision in question merely lists the Member States to which the treaty shall apply, including some overseas departments like the Canary Islands.⁷³ It does not refer, however, to any maritime zones. Moreover, it has been established that it is up to each of the Member State to define its own limits of national territory in compliance with international law, which creates even more theoretic uncertainty (Boelaert-Suominen 2008, p. 688). Nevertheless, some developments have materialised in this matter of the application of European Law to maritime zones, mainly through judgements by the European Court of Justice (CJEU).

4.5.1 Territorial Sea

As we have established above, the EU treaties apply to the territories of the Member States, that is to all the areas in which the Member State has territorial sovereignty. Since it has been established in UNCLOS that the territorial sea falls under the territorial sovereignty of the coastal State, the EU treaties are applicable to this maritime zone as much as they are to the land mass of the State.⁷⁴ The same goes for secondary legislation, such as Directives.

4.5.2 EEZ and continental shelf

As described in the subchapter on maritime zones, the EEZ and continental shelf of a coastal State are not part of its national territory. The State does thus not have territorial jurisdiction over these areas, but UNCLOS provides that it does have certain rights and exercises some functional jurisdiction. Consequently, the application of national law and European law in the EEZ and over the continental shelf is limited. More specifically, it has been argued and subsequently confirmed by the CJEU that, if Member States may exercise functional jurisdiction and have sovereign rights in the maritime zones, the same has to apply for the European Union insofar as the respective competences have been transferred to it (Graf Vitzthum 2004, p. 1195).

Some Directives contain an express provision on their geographical scope, others do not. The CCS Directive, for instance, is clear when it comes to its applicability offshore: it applies to the geological storage of CO₂ in the territory of the Member States, their exclusive economic zones and on their continental shelves within the meaning of UNCLOS.⁷⁵ On the other hand, the Environmental Liability Directive does not explicitly state its geographical scope at all, making the matter of its applicability offshore not quite as unequivocal at first view.

In 2005 the CJEU has explicitly established that a secondary legislative act of the EU, in that instance referring to the Habitats Directive, can be held to apply not only to the territorial sea but also to the EEZ and the continental shelf.⁷⁶ In a more recent case, the CJEU has judged that European Law is in fact applicable to the continental shelf adjacent to a Member State, if it is within the right context. This latest particular case concerned a gas-drilling platform on the Dutch Continental Shelf, where the national court wondered whether a European Regulation relating to the freedom of movement for workers should apply. The CJEU judged that “work carried out on fixed or floating installations positioned on the continental shelf, in the context of the prospecting and/or exploitation of natural resources, is to be regarded as work carried out in the territory of that State for the purpose of applying EU law.”⁷⁷ It subsequently stated that “[a] Member State which takes advantage of the economic rights to prospect and/or exploit natural resources on that part of the continental shelf which

⁷³ Treaty Establishing the European Community, Article 299.

⁷⁴ Article 2 (1) UNCLOS dictates that “[t]he sovereignty of a coastal State extends, beyond its land territory and internal waters (...) to an adjacent belt of sea, described as the territorial sea.”

⁷⁵ CCS Directive, article 2 (1).

⁷⁶ Case C-6/04, Judgment of the Court, 20 October 2005, *Commission v United Kingdom*, paragraph 115-117.

⁷⁷ Case C-347/10, Judgment of the Court, 17 January 2012, *A. Salemink v. Raad van Bestuur van het Uitvoeringsinstituut werknemersverzekeringen*, paragraph 35.

is adjacent to it cannot avoid the application of the EU Law provisions to ensure the freedom of movement of persons working on such installations.”⁷⁸

In conclusion, it can be said that when the text of a piece of secondary legislation is not clear as to its geographical application, the answer to the question of whether it applies to the EEZ and the continental shelf depends on close examination of the content of that piece of legislation itself and on the context of the specific case. In case of such a lack of a clear-cut geographical scope, only the CJEU can provide authoritative clarity through a judgement, as it has done in the above cases.

4.5.3 High Seas

Since CCS is currently not foreseen to take place on the high seas, this part is so far not very relevant. However, as discussed in chapter 4.2, it is clear that the high seas do not fall under the jurisdiction of any State, nor under that of the European Union. European law can therefore not as such be applicable to the high seas itself. What is relevant, however, is that vessels are governed by the law of their flag State. It has been established in case law of the CJEU that this entails not only the national law of that flag State, but also relevant European Law if the flag State is a EU Member State. EU law provisions may not be applied to a vessel on the high seas registered in a non-Member State, since in principle such a vessel is there governed only by the law of its flag State.⁷⁹

⁷⁸ Case C-347/10, *Salemink*, paragraph 36-37.

⁷⁹ Case C-286/90, Judgement of the Court, 24 November 1992, *Anklagemyndigheten v. Peter Michael Poulsen and Diva Navigation Corp.*, paragraph 22.

5 Onshore CCS – an overview of the legal status quo in the Netherlands

5.1 Liability onshore

5.1.1 Introduction

The issue of liability and CCS has been discussed extensively in chapter 5 of CATO2 report D.4.1.01.⁸⁰ Therefore, in this subchapter, it will suffice to provide a concise review of the findings of that report. The goal of this subchapter is to provide a proper background and comparison material for the liabilities offshore, which will be discussed in chapter 6.

Liability is the legal responsibility that one has to another or to society, enforceable by civil remedy or criminal punishment. There are generally two types of liability: tortious or fault-based liability and strict or risk-based liability. The biggest difference between the two concepts is that fault-based liability requires an unlawful act or omission, whereas risk-based liability does not. Damage that can result from CCS activities specifically, can be divided into three categories: damage to the climate, damage to the environment and damage to health and property. In the following subsections, the essence of these three types of damage will be reviewed.

Table 5.1: Overview of existing liabilities

<i>Damage to:</i>	<i>Liabilities covered under:</i>	<i>Liable person:</i>	<i>Plaintiff:</i>
Climate	EU-ETS	Licensee (operator) ⁸¹	Competent Authority (Dutch emissions authority)
Environment	ELD Directives as implemented in the Dutch environmental management act.	Licensee (Operator)	Government/local authorities
Health and Property (third parties)	Dutch Civil Code	Licensee (operator)	Third parties that suffered the damage

5.1.2 Damage to the climate onshore

As described in the introduction, the first category of liability under CCS is climate liability. The system of climate liability is aimed at compensating the damage done to the climate as a whole as a result of leakage of CO₂ into the air. The EU Emission Trading System (ETS) functions as a compensation mechanism for this, since there is no specific climate liability regime in the Netherlands.

The CCS Directive links CCS to the ETS, by counting captured and subsequently permanently stored CO₂ as not emitted under the ETS permit. If a part of such captured CO₂ - subsequently escapes into the atmosphere through, for instance, leakage or venting, it will again count as CO₂ emitted under the ETS. The holder of the emissions permit will thus have to pay ETS allowances for the emitted CO₂. All parties involved in the different phases of CCS have such a permit: the operator of the capture installation, the operator of the transport network and the operator of the storage site.

Per tonne of CO₂ emitted, the holder of the permit will have to pay a certain amount, determined by the price of the emission rights. If the responsible holder of the permit does not meet its

⁸⁰ See CATO2 Deliverable D4.1.01, *Issues concerning the implementation of the CCS Directive in the Netherlands*, p. 73-87.

⁸¹ Although licensee and operator are often the same, it is possible that the operator is another corporate entity than the licensee, and is instructed by the licensee. In general the legal entity having control over the actions and decisions of the operator will be the liable person. See also D4.1.01, section 5.3.3.4.

amount of allowances, it may be fined and it should surrender the missing allowances in the following year. The operator of the storage site remains liable for the ETS allowances until the responsibility for the site is transferred to the competent authority.⁸²

Table 5.2: Overview of climate liability

Climate liability	
Damage	For the amount of leaked CO ₂ allowances have to be paid, the accuracy seems to be a problem in measuring the amount of leakage
Liability horizon	Yearly compensation until transfer (app. 20 years)
Liable persons	Before transfer the licensee (operator), after transfer the competent authority
Type of liability	Not really a liability regime, more a breach of an administrative system registering emissions for the ETS
Legal debate ⁸³	Debate might occur on the interpretation of data and the decision when these data indicate an event

5.1.3 Damage to the environment onshore

The second category of liability under CCS is environmental liability, which deals with damage to the ecosystem. This includes damage to species, habitats, land, and water, caused by significant leaks of greenhouse gases. With respect to environmental damage which occurs during the storage phase, the liability rules are laid down in the EU Environmental Liability Directive (ELD), which in turn has chiefly been implemented in the Netherlands in the Environmental Management Act (EMA; *Wet Milieubeheer*). The EMA has recently been integrated with other legislation into the General Provisions Act on Environmental and Spatial Planning Law (Wabo; *Wet algemene bepalingen omgevingsrecht*). It is important to note that environmental damage which occurs during capture and transport is not regulated by the ELD.

A Environmental damage during storage

The CCS Directive adds the operation of CO₂ storage sites to Annex III of the ELD, which means that such storage falls under the risk-based liability regime of his Directive. This signifies that there is no requirement of fault or unlawful behaviour on behalf of the operator for liability to arise; the liability is inherent in the risk of the activities performed. However, the ELD sets rather stringent requirements for defining environmental damage that leads to such liability, e.g. the existence of a “significant adverse effect” caused by the leakage.⁸⁴ Annex I of the ELD provides some criteria for what may qualify as significant, but it will eventually be up to the judge to make this assessment.

The liability regime provides that the operator shall take and pay for preventive and/or remedial action, to be taken under supervision of the competent authority. If the operator fails to act, the competent authority may itself act and subsequently hold the operator liable for the costs incurred in the process. Liability under the ELD applies only to environmental damage if the emission, event or incident causing the damage took place after 30 April 2007. If the emission, event or incident occurred after that date, the operator remains liable under the ELD for in principle 30 years. Environmental liability for CCS will be transferred to the competent authority once the storage site is closed and a number of conditions are met.⁸⁵ The competent authority becomes the operator once the site has been transferred to it in accordance with article 18 of the CCS Directive.

