Preventing a next Deepwater Horizon?

Evaluation of the regime for the prevention of and response to accidental oil spills from drilling platforms at the North Sea

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ABSTRACT

This thesis evaluates the regime for the prevention of and response to accidental oil spills from drilling platforms at the North Sea. The principal motivation for the research is the Deepwater Horizon oil spill that caused the greatest environmental disaster in U.S. history. The evaluation, which is split up into a prevention and a response component, focuses on the international regime and the national regimes of the Netherlands, Norway and the United Kingdom (UK). The methodology by means of which the evaluation is carried out consists of the development of evaluation criteria based on regime theory, disaster studies, the findings of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, and the input of consulted experts. Guided by these criteria an assessment is made of the extent to which the regime at the North Sea is effective. The assessment takes into account the main laws and regulations that relate to the current topic as well as the way they work out in practice through the activities of key regime bodies. The opinions of consulted experts on the performance of the regime are central to the evaluation. The overall conclusion is that there is a reasonably effective regime, but a number of significant issues need to be resolved before we can speak of true effectiveness. The strengths of the regime are the goal setting nature of the laws and regulations, the high level of cooperation between involved actors and the efforts undertaken to learn from incidents like the Deepwater Horizon oil spill. Weaknesses of the regime are the suboptimal harmonization between nations on a European level, the threat of budget cuts in the Netherlands and the UK, inadequate organization of oil spill response efforts in the Netherlands and the UK, and suboptimal transparency of the key supervisory regime body of the UK. The thesis concludes by presenting recommendations to address these weaknesses as well as opportunities for future research.

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PREFACE

Before you lies the culmination of my graduation project for the Master's degree programme of Sustainable Development at Utrecht University. Many months of hard work, blood, sweat and tears have resulted in the pages concealed behind this preface. What a journey it was. Days of solitary confinement, pleasant discussions with many inspiring people, staying the night at a desolate airport because of a missed flight, and even a terrorist attack – all have made the process of crafting this thesis an unforgettable experience.

This thesis hopes to reflect more than just another academic exercise. The disaster with the Deepwater Horizon drilling rig and the oil spill that resulted showed, once more, how important it is to continually reassess the way we shape our energy supply. If we cannot escape the use of oil in the decades to come, we had better do it safely and with eye for the environment we will pass on to future generations.

A lot of people deserve a big thank you for the support they provided during the whole endeavour. First, I would like to acknowledge the invaluable assistance lent by my research advisor Carel Dieperink. His advice and relentless optimism allowed me to stay on track at all times. Second, without the talks with experts from the Netherlands, Norway and the United Kingdom this thesis would not have been as substantiated as it is. Special thanks go out to Kåre-Ludwig Jørgensen for introducing me into the exquisite Norwegian cuisine, which really made my day. Last, but most certainly not least, I am very grateful for the continued support of my friends and family – in particular of my mom and dad without whom neither I nor this thesis would have ever seen the light of day.

I wish you all as much pleasure in reading this thesis as I had in making it and – perhaps even more – in finishing it.

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1. INTRODUCTION

1.1 Problem definition and relevance: preventing a next 'Deepwater Horizon'

On April 20, 2010 an explosion tore through the Deepwater Horizon drilling rig following a blow-out of the exploratory 'Macondo' oil well in the Gulf of Mexico. The disaster killed 11 platform workers, injured 17 and disputably caused the greatest environmental disaster in U.S. history. Over a period of several months an unprecedented amount of oil flowed into the Gulf. By the time the well was sealed over 4 million barrels of oil had been released into the water column – one barrel of oil roughly equalling 160 litres. The spill severely damaged the local oceanic environment, polluted many coastal areas and threatened the livelihoods of those living in the area. Apart from causing environmental damage the oil spill impacted on both the local economy (fisheries, tourism etc.) and the global economy – the latter being ever more dependent on a steady supply of natural resources of this kind (Kerr et al., 2010).

The Deepwater Horizon disaster incited concern in regions outside of the U.S. as well, the North Sea area being one of them. Shortly after the full extent of the disaster in the Gulf of Mexico became apparent Norway postponed new deepwater drilling pending an investigation of what had happened (Izundu, 2010). Furthermore, the United Kingdom doubled the number of environmental oil rig inspections (ibid.) and the Netherlands were reported to be developing new 'best practices' and equipment for oil spill mitigation (Op Zee radio show, October 7, 2010). In the aftermath of the Deepwater Horizon disaster tighter regulations hovered over North Sea oil exploitation activities (Izundu, 2010).

The North Sea is a relatively shallow sea located at the North West of Europe. It has an average depth of about 90 meters while at some places – off the coast of Norway – reaching depths of about 700 meters. The North Sea is semi-enclosed by the countries of Norway, Sweden, Denmark, Germany, the Netherlands, Belgium, France, and the United Kingdom. It opens up largely to the Atlantic Ocean in the North, the English Channel in the South and connects to the Baltic Sea in the East as well as great number of rivers (Ducrotoy and Elliot, 2008). Figure 1, below, shows the North Sea area.

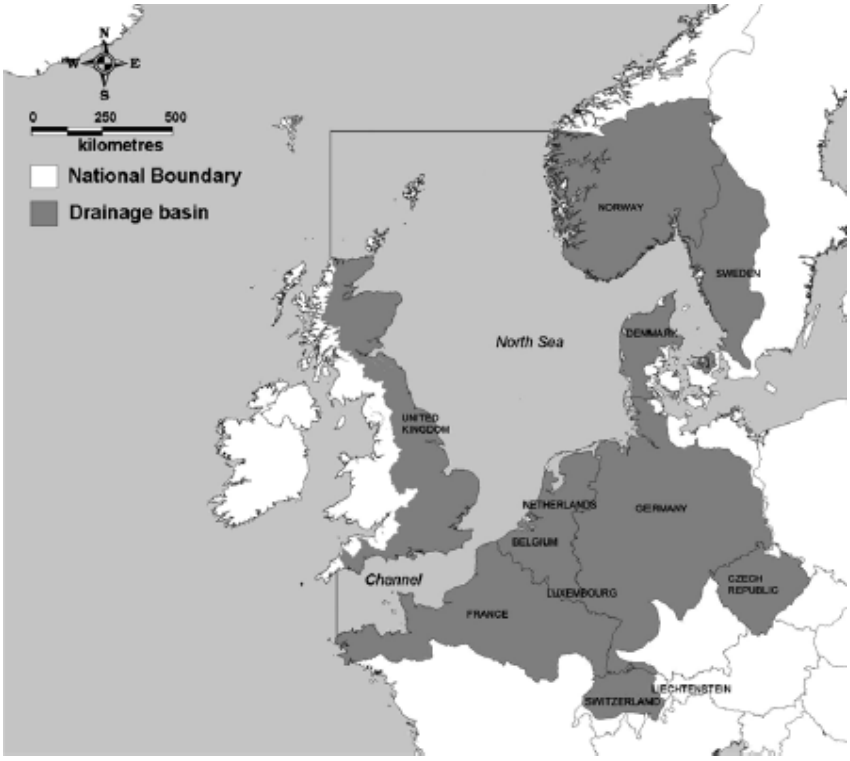

Figure 1 – The North Sea and its watershed (Ducrotoy and Elliot, 2008)

The North Sea area is very densely populated. Around 185 million people live in the catchment area with population densities of more than 1000 inhabitants per km² along the coasts of countries like the Netherlands and Belgium. Obviously, the presence of such a number of people is accompanied by a manifold of activities – some of which having a potentially harmful impact on the North Sea's natural environment. The North Sea is subject to heavy (over)fishing, tourism drives millions of people to its coasts on hot summer days, and its river basins, estuaries and bays are home to all different types of industries. Moreover, the North Sea has proven to be a rich source of oil and gas. Oil exploration in the North and gas exploration in the South have prompted the instalment of many rigs and pipelines and sparked an industry for transporting the recovered substances (Ducrotoy and Elliot, 2008).

Together, the European Union and Norway represent the fourth largest oil and gas producer in the world. Even though not all of this produced oil and gas originates from the North Sea it still harbours significant production capacity. Currently, 20 out of 33 offshore oil and gas

projects under development in Europe are located at the North Sea. Dependence on oil and gas for meeting primary energy demand remains high. The UK continental shelf, for instance, roughly satisfied two thirds of UK energy demand in 2009 – 94% of oil demand and 68% of gas demand. In Norway the oil and gas industry generated a staggering one fourth of the country's income in 2010 (Izundu, 2010).

The above figures illustrate the importance of the oil (and gas) industry for the region's economy. The Deepwater Horizon oil spill provided a grim reminder, once again, of the urgency of conducting these activities in an ever more environmentally responsible manner.

No evaluative studies on the regulatory state of affairs regarding accidental oil spills at the North Sea seem to exist in academic literature. This thesis intends to fill that gap. The following considerations were made to demarcate the research topic:

- The thesis focuses on three North Sea bordering nations: the Netherlands, Norway and the United Kingdom. The author of this thesis is a citizen of the Netherlands and in order to generate relevant insights into the North Sea region as a whole Norway and the UK were chosen to be added to the scope. Taken together these latter two account for about 90% of oil exploitation activities in the region (IEA, 2010). On top of this, multilateral and international arrangements that relate to the issue are included as well. These guide the conduct of (actors from) the three individual nations.

- The research is concerned with the issue of the *accidental* spill of *oil*. This reflects that the Deepwater Horizon oil spill is the main source of inspiration for this thesis. Apart from accidental spills there are intentional, operational spills as well. However, the interest here is to gather knowledge on how such giant environmental disasters as in the Gulf of Mexico may be prevented. It is probably safe to say these kinds of disasters will generally be of an accidental nature. The focus on oil is an intuitive one given its habit to wreak environmental havoc, unlike for example natural gas.

- The role of involved actors in the implementation of regulation is studied as well. One cannot disregard the importance of implementation practices as it comes to how well regulation does, or does not, function. Being generally crafted and enforced by governments, the role of government actors will be central to this study. This focus is further motivated by the assumption that any corporate oil spill policy will have to abide by governmental regulation. Moreover, corporate documents on the issue are likely not to be readily available as they may contain confidential information. Nevertheless, given that the functioning of regulation is likely not to depend solely on governmental actions, the role of the oil industry and civil society is, to the extent possible, looked into as well.

- Oil spills as caused by shipping accidents are excluded from the scope of the current investigation. Even though these are a common source of accidental oil spills, it was found that the prevention of shipping accidents involves such a staggering amount of legislation, institutional arrangements and so on, this could well be the object of an individual study in its own right. In order to maintain a feasible scope for the current research, and not to water down its link with the Deepwater Horizon disaster, the choice was made to focus on accidental oil spills stemming from drilling platforms.

In short, this thesis covers government regulation and related implementation practices from the Netherlands, Norway and the United Kingdom addressing the issue of major accidental oil spills from drilling platforms at the North Sea.

In addition to generating knowledge, this thesis is hoped to contribute to awareness in the area of North Sea oil spill mitigation. There is never room for complacency. The thesis will provide a picture of the state of affairs around existing oil spill mitigation arrangements at the North Sea, pointing to strong and weak points. Weak points will be translated into recommendations. Upon implementation these recommendations ought to improve human and environmental safety at the North Sea.

1.2 Oil drilling at the North Sea: processes and risks

Oil exploitation involves the following mining processes (SSM interview, 2011):

- Seismic exploration
- Field development
- Establishing (drilling) installations
- Oil drilling
- Maintenance
- Field abandonment/decommissioning

These processes often involve different types of expertise. Because of this many players are involved in oil exploitation operations. It is beyond the current scope to list all potentially involved actors, but in order to comprehend the laws and regulations that will be outlined in coming chapters, it is important to take note of the difference between licensees, operators and contractors. Licensees are actors that hold the rights over a particular geographical area that contains one or more oil fields. Licensees may or may not be operators themselves. To spread (financial) risks it is not uncommon for licenses to be shared among multiple oil companies. These will not all participate in oil drilling activities. An operator is a company actually performing oil exploitation operations. Operators may hire contractors to perform activities on their behalf. In relation to the current topic drilling contractors are most notable.

The risks related to oil drilling are to a significant degree linked to water depth and the temperature and pressure characteristics of the oil well in question. The Deepwater Horizon platform drilled at a depth of more than 1500 meters. The concerned Macondo well is characterized by high pressures and temperatures. Such oil wells are more than others prone to destabilization and consequently the unwanted escape of oil or gas. Arguably, the most critical element of in the Deepwater Horizon oil spill was not so much the depth at which was drilled, rather the fact that Macondo is a high pressure, high temperature well (ECC, 2011).

At the North Sea, oil drilling conditions are somewhat different compared to the Gulf of Mexico. The majority of oil wells is located at depths of less than 100 meters. On the Dutch continental shelf the maximum drilling depth is 50 meters (SSM interview, 2011). On the Norwegian part of the North Sea the maximum drilling depth is 180 meters, off the coast of Bergen (PSA interview, 2011). On the UK continental shelf the deepest wells are located near the Shetland Islands. Depending on where you would draw the line of where the North Sea ends drilling depths extend to about 1100 meters. On top of more shallower waters, nowhere at the North Sea does deepwater drilling occur in high pressure, high temperature oil wells (ECC, 2011).

1.3 Research aim and methodology

This thesis aims to generate descriptive and evaluative knowledge on the regime for accidental oil spills from drilling platforms at the North Sea. This is done by:

1. developing a set of criteria on the basis of which the effectiveness of the regime for accidental oil spills from drilling platforms at the North Sea can be evaluated;
2. constructing a picture of how this regime is shaped internationally, regionally and nationally, and;
3. evaluating the obtained characteristics of the regime on the basis of the established criteria.

The above objective refers to the concept of a 'regime'. A regime is defined as the "principles, norms, rules, and decision-making procedures around which actor expectations converge in a given issue-area" (Krasner, 1983, p. 2). This concept is used to incorporate into this study as much as possible other relevant aspects, on top of the regulation itself, that play a role in preventing or combating oil spills. Section 1.1 touched upon the need thereof: in order for regulation to work it needs to be properly put in practice. The regime concept covers a wide range of aspects of the collaborative process which different (international) actors may engage in to try to solve a particular problem.

The central research question to this thesis is as follows:

To what extent is the regime for the prevention of and response to accidental oil spills from drilling platforms at the North Sea effective?

Figure 2, below, shows the research framework to this thesis. The framework illustrates the steps that will lead to meeting the stated objective and answering the central question. Where applicable the individual steps in the research framework are accompanied by their associated sub-question (as indicated between brackets).

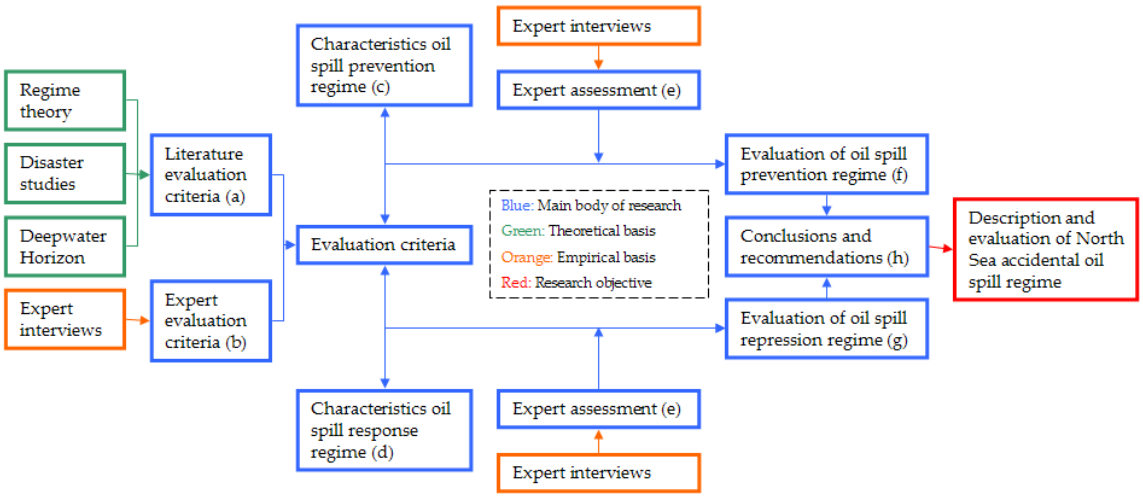

Figure 2 – Research framework

The sub-questions referred to in the above framework are the following:

a. What evaluation criteria for the effectiveness of the regime for accidental oil spills from drilling platforms at the North Sea can be derived from existing literature?
b. What evaluation criteria for the effectiveness of this regime can be derived from experts (in the field)?
c. What are the main characteristics of the regime for the prevention of accidents at drilling platforms at the North Sea?
d. What are the main characteristics of the regime for the response to oil spills at the North Sea?

e. To what extent do experts (in the field) consider the regime for accidental oil spills from drilling platforms at the North Sea to be effective?
f. To what extent is there an effective regime for the prevention of accidents at drilling platforms at the North Sea?
g. To what extent is there an effective regime for the response to oil spills at the North Sea?
h. What conclusions can be drawn, and what recommendations can be issued regarding the regime for accidental oil spills from drilling platforms at the North Sea?

The theoretical background of this study (sub-question a) consists of three types of literature: regime theory, disaster studies and the U.S. presidential report issued in the wake of the Deepwater Horizon disaster: 'Deep Water – The Gulf Oil Disaster and the Future of Offshore Drilling'. From this literature a list of evaluation criteria is derived to be used for the evaluation of the regime for accidental oil spills from drilling platforms at the North Sea. The criteria also serve to highlight the features of the regime that need to be described to make an evaluation possible in the first place.

Regime theory provides insight into both how regimes can be described and how they can be evaluated. According to Young (1989) a regime can be studied in terms of contents, procedures, and implementation arrangements. It is an – albeit rather general – inclusive concept fit for situations that involve international coordination to address a common problem. There exists a multitude of (case-)studies that discuss more or less similar international arrangements under the common denominator of regimes. An example in this respect is Skjaerseth (2002) who studied the regime against (intentional) dumping in the North Sea with special reference to the Oslo Commission. Miles et al. (2002) present no less than fourteen studies of regimes, among which Skjaerseth (2002). These studies illustrate the usability of the regime concept for evaluative purposes (this is not to say that the current study takes the exact same approach – as will be discussed in chapter 2).

In addition to regime theory, literature from disaster studies is used. This literature enables tailoring the theoretical background more to our topic of interest. Oil spills are disastrous

events that should be, and are, studied as such. The research field of disaster studies adds information on why and how disasters happen and what can be done to address such occurrences. One strand within this field aims to pinpoint what is necessary for systems that involve both technical and human elements to be safe, while another focuses on the arrangements that need to be in place in order to be properly prepared to respond to an emergency.