⁸² Except in the case where leakage occurring after transfer turns out to have been caused by a fault of the former operator, see Article 18 (7) of the CCS Directive.

⁸³ As the ETS system is more of an administrative program than a liability regime, possible defences do not really apply, so the term legal debates is chosen here.

⁸⁴ Directive 2004/35/EC, article 2 (1) (a).

⁸⁵ CCS Directive, article 17 and 18.

The ELD provides a few important exceptions to environmental liability. Importantly, environmental liability does not apply in situations where the damage is caused by armed conflict or “natural phenomena of exceptional, inevitable and irresistible character”.⁸⁶

B Environmental damage during capture and transport

As indicated above, the CCS Directive only explicitly puts the storage-phase of CCS within the scope of the ELD. Environmental damage which occurs during the two prior phases of CCS is not included, and is thus not categorised within that risk-based liability regime. This means that if such damage should occur in one of those two phases, liability and compensation will be based on the regular fault-based regime of the Member State in question. Only when fault or negligence has caused the emission during capture or transport, will the operator be held liable.

One important exception to this rule is provided by the ELD. When it is concluded that there was environmental damage to protected species and natural habitats, caused by an operator who has been at fault or negligent, the ELD does apply.⁸⁷

Table 5.3: Overview of environmental liability

Environmental liability	
Damage	Significant adverse effect for species and water, measurable adverse effect for land/humans, costs made by plaintiff to prevent, limit or repair damage.
Liability horizon	30 years following the event that caused the damage, recovery within 5 years after execution of the measures.
Liable persons	Before transfer the licensee (operator, joint and several in case of a holding or joint venture), after transfer the competent authority
Type of liability	Strict or risk-based liability
Possible defences	<ul style="list-style-type: none"> - damage caused by armed conflict - damage caused by natural phenomena - regulatory compliance defence - state of the art defence

The ELD clearly states that it shall not give private parties a right of compensation as a consequence of environmental damage or of an imminent threat of such damage.⁸⁸ The subject of liability for damage inflicted upon such third parties will be discussed in the next subsection.

5.1.4 Damage to health and property onshore

The third category of liability under CCS is liability for damage to health and property of third parties. The CCS Directive indicates that the liabilities which are not mentioned in the Directive are to be dealt with on a national level.⁸⁹ This is the case with this category of liability. Since the implementation of the Directive through the Mining Act in 2011 did not entail any specific regulation for liabilities, the regular national civil liability legislation applies. The Dutch legislation encompasses an extensive set of rules dealing with fault-based as well as risk-based liabilities.

A. Fault-based liability

Under fault-based liability, the most common basis for liability is article 6:162 Dutch Civil Code. In short, this article dictates that if a person’s action or omission causes harm to someone else, the harmed person should be compensated if it was an unlawful action or omission, which was imputable to the person held liable. Possible damages to compensate include personal injuries, damaged goods, costs made to prevent damage (also for others), costs made to establish the damage, and costs for

⁸⁶ Directive 2004/35/EC, article 4 (1).

⁸⁷ Directive 2004/35/EC, article 3 (1) (b).

⁸⁸ Directive 2004/35/EC, article 3 (3).

⁸⁹ See recital 34 of the CCS Directive.

the procedure. If an incident occurs and there is damage, and the operator did not comply with the conditions of the different permits, he will be held liable. But since permits generally cover the interests of society as a whole or more in particular the environment, and not the specific interests of third parties, an operator might be liable to third parties even if he did comply with the permit. Naturally, the operator has a number of defences at his disposal. Whether or not the operator can be held liable is highly dependent on the circumstances of the case.

The liability based on article 6:162 Dutch Civil Code ends when the responsibility for the site is transferred. The legislator has regulated the period in which plaintiffs may claim damages. This may either be five years after the plaintiff knew of the damage and knew of the liable person (short period), or twenty to thirty years after the event that caused the damage occurred (long period).⁹⁰ Below in table 5.4, a schematic overview of the most relevant elements of fault-based liability for damage to third parties is provided.

Table 5.4: Overview of fault-based liability for damage to third parties

Civil law liability, tortuous / fault-based liability	
Damage	Personal injuries, damaged goods, costs made to prevent damage (also for others), costs made by plaintiff to establish the damage and costs for the procedure
Liability horizon	5 years after the damage and liable person are known to the plaintiff in case of personal injury, for other damages 20 years after the event
Liable persons	Operator (responsible party for the site)
Type of liability	Fault-based liability
Possible defences	<ul style="list-style-type: none"> - State of the art defence (unlawfulness of the act) - Grounds for justification - The causal relation between act and damage - The act is not imputable to the operator - The damage of the plaintiff is not specific, the damage is suffered by all equally

B. Risk-based liability

The Dutch Civil Code identifies a few categories of activities for which strict or risk-based liability applies. As we have indicated above, in such cases the plaintiff does not have to prove that the actions were unlawful or imputable to the operator in order for liability to be established. Damages, for which risk-based liability exists in the Netherlands, are damages as a result of the use of dangerous substances (Article 6:175 BW); damage as a result of pollution of air, water or soil caused by substances deposited on a waste disposal site (Article 6:176 BW); and damage as a result of blow-outs or soil movement triggered by mining works (Article 6:177 BW). These categories of damage relevant for CCS will be discussed below.

Whether CO₂ is to be viewed as a dangerous substance can be questioned. It has not been listed as a dangerous substance under European legislation, but under national legislation it may be viewed as posing a danger under certain circumstances. It can thus not be stated categorically that CO₂ will not be considered to fall under article 6:175 BW under any circumstances. It will be difficult, however, to establish that CO₂ is an inherently dangerous substance since it is among other things used for consumption in soft drinks (Wissink 2009, p. 249-250).

Article 6:177 BW on liability for mining activities seems a logical ground for liability for CCS activities. This article deals with blow-outs of minerals as well as soil movement. Since CO₂ is not a mineral, the liability based on this article does not arise for blow-out of CO₂, but it does arise for the blow-out of minerals caused by the injection of CO₂. Furthermore, the operator will be liable for a blow-out of any substance including CO₂ caused by defective equipment or a defective man-made structure that is part of the mining work, as dictated by Articles 6:173 BW and 6:174 BW respectively (Wissink 2009, p. 254). With regard to soil movements, article 6:177 BW is also applicable to CO₂ storage, as the injection might result in damage to buildings in the area of the storage location.

⁹⁰ See article 3:310 BW.

An indicative overview of who the liable person is with respect to all risk-based liabilities, the liability horizons as well as possible defences can be found in table 5.5 below. For more extensive information on the subject, please view CATO2 Deliverable D4.1.01. It can be concluded, however, that some risk-related liabilities as described in the Dutch Civil Code definitely apply to storage of CO₂ onshore, whereas the applicability of others will have to be determined by courts, governments and local authorities.

Table 5.5: Overview of risk-based liability for damage to third parties

Relevant article	Dangerous substance 6:175	Blow-out of minerals 6:177	Failing Equipment / structure 6:173/174	Soil movement 6:177
Damage	Same damage as torturous liability	Same damage as torturous liability	Same damage as torturous liability	Same damage as torturous liability
Liability horizon	30 years after the event causing damage, or 5 years after the discovery of personal injury	Liability lapses 5 years after closure or the site	20 years after the event causing damage, or 5 years after the discovery of personal injury	30 years after the event causing damage, or 5 years after the discovery of personal injury
Liable persons	Licensee/Operator (until the transfer)	Licensee/Operator at the time of the blow-out or the last operator after the site is closed	Owner/Operator at the time that the damage became known, or the last operator after the site is closed	Licensee/Operator at the time that the damage became known, or the last operator after the site is closed
Type of liability	Risk-based liability	Risk-based liability	Risk-based liability	Risk-based liability
Possible defences	art 6:178 + state of the art	art 6:178	art 6:178 + tort defences	art 6:178 + technical committee

5.1.5 Conclusion

From the analysis above can be concluded that the liability framework for onshore CCS in the Netherlands has not morphed into a crystal clear system yet. In the absence of jurisprudence in the field of CCS, it remains especially unclear how the law is applied in cases of damage to the health and property of third persons. The Dutch government is still working on an amendment of the Civil Code to provide more clarity in this respect, but it is unclear when this process will be finished.⁹¹

⁹¹ Originally, the Bill was supposed to be ready mid-2011.

5.2 Supervision and enforcement onshore

5.2.1 Supervision onshore

The supervision of CCS in the Netherlands is regulated in the *Mijnbouwwet* (Mbw), which is the national Mining Act.⁹² This law entered into force in 2003 but at that time it contained no specific reference to permanent storage of CO₂ yet. By the necessity of implementing the CCS Directive in national law, the Mining Act was crucially updated in October 2011. It now contains an entire chapter dedicated to the permitting of permanent storage of CO₂, dealing with topics such as the issuing, review and withdrawal of storage permits as well as conditions for closure of the storage site.⁹³ Previously existing provisions of the Mining Act on supervision and enforcement have been amended to cover CO₂ storage, as we will find below. First, we will discuss the supervision or monitoring conducted by the operator itself. Secondly, we will look at the supervision activities performed by the State.

A By the operator

Supervision-related duties are to a large extent primarily performed by the holder of the storage permit. This is indicated by the CCS Directive, which puts the obligation on Member States to ensure that the operator carries out monitoring activities.⁹⁴ This has been implemented in the Mining Act, which, for instance, imposes an obligation on the holder of the permit to keep a detailed register of the amounts and the characteristics of the delivered, stored and leaked CO₂ streams, including their composition.⁹⁵

Further rules on monitoring are to be found in the updated Mining Decree, which incorporates the changes necessary for the proper implementation of the CCS Directive. The Decree dictates that the operator must organize its monitoring activities in a monitoring plan. This plan entails the methods of monitoring the injection facilities, the storage complex and the environment in the direct vicinity.⁹⁶ It further indicates that this monitoring plan must be set up in compliance with the instructions listed in section 1.1 of Annex II of the CCS Directive. It follows from this section that the plan will have to include continuous or intermittent monitoring of, among other things, the fugitive emissions of CO₂ at the injection facility, CO₂ volumetric flow at injection wellheads, CO₂ pressure and temperature at such wellheads, chemical analysis of the injected material, as well as reservoir temperature and pressure.⁹⁷

With respect to the results of these monitoring activities, the Mining Act dictates that the holder of the permit is required to furnish the Minister of Economic Affairs (hereinafter referred to as the Minister) with the following information on a yearly basis: (1) the results of its own monitoring of the stored CO₂ with mention of the used technology, (2) the amounts and the characteristics of the delivered and stored CO₂ streams and their composition, (3) proof that the required financial security⁹⁸ has been set and retained and (4) other data which the Minister finds relevant.⁹⁹

B By the State

The CCS Directive stipulates that Member States shall ensure that the competent authorities organise a system of routine and non-routine inspections of all storage complexes. The purpose of these inspections is to check and promote compliance with the requirements of the Directive and to monitor

⁹² *Wet van 31 oktober 2002, houdende regels met betrekking tot het onderzoek naar het winnen van delfstoffen en met betrekking tot met de mijnbouw verwante activiteiten (Mijnbouwwet)*, hereafter Mining Act.

⁹³ See chapter 3 of the Mining Act.

⁹⁴ CCS Directive, article 13 (1).

⁹⁵ Mining Act, Article 31f (1)

⁹⁶ Mining Decree, article 29f (2). Section 1.1 of Annex II of the CCS Directive provides instructions on the content of the monitoring plan.

⁹⁷ CCS Directive, Annex II, section 1.1.

⁹⁸ For more information on the required financial security, see articles 31b (n) and section 4.2 of the Mining Act.

⁹⁹ Mining Act, article 31g (1)

the effects on the environment and human health.¹⁰⁰ This is a necessary verification mechanism since otherwise the actions of the Minister would be based entirely on the findings provided by the holder of the permit. Considering the fact that the holder might have reasons to *window-dress* in case of leakages of CO₂, it seems appropriate to inspect storage sites on a regular basis.

The Mining Act contains a section on supervision by the State Supervision of Mines (*Staatstoezicht op de Mijnen*, hereinafter referred to as SSM), which is the Dutch mining supervising authority governed by the Ministry of Economic Affairs.¹⁰¹ Among its tasks is monitoring the storage of substances. Specifically with regard to the permanent storage of CO₂, the Mining Act prescribes that the Inspector General of the SSM shall draft a report on the compliance with the conditions and the prescribed measures after every inspection of a CO₂ storage complex.¹⁰² In addition, the Inspector General reports to the Minister on a yearly basis on all the work done by the SSM.¹⁰³

The Dutch law maker decided that it was not necessary to implement in law at what intervals these inspections take place, because it concerns “factual acts”.¹⁰⁴ The CCS Directive, however, dictates that routine inspections shall be carried out at least once a year until three years after closure and every five years until transfer of responsibility to the competent authority has occurred.¹⁰⁵ The overall task of supervision of all mining activities is carried out by the civil servants employed by the SSM.

5.2.2 Enforcement onshore

The Mining Act contains only a very limited section on enforcement. It merely states that the Minister is authorized to impose an administrative order, called a *last onder bestuursdwang*, in order to enforce the obligations contained in it.¹⁰⁶ This is a concept under Dutch Administrative Law, which constitutes (1) an imposition on the holder of the permit to restore the infringement in part or completely and, (2) if this restoration is not effectuated in time or at all by the holder of the permit, an authorization of the Minister itself to restore the infringement.¹⁰⁷ If the latter option applies, the permit holder can subsequently be made to reimburse the costs of restoration incurred by the Minister.

As an ultimate remedy, the Minister has the option under the Mining Act of changing the storage permit or even withdrawing it entirely in the following instances: (1) if there are leakages or significant irregularities, (2) if it turns out that the conditions of the storage permit are not met or if there is a risk of leakages or significant irregularities, (3) if such action turns out to be necessary based on the most recent scientific findings and technological progress, and (4) if the financial security retained by the holder of the permit turns out to be insufficient.¹⁰⁸

After the permit to permanently store CO₂ has been withdrawn by the Minister, the former permit holder is relieved of its monitoring duties. From then on, monitoring as well as corrective measures and preventive and remedial action will be performed by the Minister, *i.e.* the SSM.¹⁰⁹

¹⁰⁰ CCS Directive, article 15 (1).

¹⁰¹ Mining Act, Chapter 8, section 1.

¹⁰² Mining Act, Article 127(2) .

¹⁰³ Mining Act, article 128(1) .

¹⁰⁴ *Memorie van Toelichting bij de wijziging van de Mijnbouwwet in verband met implementatie van richtlijn 2009/31/EG*, file 32343, No. 3, p. 24.

¹⁰⁵ CCS Directive, article 15 (3).

¹⁰⁶ Mining Act, Article 132.

¹⁰⁷ *Algemene wet Bestuursrecht*, Article 5:21.

¹⁰⁸ Mining Act, article 31h (1)

¹⁰⁹ Mining Act, article 31k (1)

6 Offshore CCS – legal status quo, challenges and gaps

6.1 Liability offshore

6.1.1 Introduction

As discussed in the previous chapter, the liability for CCS activities onshore is covered by a patchwork of provisions which are national and international, as well as specific and general. In this subchapter, the aim is to find out to what extent this also applies to the offshore areas of the territorial sea and beyond. It will take into account the findings from chapter 4 with regard to the applicability of national, European and international law.

6.1.2 Damage to the climate offshore

As we have found in the previous chapter, the CCS Directive stipulates that damage to the climate is regulated in the ETS Directive. First, the ETS Directive lists the capture, transport and permanent storage of CO₂ as activities for which an ETS permit is required.¹¹⁰ Subsequently, it stipulates that captured and subsequently permanently stored CO₂ count as not emitted under the ETS permit. To this effect, the amended ETS Directive provides that:

“[a]n obligation to surrender allowances shall not arise in respect of emissions verified as captured and transported for permanent storage to a facility for which a permit is in force in accordance with Directive 2009/31/EC (...) on the geological storage of carbon dioxide.”¹¹¹

However, if a part of such captured CO₂ escapes into the atmosphere through, for instance, leakage or venting, it will again count as CO₂ emitted under ETS. The holder of the emissions permit will have to pay ETS allowances for the emitted CO₂ because it was not stored permanently as intended.

All parties involved in the different phases of CCS must have an ETS permit: the operator of the capture installation, the operator of the transport network and the operator of the storage site. In the offshore context, it is unclear whether this includes the operator of a ship which transports the CO₂ to the storage site. This is because when the CCS Directive was drafted, the parties had not envisaged the use of ships for transportation of CO₂.

It is inconsequential for climate damage whether the emission of CO₂ occurs on land, within the territorial sea, the EEZ, or even beyond; the operator who is responsible for the CO₂ at the moment of the incident will be liable for it wherever the emission happens. If this were not the case, the operator of a ship could just load the CO₂ in the harbour of a Member State and sail off to the high seas and let the CO₂ escape without any consequence. The same applies to a transport network operator.

6.1.3 Damage to the environment offshore

In chapter 5 on onshore liability, we established that it is important to distinguish environmental damage at the separate stages of CCS. The same distinction needs to be applied to environmental damage which occurs offshore. Since capture of CO₂ is not envisaged offshore, we will make a distinction here between damage to the environment that occurs during the other two phases of CCS: the transport phase and the storage phase. Furthermore, given that the extent of the jurisdiction of Member States and the applicability of national and European legislation differs in the various relevant maritime zones, we will first discuss how environmental liability is regulated within the territorial sea, and then how, if at all, it is regulated outside the territorial sea.

¹¹⁰ Directive 2003/87/EC, article 4 *juncto* Annex I (as updated by Directive 2009/29/EC).

¹¹¹ Directive 2009/29/EC, article 1 (15) (b).

6.1.3.1 Within the territorial sea

A During storage

In the discussion of liability for environmental damage onshore, we established that the Environmental Liability Directive (ELD) and the Dutch Environmental Management Act (EMA) apply within the land territory of the Netherlands, as far as this damage is caused during the storage phase. The question arises whether these two legislative acts apply in the territorial sea in the same way as they do on land.

In the subchapter on maritime zones, we found that national law applies in principle to the whole territory of the State. This territory does not only consist of the land mass, but also of the territorial sea. This means that in principle, the EMA applies to the territorial sea to the same extent as it does to land territory.¹¹²

The ELD is a piece of secondary EU legislation which lacks a clear geographical scope. We established in chapter 4 (subchapter on applicability of EU law) that when the text of a piece of secondary legislation does not clearly provide the extent of its geographical application, the answer to the question of whether it applies to the EEZ and the continental shelf depends on close examination of the content of that piece of legislation itself and on the context of the specific case. Only the CJEU can provide authoritative clarity through a judgement. Until then, we can make our own assessment which in this case is best done by looking at the CCS Directive. With respect to geological storage of CO₂ offshore, the CCS Directive clearly stipulates that it:

“ (...) shall apply to the geological storage of CO₂ in *the territory* of the Member States, *their exclusive economic zones* and on *their continental shelves* within the meaning of the United Nations Convention on the Law of the Sea (Unclos).”¹¹³

Furthermore, the CCS Directive explicitly states that:

“[I]liability for environmental damage (damage to protected species and natural habitats, water and land) is regulated by Directive 2004/35/EC (...) on environmental liability with regard to the prevention and remedying of environmental damage *which should be applied to the operation of storage sites pursuant to this Directive.*”¹¹⁴

Reading these two in combination, it is fair to conclude that the European legislator clearly had the intention to let the ELD apply to storage of CO₂ in the territorial sea. If this is indeed the case, it means that the risk-based liability regime will be applicable to geological storage of CO₂ in the Dutch territorial sea.¹¹⁵ There is thus no need to establish a fault or negligent behaviour of the operator in order for liability to be incurred by the operator. There will, however, need to be a “significant adverse effect” caused by the leakage, as is also the case with onshore storage.¹¹⁶

Scenario 1A

CO₂ is injected into a geological formation deep beneath the seabed of the Dutch territorial sea. After the operation phase, the site is closed and the structure removed. Due to a faulty construction of the seal of the well, the seal eventually gives way. This causes part of the injected CO₂ to leak out to the water surface over an extended period of time. As a consequence, the pH value of the water in the direct vicinity is increased. This will qualify as environmental damage to the water in the sense of the

¹¹² Article 17.13 of the EMA dictates that the operator shall take all practicable steps to immediately control, contain, remove or otherwise manage the relevant contaminants and/or any other damage factors in order to limit or to prevent further environmental damage and adverse effects on human health or further impairment of services. It further stipulates, in combination with article 17.14, the procedure that needs to be followed by the operator for taking the necessary remedial measures. These articles implement article 6 of the ELD.