The U.S. presidential report wraps up the theoretical background of this thesis. As touched upon in the introduction the Deepwater Horizon oil spill is the central motivation for the current endeavour. The report shows what actually may go wrong in practice. Obviously, we want to prevent such disasters from happening at the North Sea. Through information about what went wrong, and why, criteria are be devised to complement the insights gained from the other two types of literature.

Expert interviews occupy an important place in this research in addition to (scientific) literature. Because theory seldom fully coincides with practice, experts were consulted to strengthen the list of evaluation criteria and to provide an inside look into how the regime performs in real life. These experts were drawn from government actors, the oil industry and civil society from the Netherlands, Norway, and the UK. The following actors were consulted:

Based in the Netherlands:

- State Supervision of Mines (SSM – government supervisory agency of oil and gas activities in the Netherlands);
- Rijkswaterstaat Noordzee (RWS NZ – government agency charged with ensuring the environmental integrity of the Dutch part of the North Sea);
- Netherlands Oil and Gas Exploration and Production Association (NOGEPA), and;
- Netherlands Institute for the Law of the Sea (NILOS).

Based in Norway:

- Petroleum Safety Authority Norway (PSA – government supervisory agency of Norway on safety issues in the oil and gas industry);
- Climate and Pollution Agency (Klif – government supervisory agency of Norway on issues relating to the environment);
- Norwegian Oil Industry Association (OLF);
- Norwegian Clean Seas Association for Operating Companies (NOFO), and;
- Bellona (international environmental non-governmental organisation, amongst other issues fighting against the environmental impact of Europe's oil and gas industry).

Based in the United Kingdom:

- Health and Safety Executive (HSE – the offshore division of this organization is the government supervisory agency of the United Kingdom on safety issues in the oil and gas industry);
- Greenpeace UK (the United Kingdom branch of this well-known international environmental non-governmental organization);
- Secretariat of the OSPAR Commission and Bonn Agreement (both these international arrangements are administered by the same secretariat), and;
- Oil Spill Response ltd. (OSR – an internationally operating private company providing resources to respond to oil spills).

In selecting the actors to be consulted the goal has been to do justice to the idea that the development and maintenance of an international (accidental oil spill) regime is a prime example of governance. The leadership role of governments set aside, businesses and civil society assumedly play an important role in crafting the regime and implementing it. These spheres of society have different interests and goals. Taking account of the views of distinctly different actors allows for a comprehensive view on matters, eliminating – for as far possible – any slumbering biases.

Unfortunately, when performing expert interviews one is dependent on the availability and willingness of third parties to cooperate. In the case of the Netherlands and Norway it is believed the group of consulted actors provides a well-balanced representation of possible views on the issue. The group of actors from the U.K., however, encompasses but a single national regime actor – the HSE – while the others can be considered non-regime and/or international/regional regime actors. This thesis would have profited from the inclusion of such actors as the Department of Energy and Climate Change (DECC), the Maritime and Coastguard Agency (MCA) and Oil & Gas UK (the U.K. equivalent of NOGEPA and the OLF). The implications hereof are addressed in the discussion to this thesis (section 10.3).

1.4 Outline of the thesis

The below table shows for each of the following chapters what will be discussed and to which research question(s) the discussion relates.

Chapter	Aim(s)	Addressed research question(s)
2.	To further develop the strategy for evaluating regime effectiveness; To construct evaluation criteria based on regime theory	Sub-question a
3.	To provide insight into what it takes to prevent and respond to accidents; To construct evaluation criteria based on disaster studies	Sub-question a
4.	To illuminate the principal failures leading up to the Deepwater Horizon disaster; To construct evaluation criteria based on the recommendations issued after this oil spill	Sub-question a
5.	To introduce evaluation criteria as proposed by consulted experts; To present definitive evaluation criteria by integrating and operationalizing the above	Sub-question b
6.	To describe the international regime for accidental oil spills at the North Sea; To evaluate the international regime, guided by the description and expert opinions	Sub-questions c, d, e, f and g
7.	To describe the national regime of the Netherlands for accidental oil spills at the North Sea;	Sub-questions c, d, e, f and g

	To evaluate the national regime of the Netherlands, guided by the description and expert opinions	
8.	To describe the national regime of Norway for accidental oil spills at the North Sea; To evaluate the national regime of Norway, guided by the description and expert opinions	Sub-questions c, d, e, f and g
9.	To describe the national regime of the United Kingdom for accidental oil spills at the North Sea; To evaluate the national regime of the United Kingdom, guided by the description and expert opinions	Sub-questions c, d, e, f and g
10.	To provide a comparison of the national regimes in terms of key similarities and key differences; To discuss the limitations of the performed research; To reflect on the theoretical background	Sub-questions f and g
11.	To present the conclusions of the research on the extent to which the regime at the North Sea is effective; To present recommendations for improvement of the regime; To present recommendations for future research	Sub-questions f, g and h; Central research question

2. REGIME THEORY

2.1 Introduction

This chapter aims to provide the first part of the answer on the question of what evaluation criteria can be used to assess the effectiveness of the regime for accidental oil spills from drilling platforms at the North Sea (sub-question a). Section 2.2 defines the central concepts of this question – regime and effectiveness. Section 2.3 sets out the strategy by means of which the evaluation will be carried out. This involves a brief discussion of strategies common in existing regime literature. Section 2.4 presents a number of features of effective regimes from which evaluation criteria can be derived. As will be elaborated on, this strategy requires a look into the role of problem structure. On the basis of the foregoing section 2.5 will then produce the evaluation criteria to be used for evaluating the regime. The chapter is finalized in section 2.6 in the form of some concluding remarks about the obtained results and their role in upcoming chapters.

2.2 The concept of 'regime' and 'regime effectiveness'

The study of (environmental) regimes is part of the research field of international relations. A regime can be defined as the "principles, norms, rules, and decision-making procedures around which actor expectations converge in a given issue area" (Krasner, 1983, p. 2). The regime concept covers both content and process and links them together. A regime's content, or substantive element, consists of its principles, rules, rights and responsibilities. A regime's process, or procedural element, consists of its mode of operation and the organizations established to make it work (Young, 1989).

Helm and Sprinz (2000) discern three phases in the development of the field of study revolving around regimes and their analysis. The first phase was centred on the issue of how and why regimes come about. The second phase focused on implementation and compliance. The third, and current, phase addresses the question of whether or not regimes matter and if so, to what extent. This thesis fits in with this latest branch of regime analysis.

The aim here is to assess the effectiveness of one particular regime – that for accidental oil spills from drilling platforms at the North Sea.

Zürn (1998) discusses the value of research on regime effects and notes that such studies differentiate between 'regime consequences' and 'regime effectiveness'. The consequences of a regime are basically all observed impacts that can be attributed to a regime. These include intended and unintended ones, those that pertain to the issue area and those that do not. Regime effectiveness, on the other hand, more specifically refers to the intentional, issue-area-specific impacts for the purpose of which the regime was set up. There are multiple definitions of regime effectiveness. Hisschemöller and Gupta (1999), for instance, take regime effectiveness to refer to "the capacity of the regime to solve the environmental problems it is meant to solve" (p. 152). This roughly coincides with the definition given by Underdal (2002) who states that regime effectiveness can be understood as "the extent to which [a regime] successfully performs a certain (set of) function(s) or solves the problem(s) that motivated its establishment" (p. 4). Young (1994) articulates yet another view. He distinguishes six different meanings of effectiveness (obtained from Zürn, 1998):

1. Problem solving – the extent to which a regime contributes to solving the problem it was designed to deal with;
2. Goal attainment – the extent to which a regime's stated or unstated goals are attained;
3. Behavioural effectiveness – the extent to which a regime alters the behaviour of its target group;
4. Process effectiveness – the extent to which a regime alters rules;
5. Constitutive effectiveness – the extent to which a regime gives rise to new social practices, and;
6. Evaluative effectiveness – the extent to which a regime fulfils evaluative criteria.

The concept of effectiveness used in this thesis resembles the first and sixth of the above meanings. I define regime effectiveness in the current context as follows:

The extent to which the arrangements that a regime encompasses can be expected to bring down the risk of major environmental damage as result of an oil spill to a level as low as reasonably attainable.

Two aspects of this definition require further explanation. First, there is a reason to explicitly mention "the arrangements" that a regime encompasses. As section 2.3, below, will explain in more detail the object of evaluation will be the regime itself (i.e. the principles, rules, norms, etc.) rather than e.g. the outcome in terms of the behavioural change it has brought about. Second, "can be expected […] as low as reasonably attainable" refers to the subjectivity in the judgement of these arrangements. Any evaluation inevitably involves some degree of subjectivity, and this is especially true here. Not only are the criteria which flow forth from literature and expert interviews in the end – to some extent – arbitrarily chosen, the decision of whether or not they are met is subjective as well. Obviously, since the experts deal with the issue of accidental oil spills on a day-to-day basis, their opinion on the extent to which risks are brought down to a level as low as reasonably attainable will be leading in the final verdict. Lastly, in order not to let the subjective elements in this thesis overshadow the obtained results, any choices will be made explicit – it is then up to the reader to determine the quality of these choices and the results that flow forth from them.

2.3 Strategies for regime evaluation

Studying regime performance would ideally involve comparing the workings of a regime with (improvement of) the state of the environment (Zürn, 1998). However, because of reasons ranging from the timescale on which environmental changes take effect to the lack of well understood environmental indicators the focus is more often put on observable effects earlier in the process. The effects of a regime can be investigated at different stages of its 'causal chain'; from when the first documents are produced to when the resulting change in human-environment interaction causes the problem the regime was created for to be solved. Underdal (2002) summarizes the challenges associated with assessing regime effectiveness into three issues that need to be addressed:

1. a clear description of the to be evaluated *object*;
2. a *standard* against which the object will be evaluated, and;
3. determination of the *measurement operation* that is to be performed for evaluation.