¹¹³ CCS Directive, article 2 (1). Emphasis added.

¹¹⁴ CCS Directive, recital 30. Emphasis added.

¹¹⁵ Directive 2004/35 EC, article 3 (1)(a).

¹¹⁶ Directive 2004/35 EC, article 2 (1)(a).

ELD if it “significantly adversely affects the ecological, chemical and/or quantitative status and/or ecological potential (...) of the waters concerned”.¹¹⁷ If this is found to be the case, the operator of the storage site is liable to the coastal State for the environmental damage caused by the leakage. There is no need to establish fault or negligence on the part of the operator since the storage of CO₂ is covered by the risk-based liability regime. The operator will have to take the necessary remedial measures after having consulted the competent authority.¹¹⁸ If the operator fails to take such measures, the competent authority may take such measures itself and recover the costs from the operator.¹¹⁹

B During transport

As indicated above and in chapter 5.1 on liability onshore, the CCS Directive only explicitly puts the storage-phase of CCS within the scope of the ELD. Environmental damage which occurs during transport is thus not included, and therefore not categorised within the risk-based liability regime of the ELD. For the situation onshore, we have found that this means that if environmental damage should occur during the transport phase, liability and compensation will be based on the regular fault-based regime of the Member State in question. Only when fault or negligence has caused the emission during capture or transport, will the operator be held liable.

Importantly, as is the case onshore, when it is concluded that there was environmental damage to protected species and natural habitats in the territorial sea, caused by an operator who has been at fault or negligent, the ELD does apply.¹²⁰

Scenario 1B

A tanker vessel, registered in the Netherlands and flying the Dutch flag, ships compressed CO₂ from the Netherlands to Denmark for permanent storage. It experiences a calamity during its passage through the Dutch territorial waters. A personal error by a technician on board the ship causes one of the CO₂-containing tanks to burst, resulting in a dense cloud of CO₂ to descend on a flock of Fea's Petrels (*Pterodroma feae*) beside the tanker. The birds, which are a protected species under the ELD as indicated by the Birds Directive,¹²¹ suffocate as a consequence. The operator can be held liable for environmental damage to the Netherlands if the prerequisites under the fault-based regime of the ELD are met. The competent authority, i.e. the Minister of Economic Affairs, will have the duty to establish which operator has caused the damage, to assess the significance of the damage, and to determine which remedial measures need to be taken.¹²² In order to be considered environmental damage in the sense of the ELD, the death of the flock of birds will need to have “significant adverse effects on reaching or maintaining the favourable conservation status” of the affected species.¹²³ Finally the competent authority will need to establish that the operator was at fault or negligent.

6.1.3.2 Outside the territorial sea

The EEZ and continental plate are not part of the territory of the coastal State. The EMA does thus in principle not apply to these maritime zones, except, as we have found in chapter 4.4 for certain specific issues. In addition, the applicability of the ELD needs to be discussed. The question that thus arises is whether these two legislative acts apply to the EEZ and continental plate in the same way as they do to land.

¹¹⁷ Directive 2004/35/EC, article 2 (1) (b).

¹¹⁸ Directive 2004/35/EC, article 6 (1) (b) *juncto* article 7.

¹¹⁹ Directive 2004/35/EC, article 6 (3) *juncto* article 8 (2).

¹²⁰ Directive 2004/35/EC, article 3 (1)(b).

¹²¹ Directive 2009/147/EC on the conservation of wild birds, Annex I. This Directive replaces the old Directive 74/409/EEC on conservation of wild birds, to which the ELD refers in article 2 (3) (a).

¹²² Directive 2004/35/EC, article 11 (2).

¹²³ Directive 2004/35/EC, article 2 (1)(a).

A During storage

In subparagraph 4.1.3.1 (A) above, we found that the CCS Directive explicitly stipulates that it applies not only to the territory of the Member States, but also to their exclusive economic zones and continental shelves. Considering the quoted references to the ELD, it follows that the ELD was intended by the Commission to apply to storage activities taking place in those maritime zones. The risk-based liability regime will thus apply,¹²⁴ meaning that there is no need to establish a fault or negligent behaviour of the operator in order for liability to be incurred by the operator. There will, however, need to be a “significant adverse effect” caused by the leakage, as is the case with onshore storage.¹²⁵

An interesting factor that comes into play outside the territorial sea is that the storage no longer takes place within the territory of a Member State, but merely within an area where the State has certain sovereign rights and limited jurisdiction. Nonetheless, it seems obvious that environmental liability in case of leakage is incurred against the coastal State to which the EEZ belongs. This is corroborated by the fact that UNCLOS gives the coastal State jurisdiction with regard to “the protection and preservation of the marine environment”.¹²⁶

Scenario 2A

Imagine the same scenario as discussed in 1A, only this time the CO₂-storage site is not located in the Dutch territorial sea but in the Dutch EEZ. The damage to the water will qualify as environmental damage in the sense of the ELD if it “significantly adversely affects the ecological, chemical and/or quantitative status and/or ecological potential (...) of the waters concerned”.¹²⁷ If this is found to be the case, the operator of the storage site is liable to the coastal State for the environmental damage caused by the leakage. There is no need to establish fault or negligence on the part of the operator since the storage of CO₂ is covered by the risk-based liability regime. The operator will have to take the necessary remedial measures after having consulted the competent authority.¹²⁸ If the operator fails to take such measures, the competent authority may take such measures itself and recover the costs from the operator.¹²⁹

B During transport

We have found earlier that transport of CO₂ is not covered by the CCS Directive. It is not clear, therefore, whether the ELD applies to environmental damage caused by leakage of CO₂ during transport via pipeline or ship. If the ELD is found to apply to CCS transport in the EEZ, then article 3 (1)(b) stipulates that liability under this Directive will only arise with respect to:

“damage to protected species and natural habitats (...) and to any imminent threat of such damage occurring by reason of those [transport] activities, whenever the operator has been at fault or negligent.”¹³⁰

This implies that the ELD does not apply to any environmental damage to the water itself of the EEZ, as long as it does not entail any damage to protected species or natural habitats.¹³¹ It appears that liability for such damage will not be covered by any legal framework, as there is no international legislative framework for such liability in existence yet. However, States have jurisdiction to regulate “the protection and preservation of the marine environment”¹³² in the EEZ, so national environmental legislation may apply there if the law explicitly provides that it is applicable to the water of the EEZ.

¹²⁴ Directive 2004/35/EC, article 3 (1)(a).

¹²⁵ Directive 2004/35/EC, article 2 (1)(a).

¹²⁶ UNCLOS, article 56 (1)(b)(iii).

¹²⁷ Directive 2004/35/EC, article 2 (1) (b).

¹²⁸ Directive 2004/35/EC, article 6 (1) (b) *juncto* article 7.

¹²⁹ Directive 2004/35/EC, article 6 (3) *juncto* article 8 (2).

¹³⁰ Directive 2004/35 EC, article 3 (1)(b).

¹³¹ Damage to land appears not to be an issue in the EEZ. Any land mass located in the EEZ should be islands, which are part of the territory of the State and thus fall under that regime.

¹³² UNCLOS, article 56 (1)(b)(iii).

Scenario 2B

Imagine the same scenario as under 1B, only this time the incident happens while the ship is sailing through the Dutch EEZ. The death of the protected birds during the transport of the CO₂ is covered by the ELD as indicated above. The operator can be held liable for the environmental damage to the Netherlands if the prerequisites under the fault-based regime of the ELD are met. The competent authority, i.e. the Minister of Economic Affairs, will have the duty to establish which operator has caused the damage, to assess the significance of the damage, and to determine which remedial measures need to be taken.¹³³ Just as in scenario 1B, the death of the flock of birds will need to have “significant adverse effects on reaching or maintaining the favourable conservation status” of the affected species in order to be considered environmental damage in the sense of the ELD.¹³⁴ Finally the competent authority will need to establish that the operator was at fault or negligent.

6.1.4 Damage to health and property offshore

6.1.4.1 Within the territorial sea

Onshore, damage to health and property of third persons is regulated under the fault-based and risk-based clauses of the Dutch Civil Code (*Burgelijk Wetboek*, or *BW*). As we have found in chapter 4.4, national law applies in principle to the whole territory of a State. Since the territorial sea is considered to be part of the territory of the coastal State, the *BW* also applies to the territorial sea. Since there is as yet no specific clause in the *BW* dealing with liability for CCS related activities, the regular framework for civil liability applies.

Scenario 3A

A tanker vessel, registered in the Netherlands and flying the Dutch flag, ships compressed CO₂ from the Netherlands to Denmark for permanent storage. It experiences a calamity during its passage through the Dutch territorial waters. A personal error by a technician on board the ship causes one of the CO₂ containing tanks to burst, resulting in a dense cloud of CO₂ to descend on a yacht, registered in the Netherlands and flying the Dutch flag, sailing beside the tanker. The owner of the ship suffocates as a consequence. His family sues the operator for damages (*overlijdensschade*). The family of the deceased has recourse to the fault-based liability regime of article 6:162 *BW* on tort.

It is important to note at this stage that there are scenarios imaginable where a CO₂-related incident takes place within the Dutch territorial sea, but the Dutch Civil Code will nevertheless not be applicable to the liability for health and property of the affected parties. In 2007, the EU issued the ‘Rome II’ Regulation on the law applicable to non-contractual obligations.¹³⁵ This provides rules on which Member State’s law should apply in cases involving a conflict of laws to non-contractual obligations in civil and commercial matters.¹³⁶ The general rule formulated by ‘Rome II’ is provided by article 4(1):

“Unless otherwise provided for in this Regulation, the law applicable to a non-contractual obligation arising out of a tort/delict shall be the law of *the country in which the damage occurs* irrespective of the country in which the event giving rise to the damage occurred and irrespective of the country or countries in which the indirect consequences of that event occur.”¹³⁷

¹³³ Directive 2004/35/EC, article 11 (2).

¹³⁴ Directive 2004/35/EC, article 2 (1)(a).

¹³⁵ Regulation (EC) No 864/2007 of the European Parliament and of the Council of 11 July 2007 on the law applicable to non-contractual obligations (Rome II) [2007] OJ L 199/40 [hereinafter Regulation 864/2007].

¹³⁶ Regulation 864/2007, article 1 (1).

¹³⁷ Regulation 864/2007, article 4 (1). Emphasis added.

The territorial sea is part of the territory of the State and can thus be viewed as part of ‘the country in which the damage occurs’. So generally it can be stated that as far as the Dutch territorial sea is concerned, it does not matter what the nationality of the ships or natural persons is; the Dutch Civil Code will apply with respect to liability for damage to health and property since the damage occurs in the Netherlands territory.

However, this general rule is followed by an important exception in article 4(2), which stipulates the following:

“However, where the person claimed to be liable and the person sustaining damage *both* have their habitual residence in the same country at the time when the damage occurs, the law of that country shall apply.”¹³⁸

For the purpose of this Regulation, for companies and other bodies, corporate or unincorporated, the term ‘habitual residence’ means their place of central administration.¹³⁹ One could thus imagine a scenario such as discussed in Scenario 3A where a CO₂-related incident takes place within the confines of the Dutch territorial sea to which the Dutch Civil Code is not applicable.

Scenario 3B

A tanker vessel, registered in Germany and flying the German flag, ships compressed CO₂ from the Netherlands to Denmark for permanent storage. It experiences a calamity during its passage through the Dutch territorial waters. A personal error by a technician on board the ship causes one of the CO₂ containing tanks to burst, resulting in a dense cloud of CO₂ to descend on a yacht, registered in Germany and flying the German flag, sailing beside the tanker. The owner of the ship, who is a German citizen, suffocates as a consequence. His family sues the operator for damages. The family of the deceased has recourse to the German liability regime due to the exception provided under article 4(2) of the Rome II Regulation. The person claimed to be liable and the person sustaining damage both have their habitual residence in the Germany at the time when the damage occurs, so the German law should apply.

Naturally, CO₂-related incidents causing damage to the health and property of third persons can also occur in the territorial sea after the operation phase of CCS.

Scenario 3C

CO₂ is injected into a geological formation deep beneath the seabed of the Dutch territorial sea. After the operation phase, the site is closed and the structure removed. Due to a faulty construction of the seal of the well, one night the seal eventually gives way causing part of the injected CO₂ to leak out to the water surface. The evening before, a Dutch yacht has dropped anchor right above the storage site and the owner is fast asleep when the incident happens. He dies as a consequence of being suffocated by the high concentration of CO₂ in the air he breathes. His family sues the operator for damages (*overlijdensschade*). The family of the deceased has recourse to the risk-based liability regime of article 6:174 BW on liability for faulty structures (*Aansprakelijkheid voor opstallen*).

6.1.4.2 Outside the territorial sea

The EEZ is not part of the territory of the coastal State. The State does thus not have sovereignty there, but it does have certain exclusive rights and/or functional jurisdiction as stipulated in UNCLOS. That means that only certain national laws are applicable. Damage to health and safety of third persons is regulated through the Dutch Civil Code, which does not contain an explicit reference to its geographical scope of application. As we have concluded in section 2.4 above, this means that the Dutch Civil Code is not applicable to the Dutch EEZ.

This does not necessarily completely exclude the applicability of certain parts of the Dutch Civil Code to incidents taking place in the Dutch EEZ. As we discussed above, the EU issued the

¹³⁸ Regulation 864/2007, article 4 (2). Emphasis added

¹³⁹ Regulation 864/2007, article 23 (1).

'Rome II' Regulation on which Member State's law should apply in cases involving a conflict of laws to non-contractual obligations in civil and commercial matters.¹⁴⁰ The general rule formulated by 'Rome II' is the following:

"Unless otherwise provided for in this Regulation, the law applicable to a non-contractual obligation arising out of a tort/delict shall be the law of *the country in which the damage occurs* irrespective of the country in which the event giving rise to the damage occurred and irrespective of the country or countries in which the indirect consequences of that event occur."¹⁴¹

We have found earlier that the EEZ is not part of the territory of the State and can thus not be viewed as part of 'the country in which the damage occurs', so the general rule of article 4(1) of Rome II is not applicable here. The exception of article 4(2), however, does appear to apply as it does not speak of 'the country in which the damage occurs'. It stipulates:

"However, where the person claimed to be liable and the person sustaining damage *both* have their habitual residence in the same country at the time when the damage occurs, the law of that country shall apply."¹⁴²

The term 'habitual residence' for the purpose of this Regulation means for companies and other bodies, corporate or unincorporated, their place of central administration.¹⁴³ One could thus imagine a scenario taking place in the EEZ where both parties to the incident are Dutch, bringing the exception provided by article 4(2) of the Rome II Regulation into play. This would make the Dutch Civil Code applicable to the incident.

Scenario 4A

Imagine the same scenario as discussed in 3A, only this time the incident takes place in the Dutch EEZ. As we have just found, the Dutch Civil Code generally does not apply there. However, since both ships are registered in the Netherlands and the victim resides there, it appears that the BW does apply after all because of the Rome II Regulation. The person claimed to be liable and the person sustaining damage both have their habitual residence in the Netherlands at the time when the damage occurs, so the Dutch law should apply.

Just as well, a scenario could be imagined where the Civil Code of another Member State applies to an incident taking place in the Dutch EEZ.

Scenario 4B

Imagine the scenario discussed in 3B. A tanker vessel, registered in Germany and flying the German flag, ships compressed CO₂ from the Netherlands to Denmark for permanent storage. However, in this scenario it experiences the calamity during its passage through the Dutch EEZ. The dense cloud of CO₂ descends on the German yacht, and the German owner of the ship suffocates as a consequence. His family sues the operator for damages. The family of the deceased has recourse to the German liability regime due to the exception provided under article 4(2) of the Rome II Regulation. The person claimed to be liable and the person sustaining damage both have their habitual residence in the Germany at the time when the damage occurs, so the German law should apply.

CO₂-related incidents causing damage to the health and property of third persons can also occur in the EEZ after the operation phase of CCS.

¹⁴⁰ Regulation 864/2007, article 1 (1).

¹⁴¹ Regulation 864/2007, article 4 (1). Emphasis added.

¹⁴² Regulation 864/2007, article 4 (2). Emphasis added.

¹⁴³ Regulation 864/2007, article 23 (1).

Scenario 4C

Imagine the same scenario as discussed in 3C, only this time the incident takes place in the Dutch EEZ where, as we have just found, the Dutch Civil Code does not apply. There will thus be no recourse to Article 6:174 BW, meaning no means for a remedy under Dutch private law as it stands today. There appears to be no international legal framework to mend this lacuna.

It is interesting to note that, in contrast to CO₂, the civil liability for offshore oil spills is extensively regulated, among others by the IMO. One of the reasons why oil spill liability is regulated broadly, is because oil spills have a far greater potential for causing damage or harm to health and property than CO₂ does. Carbon dioxide which leaks from an offshore storage site, a ship, or a pipeline may provide a risk for the health of people in the immediate vicinity, but will eventually disperse to non-harmful concentrations. Oil which has been spilled offshore, on the other hand, does not and requires intensive response measures to contain its harmfulness. Due to its buoyant nature, it can have dramatic consequences far beyond the location of the spill.

6.1.5 Conclusion

Considering the above, it is fair to conclude that, as far as liability offshore is concerned, the main problems lie with the liability for damage to the health and property of third parties. The Dutch Civil Code does generally not apply outside territorial waters, apart from the instances covered by the Rome II Regulation mentioned above. Therefore the issue of liability for damage to third parties offshore is not perfectly regulated and leaves significant insecurity. It should be noted that the CCS Directive provides a framework for CCS activities in Europe, which by no means claims to be comprehensive. It implicitly instructs Member States to regulate liability for health and property on a national level.¹⁴⁴ A bill to amend the Dutch Civil Code with regard to long-term liability for CO₂ storage is in preparation. It is not expected, however, that this bill will extend the applicability of the Code to waters outside the territorial sea.

6.2 Supervision & Enforcement offshore

6.2.1 Introduction

In the last section of the previous chapter, we outlined how CCS activities are supervised and how the rules that control these activities are enforced. The question that arises is to what extent this also applies offshore. We will see, in particular, whether the issue of maritime zones with their differing degrees of jurisdiction and control on the part of the coastal State may be a factor here.

6.2.2 Supervision in the Dutch territorial sea

We have established in previous sections that the territorial sea is part of the territory of the coastal State, which means that within its boundaries national law applies in principle to the same extent as it does onshore. This is also true for the rules on supervision of CCS activities. The primary monitoring obligations, as discussed in chapter 5 sub C, are thus to be performed by the operator of the offshore storage site. He will have to set up a monitoring plan and perform the duties which it entails. Furthermore, he will have to communicate the monitoring results to the Minister on a yearly basis.