First, the object of evaluation can be a regime's output, outcome, and impact (Underdal, 2002). Output refers to the norms, principles, and rules constituting the regime itself. This can be specified further into the incorporation of regime obligations into national policies ($output_1$) on the one, and the setting up of appropriate policy instruments and measures ($output_2$) on the other hand (Skjaerseth and Wettestad, 2002). Outcome refers to behavioural change in the regime's target group that results from its workings. Impact refers to changes in the biophysical world as consequence of the behavioural change. Given the problems associated with a focus on impact, as touched upon above, the most sensible choice would be to assess effectiveness based on information of regime output and outcome.

Second, there are two evaluation standards that dominate the field. These are counterfactuals and collective optima (Underdal, 2002):

- A counterfactual is a rough baseline scenario of what would have been the state of affairs without a regime in place. Comparing this scenario with the actual situation renders a measure of relative improvement.
- A collective optimum refers to determining some level of maximum performance. Relative to this optimum it can be measured to what extent the regime meets this optimal level.

Third, with regard to the kind of measurement operation employed for the purpose of evaluation Underdal (2002) opts for ordinal-level measurement, i.e. using a fixed scale to assign a certain rank to the obtained performance of a certain regime (e.g. good/better/best). For performance measurement relative to a counterfactual and a collective optimum he constructs a 5 and 4 point scale, respectively. These scales more or less range from no improvement to major – or even super-optimal – improvement. He regards measurement by means of an ordinal scale the most sensible way to go, arguing that an interval scale, i.e. a

scale which, on top of assigning order, also describes the true difference between these values, makes no sense in this context. Helm and Sprinz (2000) would probably beg to differ. They construct just such a scale with the help of formula from political-economic theory. Their methodology consists of constructing a no-regime counterfactual and a collective optimum that together form two ends of a continuum. A score is computed for the examined regime falling within this continuum, thus awarding the regime a score of between 0 (no-regime) and 1 (collective optimum).

The methodology of Helm and Sprinz (2000) could theoretically provide a highly objective way of evaluating a regime. Unfortunately, it is difficult to apply their methodology to the type of regime discussed in this thesis. Helm and Sprinz (2000) mention emission data to be a first choice among indicators of performance in their model, given that emission changes point to some kind of behavioural change as a (possible) result of regime output. The regime of concern in this thesis, however, exhibits a more obscure link between behavioural change and any measurable variable (number of accidents, total amount of oil released as a result of accidents, etc.): accidents involve a certain degree of contingency, rendering their occurrence rather loosely coupled to any change in behaviour.

This thesis takes the strategy of Underdal (2002) as point of departure, but there are some important differences. First, the evaluated object will be regime output rather than regime outcome. This is unavoidable for the same reason as why the methodology of Helm and Sprinz (2000) cannot be used: there are no clear, measurable variables. An advantage of a focus on output, though, is that it allows for pinpointing weak spots, hereby illuminating aspects of the regime that may be improved. Regarding the definition of regime effectiveness provided in the previous section, output can thus be understood as "the arrangements that a regime encompasses." Second, in stead of a no-regime counterfactual or collective optimum as evaluation standard this thesis uses fixed evaluation criteria. This is a corollary of not being able to use outcome as object of evaluation. Standards like a no-regime counterfactual or collective optimum involve looking into behavioural change (i.e. outcome) and contrasting this change with what would have happened had there been in place no regime or a 'perfect' one, respectively. Moreover, for the purpose of generating practical insight into

what may be improved output-wise, measuring effectiveness in relative terms has no specific added value compared to reviewing performance as it is. An advantage of using evaluation criteria is its convenience for incorporating other types of knowledge into the equation – in this case knowledge from disaster studies, the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling and experts.

2.4 Features of effective regimes

Finding objective criteria for regime evaluation purposes is difficult (Wettestad, 2001). To determine the effectiveness of a given regime output Wettestad (2001) – who uses the term 'regime design' to define his object of evaluation in stead of 'regime output' – draws on the results of a gathering of distinguished regime scholars under the label of the Concerted Action Programme on the Effectiveness of International Environmental Agreements. This programme had two key objectives. First, it aimed to create "a forum for the development of a broadly based consensus on the most important factors that influence effectiveness" (Honkanen et al., 1999, p. 1). Second, it intended "to provide important insights to those responsible for the design and administration of international environmental agreements" (ibid). The Concerted Action Programme yielded a list of 16 factors that pertain to regime design, which are important for effectiveness. These 16 features are:

1. *Systems for implementation review (SIRs)*: institutions that enable regime members to share information, compare activities, review performance, handle non-compliance, and adjust commitments. Such systems are dependent upon the extent to which regulations are designed to be verifiable; if working properly they enhance the level of transparency.
2. *Non-compliance and dispute settlement procedures*: regime-specific procedures designed to deal with non-compliance, involving designated regime bodies and positive or negative incentives.
3. *Decision-making rules*: consensus seeking or majority voting as ways of making decisions. It is assumed that the need for reaching consensus is detrimental to

decision making on the one hand, while on the other it facilitates implementation. In the case of majority voting it is the other way around.

4. *Access procedures and issues*: procedures determining the extent to which, and at what stage(s), bodies external to the regime – e.g. NGOs or (representatives of) the general public – may participate in meetings and are granted access to relevant information. There is a link here with factor 1, above, and the broader issue of transparency.
5. *Funding mechanisms*: establishment of funds to compensate for inequity caused by either the environmental problem itself or the workings of the regime addressing it. Examples are support for developing countries in the context of climate change, and compensation payments related to oil spill liability funds.
6. *Legal nature (of commitments)*: commitments can be constructed to be legally binding ('hard law') and/or politically and morally binding ('soft law').
7. *Specificity of commitments*: commitments need to be specified in such a way that they allow for verification through implementation review, hereby supporting the legal nature of the regime as well as transparency.
8. *'Tailoring' of commitments*: in order to ensure long-term viability of a regime the private parties that are involved in the regulated sector(s) may require incentives for technological innovation.
9. *(Economic) instruments*: instruments such as emissions-trading schemes or eco-labelling allow for coping with divergent economic and environmental circumstances on the global level.
10. *The organization of scientific/technological advisory work*: many regimes address rather complex environmental problems (and solutions), which requires mechanisms to obtain state of the art knowledge and, consequently, ways to deal with controversies in the scientific community or unbalanced representation of different points of view.
11. *Membership/scale*: dependent on the scope of the environmental problem at hand, some regimes may profit from greater homogeneity among members and easier trade-offs when operating on a regional rather than the global scale.
12. *Interplay and linkages to other institutions*: Honkanen et al. (1999) do not further elaborate on this factor.
13. *Capacity to deal with conflicting priorities*: idem.

14. *Role of secretariats*: the functions that secretariats need to fulfil depend to a great extent on the nature of the underlying problem; complex problems may require the secretariat to assume a rather autonomous, or guardian role, whereas easier problems may require nothing more of the secretariat than to facilitate regime related activities.
15. *Scope/agenda*: Honkanen et al. (1999) do not further elaborate on this factor.
16. *Budgetary matters*: idem.

On top of regime design factors, the Concerted Action Programme also produced a list of factors exogenous to regime design. These relate to the structure of the problem addressed by the regime in question, and to other contextual factors. To assess the effectiveness of a particular regime based on its design (i.e. the way in which regime arrangements are shaped) problem characteristics and contextual factors need to be taken into account. Hisschemöller and Gupta (1999) argue that as environmental problems differ in nature, they need to be addressed by different kinds of environmental regimes. In a similar vein, Mitchell (2006) stresses that problem structure and regime design influence one another, causing the effect of a certain design feature to be dependent upon the problem it addresses. Given this relationship the Concerted Action Programme list of regime design features cannot be thoughtlessly adopted as a checklist for regime effectiveness – problem structure and the wider setting need to be controlled for.

A common way to classify the nature of environmental problems is by distinguishing between 'benign' and 'malign' problems. This classification is used by for instance Miles et al. (2002) and Hisschemöller and Gupta (1999). Benign problems are characterized by a relatively high convergence of interests among regime partners, which means the problem is mainly a matter of coordination. Malign problems, however, involve a degree of competition (for scarce resources, etc.) among regime partners, which complicates cooperation. Mitchell (2006) acknowledges the value of the benign/malign distinction, but criticizes it for being so simplistic it looses the potential a more disaggregated account of problem structure would have for making inferences with respect to regime design. He suggests problem structure is a matter of:

- the incentives of the different actors that converge around the problem;
- the capacities of these actors;
- the information the actors have at their disposal – related to the problem at hand as well as each others' preferences, and;
- the normative setting in which a regime is embedded.