The State has the same duty to organise a system of routine and non-routine inspections of all storage complexes as it does on land. The inspections will be performed by the civil servants of the State Supervision of Mines (SSM) who, in accordance with the CCS Directive, will have to inspect

¹⁴⁴ Recital 34 of the CCS Directive indicates that indicates that the liabilities which are not mentioned in the Directive are to be dealt with on a national level. Nothing keeps Member States from doing this in a coordinated way with the neighbouring States with which they are likely to cooperate in their CCS endeavours.

every storage location at least once a year until three years after closure. The Mining Act states that permit holders can, in certain cases, be obligated to transport the indicated civil servants to the designated locations to perform their inspecting duties.¹⁴⁵ It is unclear, however, how these inspections will take place in a marine environment. If the offshore storage site has an injection facility which has an above-water structure with the necessary facilities, the inspectors could visit the site by helicopter or by boat.¹⁴⁶ Yet it is uncertain how the SSM is to inspect an injection facility which lacks such above-water facilities, as well as closed and abandoned injection sites of which the facilities have been removed.

6.2.3 Enforcement in the Dutch territorial sea

A State supervision of Mines (SSM)

In the territorial sea, the Minister has the same enforcement measures at its disposal as it does onshore. So, as discussed in chapter 5, it is authorized to impose an administrative order, called a *last onder bestuursdwang*, in order to enforce the obligations contained in the Mining Act.¹⁴⁷ As an ultimate remedy, the Minister has the option under the Mining Act of changing the storage permit or even withdrawing it entirely when (1) there are leakages or significant irregularities, (2) if it turns out that the conditions of the storage permit are not met or if there is a risk of leakages or significant irregularities, (3) if such action turns out to be necessary based on the most recent scientific findings and technological progress, and (4) if the financial security retained by the holder of the permit turns out to be insufficient.¹⁴⁸

B Other

The Netherlands Coastguard is charged with the enforcement of legislation regarding environment, fisheries, extractive activities, and navigation both in the territorial sea, as well as in the EEZ.¹⁴⁹ Although the storage of CO₂ does not entail the excavation but rather the injection of a substance and is thus technically an “injective activity” rather than an “extractive activity”, it is fair to assume that the coast guard will be called upon by the SSM to assist in the execution of enforcement activities offshore related to CCS. This assumption is strengthened by the fact that the storage of CO₂ is covered by the Mining Act.

6.2.4 Supervision in the Dutch EEZ

We have found earlier that coastal States do not enjoy full sovereignty in their EEZ. They do, however, enjoy certain rights and functional jurisdiction there. This means that only certain parts of national law apply to the EEZ insofar as they are related to the economic exploration and exploitation of this zone; the conservation and management of the natural resources; the establishment and use of artificial islands, installations and structures; and the protection and preservation of the marine environment.¹⁵⁰ The CCS Directive explicitly stipulates that it is applicable to the territorial sea as well as the EEZ and the continental shelf. Article 15 of the Directive further states that Member States have to ensure that the competent authorities organise a system of routine and non-routine inspections of all CO₂ storage complexes. This must thus entail storage complexes within the EEZ and continental shelf of such a Member State.

As we have found in the previous chapter, the supervision provisions of the Directive have been implemented in Dutch law through the Mining Act. This Act contains a specific provision on its geographical scope, providing clearly that it “also applies to the continental shelf.”¹⁵¹ Since the

¹⁴⁵ Mining Act, article 130.

¹⁴⁶ The SSM already makes use of helicopters of the police force to inspect offshore oil platforms.

This cooperation is likely to be applicable to the inspection of offshore storage sites as well.

¹⁴⁷ Mining Act, Article 132.

¹⁴⁸ Mining Act, article 31h (1).

¹⁴⁹ *Besluit Instelling Kustwacht*, article 4 (2) (d) and article 6 (1) (a).

¹⁵⁰ UNCLOS, article 56.

¹⁵¹ Mining Act, article 2 (1).

national provisions on supervision find their legal basis in the CCS Directive, which explicitly applies to the EEZ and the continental shelf, those national provisions would *ipso facto* also be applicable to the EEZ and the continental shelf, even if the national law in question would not make any explicit claim as to its geographical scope.

Consequently, the supervision of CCS activities in the Dutch EEZ will be the same as it is in the territorial sea. The primary monitoring obligations are thus performed by the operator of the offshore storage site. He will have to set up a monitoring plan, perform the duties which it entails and communicate the monitoring results to the Minister on a yearly basis. The State has the duty to organise a system of routine and non-routine inspections of all storage complexes in the EEZ. The inspections will be performed by the civil servants of the SSM who, in accordance with the CCS Directive, will have to inspect every storage location at least once a year until three years after closure. The Mining Act states that permit holders can, in certain cases, be obligated to transport the indicated civil servants to the designated locations to perform their inspecting duties.¹⁵²

6.2.5 Enforcement in the Dutch EEZ

The Mining Act explicitly stipulates that it is also applicable to the Dutch continental shelf.¹⁵³ Since the EEZ shares its boundaries with the continental shelf, the geographical area of the EEZ is covered by the Mining Act. The SSM will thus have the same enforcement capabilities at its disposal here as it does on land and in the territorial sea. It is thus authorized to impose a *last onder bestuursdwang* in order to enforce the obligations contained in the Mining Act.¹⁵⁴ As an ultimate remedy, the Minister has the option under the Mining Act of changing the storage permit or even withdrawing it entirely when (1) there are leakages or significant irregularities, (2) if it turns out that the conditions of the storage permit are not met or if there is a risk of leakages or significant irregularities, (3) if such action turns out to be necessary based on the most recent scientific findings and technological progress, and (4) if the financial security retained by the holder of the permit turns out to be insufficient.¹⁵⁵

6.2.6 Supervision in foreign EEZs

The CCS Directive is applicable to the territorial sea as well as the EEZ and the continental shelf. Since the national provisions on supervision are based on this Directive, they are *ipso facto* applicable to the EEZs of Member States as well. Article 15 of the Directive stipulates that Member States have to ensure that the competent authorities organise a system of routine and non-routine inspections of all CO₂ storage complexes. In this section, we will assess how this has been done in three Member States which share sea borders with the Netherlands and could thus be relevant in the future should they decide to receive Dutch CO₂ for storage in their subsoil.

A German EEZ

The CCS Directive was transposed into German law through the *Kohlendioxid-Speicherungsgesetz* (KSpG), which entered into force in August 2012. It stipulates that it is applicable to the demonstration of the transport and permanent storage of CO₂ in subsoil rock formations, and leaves it to the authorities of the individual Länder to decide on requests for permits.¹⁵⁶ With regard to its geographical application, it explicitly stipulates that the KSpG also applies to the German EEZ (*die ausschließliche Wirtschaftszone*) and the continental shelf (*der Festlandsockel*).¹⁵⁷

The KSpG stipulates that the operator has the obligation to perform monitoring activities with respect to the storage site, in particular with regard to the injection facilities, the behaviour of the

¹⁵² Mining Act, article 130.

¹⁵³ Mining Act, article 2 (1).

¹⁵⁴ Mining Act, Article 132.

¹⁵⁵ Mining Act, article 31h (1)

¹⁵⁶ *Gesetz zur Demonstration der dauerhaften Speicherung von Kohlendioxid (Kohlendioxid-Speicherungsgesetz - KSpG)*, article 2 (1) and (2).

¹⁵⁷ *Kohlendioxid-Speicherungsgesetz*, article 2 (4).

stored CO₂ and its influence on the storage complex.¹⁵⁸ The monitoring should be done according to a monitoring plan (*Überwachungskonzept*).¹⁵⁹ Furthermore, the KSpG dictates that the monitoring should make the following possible: (1) the comparison of the expected model-based behaviour of the CO₂ with the actual behaviour; (2) the discovery of leakages, irregularities and migration of CO₂; (3) the ascertainment of potentially negative effects on humans and the environment as well as the interests of third persons; (4) the effect of countermeasures to stem the effects of any leakage; and (5) the continuous monitoring during operation of the storage site to ensure that it complies with the storage plan.¹⁶⁰ The operator has to provide the competent authority at least once a year with (1) the results of the continuous monitoring, including the technology used, and (2) any information necessary to check whether the conditions of the permit are complied with.¹⁶¹

The competent authority has to supervise all the phases of the life cycle of the storage site, to ensure that the provisions of the KSpG and the storage permit are complied with.¹⁶² The civil servants tasked with supervision are entitled to enter the premises and grounds of the operator, in so far as this is necessary to perform their inspection duties.¹⁶³ They are also permitted to demand the necessary information from the employees present at those sites. Routine inspections of the storage site are performed by the competent authority, in order to ensure the compliance with the law and the relevant permits, and that the integrity of the environment is preserved.¹⁶⁴ The competent authority may perform non-routine inspections in case of leakages, serious irregularities, or violation of the provisions of the law or the relevant permits. Interestingly, it may also perform a non-routine inspection to investigate well-founded indications of third persons of detrimental effects to the environment.¹⁶⁵ After each inspection, the competent authority compiles a report with the results of the inspection. This report is sent to the operator within two months after the inspection took place.¹⁶⁶

Finally, it is interesting to note that the competent authority is to be designated by the individual Länder for their own territory.¹⁶⁷ It is currently unclear which authority will be designated for the German maritime areas. It is expected that this will be the *Landesamt für Bergbau, Energie und Geologie* of Lower Saxony, perhaps in cooperation with the *Bundesanstalt für Geowissenschaften und Rohstoffe*.

B Danish EEZ

The CCS Directive was transposed into Danish law by changing the Act on the Use of Danish Subsoil (the Subsoil Act) and by issuing an Executive Order on geological storage of CO₂.

The Subsoil act stipulates that it applies to the “use of the subsoil for storage or for purposes other than the production of raw materials” and also that the Act “applies in the Danish exclusive economic zone and in the Danish continental shelf area.”¹⁶⁸ With respect to supervision, the Act provides the following:

25.

(1) The Minister for Climate and Energy shall *supervise* compliance with the provisions of this present Act and with the rules and regulations, terms and conditions drawn up in pursuance of this Act.

The Minister for Climate and Energy may issue enforcement notices ordering compliance with this

¹⁵⁸ *Kohlendioxid-Speicherungsgesetz*, article 22 (1).

¹⁵⁹ *Kohlendioxid-Speicherungsgesetz*, article 20 (1).

¹⁶⁰ *Kohlendioxid-Speicherungsgesetz*, article 22 (2).

¹⁶¹ *Kohlendioxid-Speicherungsgesetz*, article 22 (3).

¹⁶² *Kohlendioxid-Speicherungsgesetz*, article 28 (1).

¹⁶³ *Kohlendioxid-Speicherungsgesetz*, article 28 (2).

¹⁶⁴ *Kohlendioxid-Speicherungsgesetz*, article 28 (3).

¹⁶⁵ *Kohlendioxid-Speicherungsgesetz*, article 28 (3) sub 2.

¹⁶⁶ *Kohlendioxid-Speicherungsgesetz*, article 28 (6).

¹⁶⁷ *Kohlendioxid-Speicherungsgesetz*, article 39 (1).

¹⁶⁸ *Lov om anvendelse af Danmarks undergrund 2011* (Danish Subsoil Act), article 1 (i) and (iii).

Unofficial English translation found at <<http://www.ens.dk/en-US/OilAndGas/Licences/Guide/Documents/GuideToHC.pdf>>

(last viewed on 14 January 2013).

Act and with regulations issued in pursuance hereof.

(2) The Minister for Climate and Energy may lay down more detailed rules and regulations regarding performance of the supervision.

In accordance with paragraph 2 of article 25 of the Subsoil Act, the Executive Order on geological storage of CO₂ provides further details on monitoring and supervision. It stipulates that the licensee shall monitor the injection facilities, the storage complex and if necessary the surrounding environment, in order to, among other things, record significant irregularities, leakage of CO₂, and significant negative impact on the surrounding environment.¹⁶⁹ As is the case in the Netherlands, the monitoring will take place on the basis of a monitoring program, which needs to be approved by the Minister for Climate and Energy.¹⁷⁰ At least once a year, the licensee provides the Minister with the results of the monitoring, including information on the monitoring technology; the quantity, properties and composition of the CO₂ streams delivered and injected during the reporting period; as well as the information which the competent authority considers relevant for assessing compliance with the terms of the storage permit and to improve the knowledge of CO₂ behaviour in the CO₂ storage site.¹⁷¹

With respect to supervision, the executive order stipulates that the Minister for Climate and Energy carries out routine inspections at least once a year until three years after closure and every five years until transfer of responsibility.¹⁷² The Minister carries out non-routine inspections where the Minister becomes aware or believes that there is an obvious risk that the Subsoil Act or rules and regulations issued thereunder, are not respected.¹⁷³ After each inspection, the Minister prepares a report on the inspection results. The report assesses whether the Subsoil Act and the Executive Order have been complied with, including conditions in the storage permit, and indicates whether further action is required. The report is then communicated to the licensee and made available to the public no later than 2 months after the inspection.¹⁷⁴ The competent authority responsible for conducting the inspections of offshore storage sites is the Danish Energy Agency, which is part of the Ministry for Climate and Energy.

Finally, it is interesting to note that the Danish Parliament agreed that only CO₂ injection for the purpose of Enhanced Oil Recovery (EOR) will be allowed for the time being. CO₂ injection in oil- and gas fields in the Danish parts of the North Sea with a view of permanent storage only is thus not allowed at this stage. If parties feel that this should be allowed, a discussion in the Danish Parliament would be required.

C United Kingdom EEZ

The United Kingdom has chiefly implemented the CCS Directive by Part 1, Chapter 3 of the Energy Act 2008 and by the *Storage of Carbon Dioxide (Licensing etc.) Regulations 2010* (the "2010 Regulations").¹⁷⁵ The 2010 Regulations stipulate that the operator must maintain a register, at a place and in a manner approved by the authority, of the quantities and properties of the CO₂ streams that have been delivered to, and injected in, the storage site.¹⁷⁶ Furthermore, the operator must carry out a monitoring programme of the storage complex and the injection facilities.¹⁷⁷ This must be done on the basis of a monitoring plan, which includes monitoring the plume of CO₂ and, where appropriate, the surrounding environment. The purpose of the monitoring plan is, among other things, to detect any significant irregularities, migration, or leakage of CO₂. The operator must send the Secretary of State ("the authority") a report in each reporting period, which normally means each year, containing the

¹⁶⁹ Danish Executive Order on the geological storage of CO₂, article 8. Danish original text at: <<https://www.retsinformation.dk/Forms/R0710.aspx?id=138158>> (last viewed on 14 January 2013).

¹⁷⁰ Danish Subsoil Act, article 28i *juncto* Danish Executive Order on the geological storage of CO₂, article 9.

¹⁷¹ Danish Executive Order on the geological storage of CO₂, article 10

¹⁷² Danish Executive Order on the geological storage of CO₂, article 11 (1)

¹⁷³ Danish Executive Order on the geological storage of CO₂, article 11 (2)

¹⁷⁴ Danish Executive Order on the geological storage of CO₂, article 11 (3)

¹⁷⁵ Statutory Instruments 2010/2221 (hereafter referred to as the 2010 Regulations).

¹⁷⁶ 2010 Regulations, Schedule 2, paragraph 1.

¹⁷⁷ 2010 Regulations, Schedule 2, paragraph 2.

results of the monitoring carried out. The report should also contain information about the used monitoring technology, the quantities, properties and composition of the CO₂ streams any other information requested by the authority that the authority considers relevant.¹⁷⁸

Article 15 of the Directive was implemented separately via the so-called *Storage of Carbon Dioxide (Inspections etc.) Regulations 2012* (the “2012 Regulations”),¹⁷⁹ which inserts new regulations 16 to 20 on supervision into the previously established 2010 Regulations. The 2012 Regulations provide for the routine and non-routine inspections of CO₂ storage sites.¹⁸⁰ After each inspection, the authority must prepare an inspection report of the results of the inspection. If the operator is found not to be in compliance, the report will contain a statement as to what action the authority considers is required to ensure such compliance.¹⁸¹ Interestingly, the 2012 Regulations specifically provide that it is an offence for a person to wilfully obstruct or lie to an inspector in the exercise of their powers. A person guilty of such an offence is to a fine.¹⁸²

The 2012 Regulations also insert a new schedule 3 into the 2010 Regulations, which sets out the powers of inspectors appointed by the Secretary of State. These include, among other things, the power to enter, at any reasonable time (or, in an emergency, at any time) any premises, which the inspector has reason to believe it is necessary to enter. In order to make the necessary examinations and investigations, the inspectors may install monitoring apparatus on the premises as well as take measurements and photographs and make such recordings as they consider necessary. Importantly, the inspectors may also take samples of “any thing found in or on the premises or in any air, water, land or seabed (including the subsoil of the seabed) in, on or in the vicinity of, the premises”.¹⁸³ Finally, inspectors have the power to require any person to afford them the necessary facilities and assistance to enable them to exercise any of the powers conferred by the 2010 Regulations and this schedule.

6.2.7 Enforcement in foreign EEZs

In general, it is important to note that the extraterritorial enforcement of national legislation is generally unlawful under international law. The reason for this is that enforcing national law abroad would amount to an unacceptable violation of the sovereignty of that foreign State. The Permanent Court of International Justice (PCIJ) judged in the *Lotus*-case that a State “may not exercise its power in any form in the territory of another State”.¹⁸⁴ This case dates back to 1927, at which point the term EEZ had not been conceived yet, nor had the term continental plate been codified in international law.¹⁸⁵ It is therefore unclear whether the prohibition formulated in the *Lotus*-case means that enforcement activities by State A may not be performed in the EEZ of State B.

However, it is clear, as we have found above, that the CCS Directive gives each Member State the possibility and in fact the duty to enforce its provisions CCS in their own EEZ. Below, we will discuss in brief which are the competent authorities in the three relevant Member States charged with the task of enforcement within their zones of control in the North Sea.

A German EEZ

Should the competent authority find that a storage site does not comply with the law or any of the relevant permits, the *Kohlendioxid-Speicherungsgesetz* stipulates that it may order that such a situation be rectified. In particular, the competent authority can order which countermeasures are to be taken, as well as the interruption of CO₂ injection or even the shutdown of the storage site.¹⁸⁶ Very much like the Dutch *last onder bestuursdwang*, the German competent authority may itself rectify the

¹⁷⁸ 2010 Regulations, Schedule 2, paragraph 3.

¹⁷⁹ Statutory Instruments 2012/461 (hereafter referred to as the 2012 Regulations).

¹⁸⁰ 2010 Regulations, regulation 16.

¹⁸¹ 2010 Regulations, regulation 18.

¹⁸² 2010 Regulations, regulation 20.

¹⁸³ 2010 Regulations, schedule 3.

¹⁸⁴ PCIJ, S.S. *Lotus* (France v. Turkey), Ser. A, No. 10, 1927, p. 35.

¹⁸⁵ The Convention on the Continental Shelf dates from 1958.