Limiting variation in problem structure in research on regime effectiveness would allow for determination of which features of regime design are conducive under similar circumstances and which are not (Mitchell, 2006). Unfortunately, it does not seem such research exists at the moment. An attempt in this desired direction, albeit still quite far removed from the ideal, is undertaken by Hisschemöller and Gupta (1999) who present a problem typology directly linked to the kind of regime that would be best to address the respective problems. They classify different problems according to whether or not there is consensus on the problem between states (with regard to values and policy goals – i.e. ends) and whether or not there is consensus within individual countries, or 'at home' (with regard to the relevance of knowledge used in the process – i.e. means). This way four different problem types and corresponding regime type are obtained:

1. Unstructured problems (no inter-state consensus, no consensus at home), requiring a "learning"-type regime;
2. Moderately structured problems with respect to ends (inter-state consensus, no consensus at home), requiring a "distributive"-type regime;
3. Moderately structured problems with respect to means (no inter-state consensus, consensus at home), requiring an "integrative"-type regime, and;
4. Structured problems (inter-state consensus, consensus at home), requiring a "coordinating"-type regime

The regime this thesis endeavours to evaluate addresses a problem that, if set against the above typology, resembles problem type 2: in rather simplistic terms one might say that preventing and combating oil spills is universally considered desirable (ends), but there may be conflicts of interest (e.g. between governments and oil companies) with respect to what

arrangements would be appropriate to make this happen (means). Hisschemöller and Gupta (1999) point to the following characteristics of the distributive-type regime:

1. Governments will have to seek domestic confrontation and enforce an international agreement if free-riding is not an option;
2. Negotiations will concentrate on means, measures, and monitoring mechanisms, and;
3. States will have to involve domestic actors in the process if implementation failure is to be prevented.

These three characteristics enable tailoring the Concerted Action Programme's list of factors, introduced at the beginning of this section, somewhat more to the regime of our interest. Obviously, this is a rather crude way of trying to control for the type of problem and other contextual factors, but no information on how to account for all of Mitchell's (2006) aspects of problem structure seems to be available at the moment. The next section turns back to the Concerted Action Programme's list of factors to present a number of evaluation criteria that incorporate the relevant insights of Hisschemöller and Gupta (1999) and Mitchell (2006).

2.5 Evaluation criteria

The regime for accidental oil spills from drilling platforms at the North Sea will be evaluated in terms of its output, using fixed evaluation criteria and an ordinal scale of measurement. Previous sections have discussed, by means of a review of currently available methodologies for regime evaluation, why this specific approach was chosen. The criteria would ideally represent widely recognized features of those effective regimes which are similar in terms of the problem addressed and the context they are embedded in. Such criteria turned out not to be available. An alternative option was provided by the Concerted Action Programme, which presented a list of general regime design features that are considered to contribute to effectiveness. This list, however, does not control for problem structure. Using insights from scholars who have theorized about how to incorporate the role of problem structure into studies for effective regime design (i.e. regime output) this section adapts the list of features from the Concerted Action Programme for use in the evaluation of the regime of this thesis.

This process requires a fair amount of creativity. Not only does the list require incorporation of knowledge on problem structure, it also needs to be made more concise (to prevent overlap) while still covering all important issues. The criteria are formulated as follows:

1. The regime encompasses all relevant actors

This criterion is based on feature 11 of the Concerted Action Programme's list. It furthermore relates to the idea of Hisschemöller and Gupta (1999) that a regime of the type evaluated here needs to involve domestic actors to prevent implementation failure. Thus, the actors referred to here are both the countries themselves as domestic actors.

2. The regime addresses all issues that relate to the problem it was designed for

This criterion is based on feature 15 of the Concerted Action Programme's list. Even though Honkanen et al. (1999) do not go into the details, this criterion was thought to be intuitively appealing.

3. Commitments that follow from the regime are sufficiently stringent and binding

This criterion is based on features 6 and 7 of the Concerted Action Programme's list. Given Hisschemöller and Gupta's (1999) emphasis on enforcement, commitments need to be actually enforceable. The criterion also relates to the issue of different incentives of regime actors raised by Mitchell (2006). The formulation of mutually agreed upon commitments may aid to align incentives.

4. The regime comprises sufficient mechanisms for reviewing implementation and compliance

This criterion is based on feature 1 of the Concerted Action Programme's list. It builds on the previous criterion: to have proper enforcement the commitments need to be complied with and this needs to be checked.

5. The regime comprises sufficient mechanisms to enforce implementation and compliance

This criterion is based on feature 2 of the Concerted Action Programme's list. It builds on the previous criterion: proper enforcement requires mechanisms to deal with non-compliance.

6. The regime is sufficiently robust to cope with challenges caused by internal affairs

This criterion is based on features 3 and 5 of the Concerted Action Programme's list. The scope of this criterion somewhat broadened in comparison to the mentioned features in order to incorporate the need for negotiations on the means and measures that the regime encompasses and the necessity to involve domestic actors in the process as put forward by Hisschemöller and Gupta (1999). It also relates to the relevance of the normative setting raised by Mitchell (2006). The setting of the current regime is one in which actors (be them countries, regime bodies, or oil companies) are considered to work out their difference through deliberation rather than coercion.

7. The regime is sufficiently robust to cope with challenges caused by external affairs

This criterion is based on feature 13 of the Concerted Action Programme's list. Even though Honkanen et al. (1999) do not go into the details, this criterion was thought to be intuitively appealing. It is used here to assess if the regime is sufficiently protected against economic bad weather or other issues that might negatively impact on the regime's quality. For other regimes this criterion may refer to, for instance, a region's political (in)stability.

8. The regime is able to adapt to changing requirements, when necessary

This criterion is based on features 3 and 10 of the Concerted Action Programme's list. It is formulated in a more general way than the two features. It refers to the role of information in the structure of the problem as touched upon by Mitchell (2006). If such information changes the regime might have to adjust.

9. Transparency is ensured, i.e. outsiders can, should that be desired, scrutinize the workings of the regime

This criterion is based on feature 4 of the Concerted Action Programme's list, and to a lesser extent also on features 1 and 7. There is also a link here with the normative setting issue brought up by Mitchell (2006).

10. Regime bodies have sufficient means to perform their tasks

This criterion is based on features 14 and 16 of the Concerted Action Programme's list. It also relates to the issue of actor capacity, an important aspect of problem structure identified by Mitchell (2006).

I, again, would like to stress that the above criteria incorporate some insights of problem structure only in an intuitive way. Perhaps in the future a more substantiated list of this kind can be produced.

Features 8, 9 and 12 from the Concerted Action list are omitted from the final evaluation criteria. This is because the first two pertain to global regimes rather than regional ones, while the latter seems to refer to exogenous influences (see: Honkanen et al., 1999).

2.6 Concluding remarks

This chapter set off to come up with evaluation criteria, based on regime theory, which can be used to evaluate the regime for accidental oil spills from drilling platforms at the North Sea. After definition of the central concepts – regime and effectiveness – and determination of a suitable strategy, the Concerted Action Programme on the Effectiveness of International Environmental Agreements provided a number of regime features which were turned into evaluation criteria. This involved taking into account the structure of the problem at hand and other contextual factors. Unfortunately, this could only be done to a limited extent. Insights from scholars that made initial attempts to appreciate the necessity to account for

such aspects, and a touch of creativity, allowed for the construction of 10 evaluation criteria. The criteria feed into chapter 5 where definitive evaluation criteria are presented based on this chapter and the following two.

3. DISASTER STUDIES

3.1 Introduction

This chapter aims to provide additional criteria that can be used to assess the effectiveness of the regime for accidental oil spills from drilling platforms at the North Sea (sub-question a). This is done by looking into 'disaster studies'. I use this phrasing to capture both studies into accident prevention and studies into accident response, which are two independent research fields. Central to both is the aim to prevent accidents from turning into disasters. The former research field has a rather theoretical orientation while the latter is of a more practical nature.

Knowledge about accident prevention is captured by Saleh et al. (2010) under the term 'theories of accident causation and system safety'. As more and more accidents were studied and compared it became clear that the causes of many of them are a complex combination of organizational, technical and human factors. What is more, it was observed that interactions between different elements of a system, rather than any of those elements independently, feature prominently in failures leading up to disaster. Such systems are consequently called 'socio-technical systems' and the accidents are characterized as either organizational or system accidents. The literature on accident causation and system safety is extensive but fragmented (Saleh et al., 2010). Figure 3 shows the different ideas and theories that have been developed on the subject over the years.

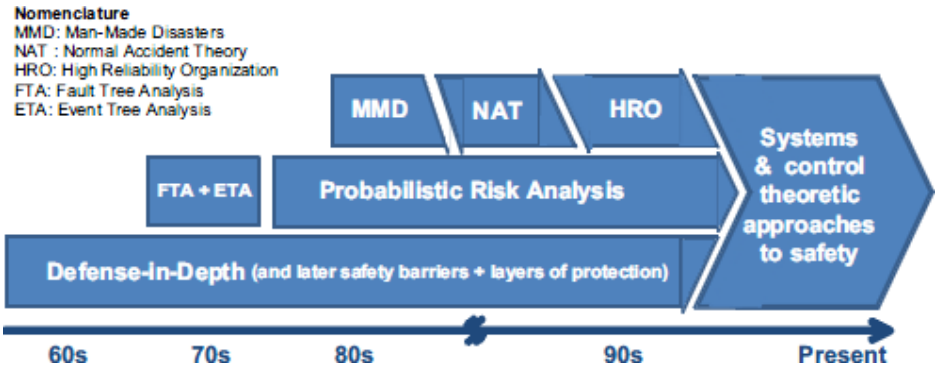

Figure 3 – Three tracks in the evolution of ideas on accident causation and system safety, and their culmination (Saleh et al., 2010)

Section 3.2 will briefly touch upon each of the different lines of thought – which I consider to be non-holistic approaches to safety – that spawned the development of the more holistic 'systems & control theoretic approaches to safety'. Thereafter section 3.3 will elaborate on this latest addition to, and current culmination of, theories about accident causation and system safety. Section 3.4 will discuss what is considered to be good quality accident response. Research on this issue may be captured under such terms as 'emergency planning' or 'emergency preparedness'. Based on the systems approach to safety – here and their aided by insights from the other theories – and insights from emergency planning section 3.5 will present the evaluation criteria that will be levelled at the regime for the prevention of and response to accidental oil spills from drilling platforms at the North Sea. Section 3.6 finalizes this chapter in the form of some concluding remarks about the obtained results and their role in upcoming chapters.