¹⁸⁶ *Kohlendioxid-Speicherungsgesetz*, article 28 (4).

situation at the expense of the operator if the operator does not do so within the set time limits.¹⁸⁷ In addition, the competent authority also has the option of issuing fines of up to €100,000, depending on the severity of the violation.¹⁸⁸ Lastly, the competent authority may amend or even revoke the storage permit in case of leakage or serious irregularities, as well as in case of violation of the law or the relevant permits.¹⁸⁹

B Danish EEZ

As indicated in the Subsoil Act, quoted in the section on supervision in foreign EEZs above, the Minister for Climate and Energy may issue enforcement notices ordering compliance with this Act and with regulations issued in pursuance thereof,¹⁹⁰ such as the Executive Order on geological storage of CO₂. Any party disregarding enforcement notices issued in accordance with the Subsoil Act or regulations laid down in pursuance of this Act, shall be punishable by a fine or imprisonment for a term of up to four months.¹⁹¹ As a last resort, the Subsoil Act stipulates that the Minister may revoke any licence granted under this Act in case of non-compliance with enforcement notices issued in pursuance of the Act.¹⁹²

C United Kingdom EEZ

The 2008 Energy Act contains provisions on the enforcement of rules on the storage of CO₂. It provides that the licence holder commits an offence when it fails to keep records, give a notice or make a return or a report, in accordance with the provisions of the licence.¹⁹³ A person guilty of such an offence can be sentenced to a fine not exceeding £50,000, to imprisonment for a term not exceeding 2 years, or both.¹⁹⁴ Furthermore, the licensing authority may direct a licence holder to take steps which the authority considers necessary or appropriate to comply with any provision of the licence, within a period specified by that authority.¹⁹⁵ If the licence holder fails to comply with such a direction, the authority may comply with the direction on behalf of the licence holder, or make arrangements for another person to do so.¹⁹⁶ A person taking such action may recover any reasonable costs incurred in taking the action from the licence holder.¹⁹⁷ This enforcement system is very similar to the *last onder bestuursdwang* in Dutch law.

As is the case in other Member States, the authority has the last resort option of revoking the storage permit in case of any (risk of) leakage or significant irregularities, as well as in case of any breach of the terms or conditions of the storage permit.¹⁹⁸ Before revoking the permit, the authority will have to consult the operator and any other holder of the licence.¹⁹⁹

6.2.8 Conclusion

The CCS Directive has been implemented in the Netherlands, Germany, Denmark and the UK in different ways. As a result, the national supervision and enforcement provisions are largely identical but some minor differences between them can be identified. What stands out first of all, is that, before eventually revoking a permit, the UK and Denmark authorities have the option of fining and even imprisoning license holders / operators which do not comply with the rules, while the Netherlands only use an administrative order to enforce obligations contained in the Mining Act. What further stands out

¹⁸⁷ *Kohlendioxid-Speicherungsgesetz*, article 28 (5).

¹⁸⁸ *Kohlendioxid-Speicherungsgesetz*, article 43.

¹⁸⁹ *Kohlendioxid-Speicherungsgesetz*, article 27.

¹⁹⁰ Danish Subsoil Act, article 25.

¹⁹¹ Danish Subsoil Act, article 38 (1).

¹⁹² Danish Subsoil Act, article 30 (1).

¹⁹³ UK Energy Act 2008, article 23 (1).

¹⁹⁴ UK Energy Act 2008, article 23 (3).

¹⁹⁵ UK Energy Act 2008, article 24 (2).

¹⁹⁶ UK Energy Act 2008, article 24 (4).

¹⁹⁷ UK Energy Act 2008, article 24 (5).

¹⁹⁸ 2010 Regulations, regulation 11 (5).

¹⁹⁹ 2010 Regulations, regulation 11 (8).

is the extent to which the powers of the German and in particular the UK inspectors are regulated, compared to those in the Netherlands and Denmark. Finally, on the whole it is interesting to note that Member States generally have the same powers in the field of supervision and enforcement with respect to their EEZ as with their territorial sea. This indicates that at least in these fields, the practical differences between the various maritime zones of the coastal State are minimal.

7 Conclusion

The purpose of this report was to provide proper insight into the legal and regulatory framework that currently exists and is applicable to offshore CCS activities in the North Sea area. In order to do that properly, significant attention has first been given to the significance and applicability of national, European and international law. Together with the discussion of the different legal characteristics of the maritime zones as established by UNCLOS, this has shown that applicability of laws offshore is a complex matter. In the discussion of the relevant treaties which deal with CCS, we further found that the London Protocol still poses a significant legal obstacle in the field of cross border CCS activities. The overview of the onshore regulation of liability, supervision and enforcement in the Netherlands showed that the available legal framework is extensive but, due to the nascent nature of CCS, there are still some lacunae. The Dutch government is still working on an amendment of the Civil Code to provide more clarity in this respect, but it is unclear when this process will be finished.

The discussion of the regulation of liability for offshore CCS activities resulted in the observation that the main problems lie with the civil liability. The Dutch Civil Code does generally not apply outside territorial waters, apart from the instances covered by the Rome II Regulation. Therefore the issue of liability for damage to third parties offshore is not perfectly regulated and leaves significant insecurity. This has negative if not insurmountable consequences for potential investments in offshore CCS installations and activities, as investors will want to know what they can expect. Unlike with oil, there is no extensive international liability regime for damage caused by CO₂ at sea. One could argue that such an international CO₂ liability regime should be established, as it would reduce insecurity and costs. On the other hand, carbon dioxide has a far smaller potential for causing damage or harm to health and property than oil does. Leaked carbon dioxide may cause damage in the immediate vicinity but will eventually disperse to non-harmful concentrations, whereas oil does not and requires intensive and expensive response measures to contain its harmfulness. These observations will be a factor in the decision to further regulate liability for CO₂ at an international level.

Supervision and enforcement have been found to be regulated in different ways in the waters of the Netherlands, Germany, Denmark and the United Kingdom. However, they are to a large extent very similar since they all had to base their regime on the CCS Directive. On the whole it is interesting to note that Member States generally have the same powers in the field of supervision and enforcement with respect to their EEZ as with their territorial sea. This indicates that at least in these fields, the practical differences between the various maritime zones of the coastal State are minimal.

Overall, the difficulty with describing the *status quo* of the law on offshore CCS thus lies in the fact that there are certain aspects to it that remain unclear. There is no dedicated international treaty regulating all legal aspects of offshore CCS, nor has there been a case before or judgment by any international tribunal or the International Court of Justice to provide clarity on the matter. Until this happens, states will have to make do with what exists at the moment. As long as other States don't object to their activities, their acquiescence may be interpreted as indicative of them being at least not illegal under international law.

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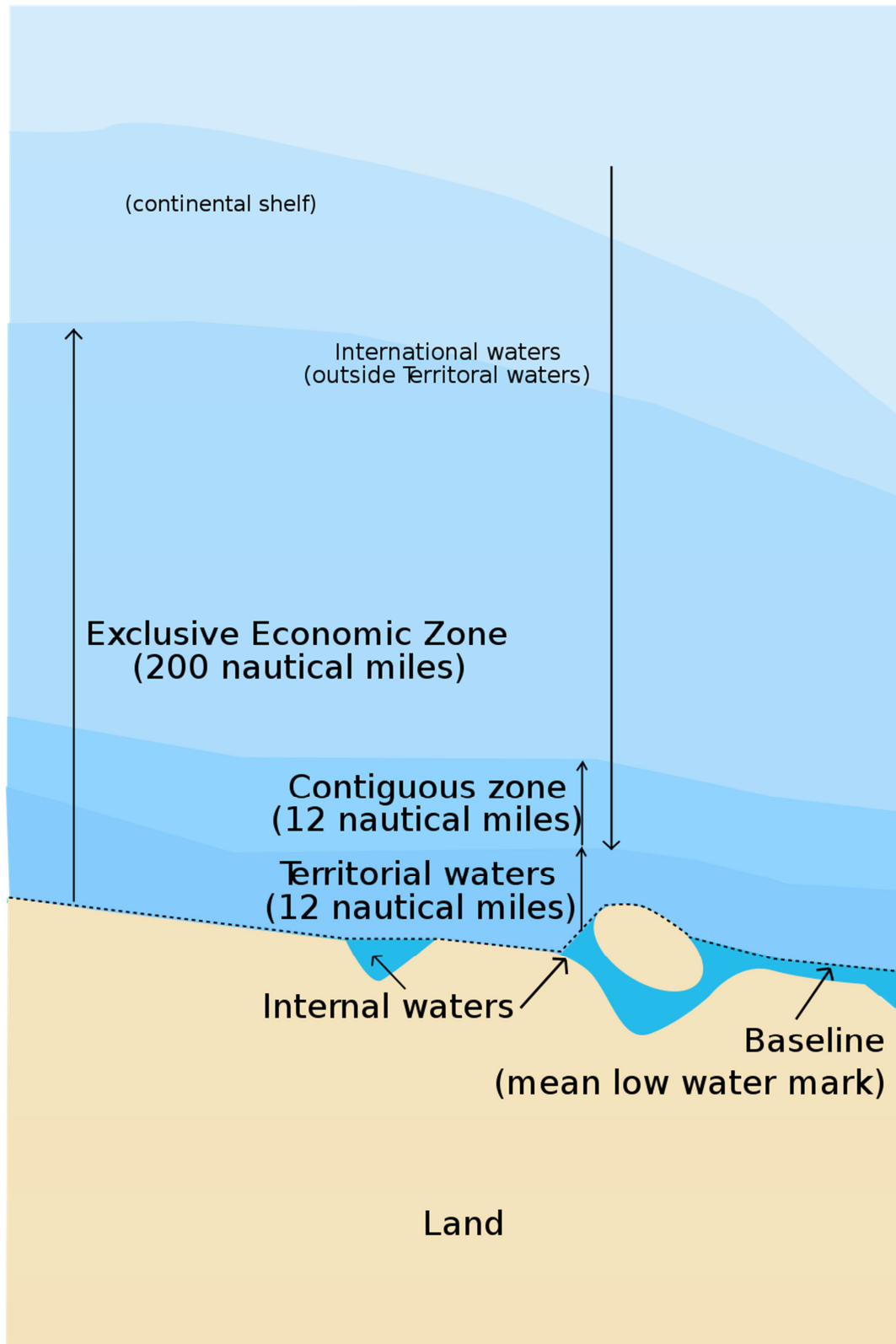
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Annex I: Maritime Zones



Source: <http://en.wikipedia.org/wiki/File:Zonmar-en.svg>

Annex II: Exclusive Economic Zones (EEZ) in the North Sea





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Source: http://en.wikipedia.org/wiki/File:North_Sea_map-en.png