3.2 Non-holistic approaches to safety

3.2.1 Man-made disasters

The man-made disasters model (MMD) was developed by Barry Turner in 1978. It was a first, path-breaking attempt to develop an understanding of why and how disasters occur. Turner concluded that accidents in which humans are involved show very similar patterns of flawed interaction between the human and organizational aspects of socio-technical systems. He defined disasters from a sociological perspective as events that avowedly demonstrate a divergence between cultural beliefs or norms about risks (of companies, governments, society at large, etc.) and reality. Such divergence often develops over long time scales in which latent processes slowly converge, unnoticed, up to a point that system failure becomes inevitable – this is called the 'disaster incubation period'. Proneness to disaster arises from unintended, complex interactions within a system, from their structured amplification as they progress through the system in ways determined by its organizational structure, and from the social processes that unwittingly conceal failure hereby rendering organizational 'intelligence' insufficient to understand what is going on (Pidgeon and O'Leary, 2000).

Pidgeon and O'Leary (2000) derive from the above that the concept of 'safety culture', at the interface of culture and institutional design, lies at the heart of the safety question. They define safety culture as "the set of assumptions, and their associated practices, which permit beliefs about danger and safety to be constructed" (p. 18). Appropriate safety culture may be bolstered by (Pidgeon and O'Leary, 2000):

1. senior management commitment to safety;
2. shared care and concern for hazards and a solicitude over their impacts upon people;
3. realistic and flexible norms and rules about hazards, and;
4. continual reflection upon practice through monitoring, analysis and feedback systems (organizational learning).

The last of the above factors is as important as it is difficult to attain. Information difficulties and political processes pose formidable barriers. Apart from the complexity of a situation power relationships may cause different (social) constructions of emerging or past events to be brought about, serving the interests of those with high stakes in the matter (Pidgeon and O'Leary, 2000). Secrecy, improper reporting of incidents and playing down failure when faced with external accountability are among the consequences of such processes (Rijpma, 1997). To tackle the 'blame' aspect inherent in many safety issues, without ignoring it as a source of motivation for good performance, Pidgeon and O'Leary (2000) suggest attention should go out to *inter alia* the protection of 'whistleblowers' (employees that uncover certain unsafe practices) and, on a more general note, clear ideas about information access and confidentiality in order to support reporting and monitoring systems.

3.2.2 Normal accident theory

Charles Perrow built forth on the effort of Barry Turner in 1984 by presenting his normal accident theory (NAT). He introduced the intrinsic properties of socio-technical systems into the equation. Perrow observed that some systems are more prone to disaster than others. He explained this through the concepts of 'interactive complexity' and 'tight-coupling' (Rijpma, 1997). The first stands for the number of ways in which the various elements of a system can

potentially interact, while the latter points to the speed at which this happens (Cooke and Rohleder, 2006). Interactive complexity is likely to be encountered in systems that have components with multiple functions, that have these components close to each other, and that deal with materials in differing states (e.g. chemistry). Tight-coupling is a feature accompanying systems of tight production processes, with specialized personnel, and where improvisation is basically impossible because of built-in safety devices (Rijpma, 1997). Systems characterized by a high degree of both interactive complexity and tight-coupling will inevitably be confronted with accidents at some point – this is nothing but normal, hence "normal" accident theory.

NAT is often criticized for not presenting any real answers with regard to how accidents can be prevented: it provides an explanation only for those accidents that occur in interactively complex and tightly coupled systems, the two central concepts are inadequately defined and it does not elaborate on a strategy to reduce either interactive complexity or tight-coupling (Hopkins, 1999).

3.2.3 High reliability organizations

Literature on high reliability organizations (HRO) starts from the observation that there actually are organizations that, despite operating under trying conditions, exhibit excellent safety records (Saleh et al., 2010). High reliability organizations display a number of features essential to safety (Rijpma, 1997):

1. *Redundancy*. If one system component, be it technical or human, fails it is backed up by another. The same goes for warning signals that pass through multiple channels.
2. *Decentralized decision-making authority*. Enabling lower level personnel to respond to problems as they occur allows for a more rapid response than when deliberation with high level managers is required first. Prerequisite for this to work is that appropriate central decision premises are in place upon which their response can be based.
3. *Conceptual slack*. Diverging theories about the system are upheld. In case of problems deliberation about the proper course of action may prevent signals to be overlooked

4. *Organizational learning*. Trial and error learning, continuous training of personnel, and the simulation of various possible accident scenarios serve to develop and improve the skills that may one day be called upon to ensure safety.

Using insights from normal accident theory Rijpma (1997) argues that the above conditions for high reliability should not be thoughtlessly adopted as panaceas for preventing accidents. For instance, redundant components may not be as independent as they appear. They could act through similar mechanisms and thus fail simultaneously. This is called a 'common-mode failure'. Redundancy may also make failures go unnoticed for a longer period of time as they are concealed by back-up systems. Furthermore, learning is a difficult matter in complex systems (as we have come across in section 3.2.1 as well). It requires quite some effort and time, and does not guarantee actual safety. Moreover, in tightly-coupled systems the need for swift reaction is likely to subvert efforts to obtain on-the-scene information that can be essential to ex-post learning.

Cooke and Rohleder (2006) try to bridge the gap between normal accidents and high reliability by developing an incident learning system. They argue that such a system can help to bring down any barriers to organizational learning (which have been discussed above and in section 3.2.1). Cooke and Rohleder (2006) posit that effective learning depends on a well-working system of incident identification and response thereto, reporting, investigation, determining causal structure, taking corrective actions, and capturing and communicating the 'learning' from the incident.

Discussing the intricate details behind each of the components of this incident learning system is beyond our scope here, but one element deserves to be explicitly mentioned. Section 3.2.1 already mentioned the importance of management commitment to safety. This concept features prominently in the model of Cooke and Rohleder (2006) as well. They argue management commitment to safety influences risk perceptions of individual workers, hereby determining the extent to which reporting and investigation takes place, and the extent to which corrective actions are taken. Figure 4, by means of a causal loop diagram, shows how management commitment to safety is linked with concerns of productivity and safety.

Figure 4 – Balancing productivity and safety (Cooke and Rohleder, 2006). A + means that the two variables are linked in a positive way, i.e. if one in/decreases the other does too; a – means that the two variables are linked in a negative way, i.e. if one in/decreases the other moves in the opposite direction.

Productivity refers to any desired business goal, e.g. achieving certain production targets or meeting pre-established deadlines. Productivity pressure is the pressure to achieve such a goal. The ideal situation is reflected by the outer circle in which losses are reacted to by increased attention to safety, leading to less unsafe conditions. Unfortunately, losses may also cause productivity pressure to increase. High productivity pressure potentially draws attention away from safety issues. The inner circle representing this state of affairs is self-reinforcing. If losses increase productivity pressure, which in turn negatively impacts on safety measures, the result is a so-called 'disaster spiral' that can only be escaped from by renewing attention to safety improvements (Cooke and Rohleder, 2006).

On the basis of their model Cooke and Rohleder (2006) present no less than 10 suggestions to overcome barriers to organizational learning. Even though these are mainly intended to be taken up by (individual) organizations – which is beyond our current scope – they do point to some general aspects important for achieving incident learning within whatever context. And as the discussion in this chapter thus far hints on, a regime that aims to prevent accidents should allow for effective incident learning. Their five most relevant suggestions for the present discussion are (Cooke and Rohleder, 2006):

1. safety culture ought to be improved by discussing safety in all openness, by treating people fairly and by implementing corrective actions where necessary;
2. in learning from incidents there should be a focus on its causal structure from a systems approach to safety, rather than on a single 'root cause';
3. lessons learned must be discussed and communicated when and where appropriate, not in the least to support sector-wide benchmarking and to establish 'best practices';
4. the 'blame game' should be eliminated to the extent possible through encouragement of incident reporting and implementation of corrective actions, and;
5. feedback tools of some sort can serve to assess management commitment to safety and to determine the extent to which incidents are actually learned from.

Wrapping up their discussion Cooke and Rohleder (2006) wish to emphasize that the above suggestions will have their desired effect only if sufficient resources are allocated to act on the lessons learned (otherwise a system may remain stuck in the disaster spiral shown in figure 4) and if the political and legal context does not cause attention to be overly drawn to issues of blame and prosecution.

3.2.4 Probalistic risk analysis and defense-in-depth

The heretofore discussed theories lack a link with the technical aspects of system safety (Saleh et al., 2010). This is where probalistic risk analysis (PRA) and defense-in-depth come into play. PRA is a framework in which a set of analytical tools is used to assess accident scenarios and risks in complex systems. PRA deals with how technical systems are designed and is used to explore the sequence of events that could lead to disaster. Basically, it points to answering three questions: 1) what can go wrong, 2) how likely is it, and 3) what are the consequences? The answers to these questions eventually lead to the formulation of various accident scenarios that can subsequently be dealt with. PRA aspires to deliver detailed knowledge of a system's technicalities and statistics to back up claims of risk identification. PRA also has its critics. Points of critique include the limited extent to which probabilities can be realistically calculated, the uncertainty of obtained results, and its inability to include human errors and software issues (Saleh et al., 2010).

Defense-in-depth, then, is a principle or strategy for achieving system safety by creating multiple lines of defense and safety barriers along accident scenarios. These barriers then serve to prevent, mitigate, or contain system failures. The concept relates to strategies of redundancy as mentioned in high reliability theory. Building forth on probalistic risk analysis it adds a fourth question to the above list: what are we actually going to do about any identified accident scenarios? As we have seen in section 3.2.3 putting in place multiple barriers is considered to add to reliability, but doing so in a complex environment may yield entirely new problems of its own.

3.3 A holistic approach to safety: systems theory

3.3.1 The necessity of a new approach to safety

Years of study into accident causation and system safety eventually led to the development of a model based on basic concepts of systems theory (Leveson, 2004). The hitherto leading theoretical constructs in this field of research – normal accident theory and high reliability theory – were considered to fall short in providing sound recommendations for improving strategies of accident prevention (Marais et al., 2004). In the discussion so far we have seen attempts to refine, or build on, both theories, yet these refinements did not go as far as to develop an approach that takes into account *all* factors involved in why accidents occur and how they may be prevented. Most attention has been centred on issues of (organizational) learning. Marais et al. (2004) argue that a systems approach to safety can help to avoid the limits posed by NAT and HRO, and unjust sanctification of learning as safety enhancement tool, by focusing on the integrated whole of characteristics of a socio-technical system – technical, organizational, social, and their interrelations.

The model referred to above is called the 'Systems-Theoretic Accident Model and Processes', or STAMP. It employs a holistic, systems view on accidents enabling it to account for social and organizational factors (e.g. management commitment to safety and safety culture), system accidents and software errors (which result from dysfunctional interactions among in itself possibly perfectly functioning individual system components), human error (including

the mechanisms and factors that shape human behaviour) and adaptation (the tendency of socio-technical systems to slowly push the boundaries of safety under conditions of productivity pressure). STAMP tries to develop an understanding not so much of an accident's *causes*, rather of its entire, underlying set of *reasons* (Leveson, 2004).

3.3.2 Brief explanation of the STAMP approach

Leveson (2004) uses STAMP to draw up a comprehensive list of factors that may lead to disaster. These factors can be tailored to any kind of socio-technical system and may serve to assess a system on whether or not it encompasses proper mechanisms to prevent potential failures to occur. The list, presented in section 3.3.3, will be used in section 3.5.1 as a basis for the evaluation criteria for the prevention of accidental oil spills. First, this section will shortly discuss how the model works to clarify the origin of the factors included in the list. Figure 5, on the next page, shows how a model of socio-technical control is generally shaped.

STAMP revolves around two central concepts. The first involves the notion of safety as an 'emergent property' of socio-technical systems; the second is about 'safety constraints' that control the behaviour of the constitutive components of these systems. The former concept brings to the fore the notion that the degree to which a system may be considered safe can only be determined by looking at the big picture – by considering individual components, their interrelations, and the external environment. Thus, safety is no property of individual system components, rather it arises from the workings of a system as a whole, i.e. it emerges from it (Marais et al., 2004).

The latter concept, safety constraints, builds on the notion of safety emergence by viewing accidents as a control problem. The emergent properties of a system are controlled by safety constraints (control laws) guiding the behaviour of its components (Leveson, 2004). The constraints serve to prevent unsafe interactions, and must be unconditionally satisfied even as the system adapts or reacts to changes that occur in itself or its contextual environment. From this perspective understanding and preventing accidents requires (Marais, et al., 2004):

- identifying the safety constraints a given system requires to prevent accidents;
- designing this system in such a way that these constraints are enforced, and;
- establishing how the processes which are meant to be controlled might change over time, for whatever reason, and building in mechanisms to convey when, and to what degree, this is happening – some kind of metric or auditing instrument may be constructed for this purpose.

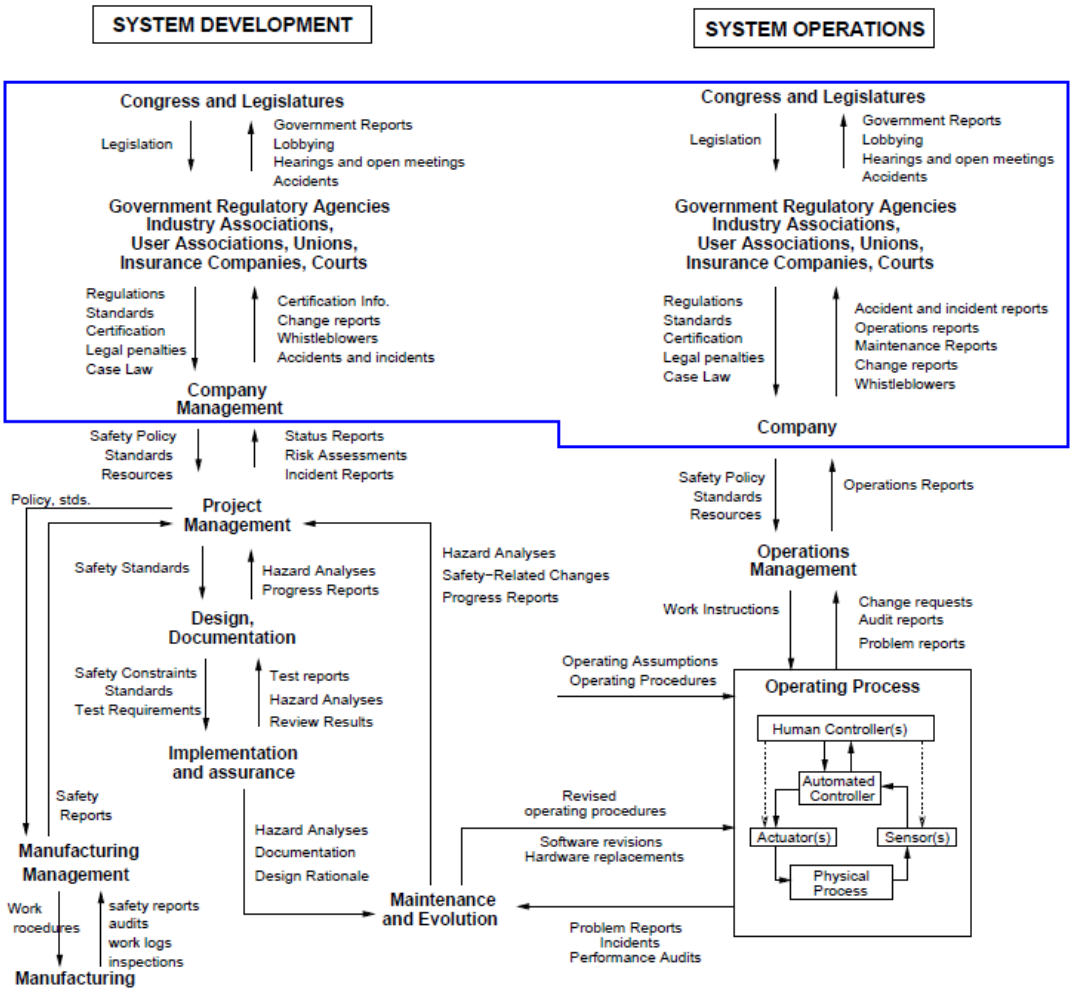

Figure 5 – General form of a model of socio-technical control (Leveson, 2004). Blue line inserted to indicate the operating field of regimes.

Figure 5 illustrates how the above concepts can be used in relation to ensuring the safety of a socio-technical system. The arrows represent adaptive feedback loops that together form a hierarchy (i.e. different levels) of control. Control commands are issued downwards, while a

flow of information about the system's state (feedback) is issued upwards. This way, higher levels constrain or allow the behaviour of lower levels (Leveson, 2004). For such a process to work properly a number of conditions need to be fulfilled, which enable the one, or ones, in the controlling position – human or automated – to actually exercise control (Ashby, 1956 in: Leveson, 2004). The controller must:

1. …have a goal or goals – of which staying within predefined safety constraints is one;
2. …be able to affect the state of the system;
3. …be (or contain) an up-to-date model of the system – to be used to determine what control actions, if any, are needed, and;
4. …be able to ascertain the state of the system.

3.3.3 General factors leading to disaster: a classification of control flaws

Before turning to the list of general factors that may lead to disaster some final remarks in relation to figure 5 are in order. First, the model shows two control structures: one of system development, the other of its operational use. Not only does safety need to be integrated into the design of a system, it also needs to be enforced through effective control over operational processes. There needs to be perpetual communication between those involved in the former and the latter in order to keep the system running safe (Leveson, 2004). Second, the model provides useful insight into how the concept of regimes can be related to the notion of socio-technical systems. A regime comprises the upper part of the system (blue line), including familiar institutional mechanisms like laws, regulation, certification, hearings, and so on. Third, for instructions to move from the upper part of the control system down to the lower parts – and vice versa in the case of feedback – it takes time. Such time lags are inescapable in these kinds of systems. Therefore, delegating certain aspects of control to lower levels is indispensable (Leveson, 2004). Finally, each adaptive feedback loop at each level of the control structure in place during system design, development or operations can be deficient (ibid.). It is exactly this conception which underlies the construction of the list of general disaster-inducing factors – and hereto we now turn. Leveson (2004) presents the following classification of control flaws that may lead to disaster:

1. Inadequate enforcement of safety constraints (control actions)

1.1 Hazards (and corresponding constraints) are not identified.

1.2 Hazards are identified, but control actions are missing, inappropriate, or ineffective.

1.2.1 The model of the system used to determine needed control actions is flawed, i.e. the set of possible system states, disturbances, and behaviours (including incorrectly handled component failures) is incomplete. Causes may be inadequate model design, faulty updating, or time lags/measurement inaccuracies that are unaccounted for.

1.2.2 Control actions are designed inadequately, are left unchanged while the underlying process has changed, or are incorrectly modified. Monitoring and communication are key to correct for, or prevent, such occurrences.

1.2.3 Inadequate coordination among controllers and decision-makers – if there are boundary and overlap areas with regard to who is controlling, or governing, a process ambiguity and conflicts can arise. Control actions can turn out to be missing or contradictory. Again, communication is key.

2. Inadequate execution of control actions

2.1 Identified hazards and corresponding constraints are inadequately communicated to the appropriate persons; system designers, operators, etc.

2.2 A control command is not properly transmitted within the system or is inadequately executed.

2.3 It takes too much time to execute a control action (time lag).

3. Inadequate or missing feedback

3.1 Feedback is not provided for in the design of the system.

3.2 Monitoring or feedback communication channels are flawed.

3.3 The feedback instrument itself is flawed.

3.4 Feedback is untimely (time lag).

Section 3.5.1 will draw on the STAMP approach and, where relevant, foregoing theories to provide evaluation criteria for accident prevention – these will be more intuitively suitable for regime assessment than the above classification of control flaws.

3.4 Emergency planning

Having done all that is humanly possible to avoid accidents, there still remains a chance of unforeseen, unfortunate sequences of events causing things to spiral out of control and rendering any taken precautions obsolete – disaster never stops lurking around the corner. The establishment of response arrangements to limit the adverse consequences of accidents drives the field of 'emergency planning'. A universal guide as to what governments or organizations should do to prepare for disaster is yet to be developed, but research on the issue has yielded a number of abstract principles that go a long way to approaching the ideal (McConnell and Drennan, 2006).

Perry and Lindell (2003) present 10 emergency planning guidelines. They argue that being prepared for disaster entails more than simply devising an emergency plan. Their list of principles therefore focuses mainly on the *process* of planning. To Perry and Lindell (2003) "[e]mergency preparedness refers to the readiness of a political jurisdiction to react constructively to threats from the environment in a way that minimises the negative consequences of impact for the health and safety of individuals and the integrity and functioning of physical structures and systems" (p. 338). It involves planning, training, exercising, acquiring the right response equipment, and documenting all of these and related matters in a written plan. Emergency planning is an ongoing jurisdictional process driven by two objectives. First, potential hazards are identified and their corresponding risks assessed. Second, actions necessary to reduce any identified risks to an acceptable level are established (which is basically a political act) and the resources these actions require are made available. The recommendations Perry and Lindell (2003) present for the emergency planning process are:

1. The planning process should be based on the best available knowledge regarding relevant threats and corresponding human responses.
2. Emergency managers should be encouraged to take appropriate, rather than speedy, actions.

3. The planning process should allow for an appropriate degree of flexibility in order to adjust activities when the situation places different demands on the response effort.
4. Inter-organisational coordination – in terms of to be performed tasks, communication systems, and resource allocation – should be fostered.
5. Efficiency should be bolstered through integration of single-hazard emergency plans into one, comprehensive multi-hazard approach.
6. Emergency planning should include training of those involved in any part of the response effort. Others, like elected officials and citizens, need to be informed about established plans and corresponding operations.
7. Proposed response operations should be thoroughly tested (through drills, exercises, etc.), both for the purpose of fine-tuning and publicity.
8. Emergency planning should be recognized as an ongoing process requiring constant tweaking in the face of changing circumstances.
9. Conflict and resistance which is likely to flare up at some point – aversion to account for worst-case scenarios, resource issues, role allocation, etc. – needs to be addressed.
10. Emergency planning (preparedness) and emergency management (implementation) should not be confused; however excellent a plan may be, the proof of the pudding is in the eating.

Alexander (2005) focuses not so much on the planning process, rather on the contents of the emergency plan itself. He defines an emergency plan as "a coordinated set of protocols for managing an adverse event, whether unexpected or untoward, in the future" (p. 159). Alexander (2005) builds forth on, amongst others, the work of Perry and Lindell (2003) to develop an emergency planning standard from which questions are derived that can be used for evaluation purposes. An emergency plan, Alexander (2005) argues, needs to be a resultant of stakeholder consensus. All should be familiar with the plan, know their respective roles, and be satisfied with the arrangements. Furthermore, the plan ought not to exhibit too many (legislative) coercive tendencies as, on the one hand, this may inhibit efficacy – one can imagine strict legal obligations to draw attention away from the actual requirements in a response situation – and, on the other hand, it may not yield any added value given that 'blaming' is likely to occur upon failure anyway. Having said that,

Alexander (2005) proposes the following questions, divided into five categories, should be asked when evaluating emergency plans:

Legislative and organisational context

- Are disaster mitigation policies adequate and in place?
- Are the provisions of legislative instruments fully respected?
- Are legal and jurisdictional responsibilities of plan participants fully specified?

Clarity of objectives

- Are scope and general objectives clearly set out?
- Are conditions for activation of the plan fully specified?

Hazard, vulnerability and risk analysis

- Has sufficient historical analysis of past hazards in the local area been carried out?
- Has hazard probability analysis been accomplished?
- Have vulnerability and risk analyses been conducted adequately?
- Have disaster scenarios for the local area been constructed, and are they satisfactory?

Logistics

- Has an audit been conducted of emergency resources?
- Is the structure of command systems and centres fully described?
- Are communications equipment, protocols and procedures specified?
- Are warning, evacuation and other pre-disaster preparations worked out?
- Are search-and-rescue operations organised and managed?
- Are the provisions for maintenance of the public order satisfactory?
- Are media and public information arrangements in place, tested, and approved?
- Are medical and mortuary services, including transportation for the injured, O.K.?
- Are mutual assistance pacts incorporated into the plan?
- Are infrastructure recovery efforts and basic services adequately described?
- Is private sector (hospitals, airports, etc.) involvement, if necessary, included?

Arrangements

- Are arrangements for testing the plan in place?
- Are arrangements for disseminating the plan in place?
- Are arrangements for updating the plan in place?

Guided by the above set of questions an emergency plan can be evaluated on the basis of its level of detail, general level of clarity, and general functionality (Alexander, 2005).

3.5 Evaluation criteria

3.5.1 Evaluation criteria for accident prevention

Sections 3.2 and 3.3 have provided a wealth of information about what it takes to prevent accidents and to ensure that socio-technical systems are safe. This information is captured in 17 evaluation criteria on the basis of which the effectiveness of the regime at the North Sea for the prevention of accidental oil spills from drilling platforms can be assessed. The classification of control flaws of Leveson (2004) was used as point of departure for the construction of these criteria. The criteria cover the topics of safety culture prerequisites, knowledge base and design of safety/control measures, implementation of safety measures and operational issues, coordination and communication, feedback (monitoring, reporting and learning), and resource allocation.

Safety culture prerequisites

1. Relevant regime bodies have shared goals with regard to system safety (Leveson, 2004)
2. The regime encourages management commitment to safety amongst oil companies (Pidgeon and O'Leary, 2000; Cooke and Rohleder, 2006)

These criteria reflect the first prerequisite for exercising control as indicated in the STAMP approach (see page 47). They also refer to the first two issues raised by Pidgeon and O'Leary

(2000) to enhance safety culture (see page 39) and the need for management commitment to safety in Cooke and Rohleder's (2006) incident learning system (see page 42).

Knowledge base and the design of safety/control measures

3. There is complete overview of the system(s) at hand (i.e. of components, interactions, processes, etc.), of the external environment, of both their changes over time, and of corresponding appropriate behaviours of any entity – internal or external – in relation to the system (Leveson, 2004)
4. Based on such knowledge regular hazard identification takes place (Leveson, 2004)
5. Based on such hazard identification control measures are formulated and regularly reviewed (Leveson, 2004)
6. As much as sensible, if there are diverging views regarding any of the above, these are respected and accounted for (Pidgeon and O'Leary, 2000)

Criterion 3 refers to control flaw 1.2.1 of the STAMP model. Criterion 4 refers to control flaw 1.1 of the model. Criterion 5 refers to control flaw 1.2.2 of the model. Criterion 6 refers to the third issue raised by Pidgeon and O'Leary (2000) relating to safety culture (see page 39).

Implementation of safety measures and operational issues

7. Sufficient redundancy is (mandated to be) built into control structures (this may be physical, human, regulatory, etc.) to compensate for individual component failure – these redundancies ought to be demonstrably independent regarding their entry into force and, to prevent hidden errors, it should be clear when they take effect (Rijpma, 1997)
8. Control measures are duly implemented (Leveson, 2004)
9. The regime upholds a proper level of conceptual slack with respect to the 'on the ground' implementation and execution of control measures (Rijpma, 1997)

Criterion 7 refers to the first characteristic of high reliability organizations as well as the problems in relation thereto indicated by NAT (see pages 40 and 41) and aims to minimize the chance of control flaw 2.2 of the STAMP model to be the single cause of an accident.

Criterion 8 refers to control flaw 2.3 of the model. Criterion 9 refers to the third characteristic of high reliability organizations (see page 40).

Coordination and communication

10. Responsibilities and tasks, relating to any of the above and below requirements, are clearly delegated and mapped (Leveson, 2004)
11. These responsibilities and tasks are properly and duly communicated to all relevant parties (Leveson, 2004)
12. Where sensible (and in support of criteria 8 and 9) authority is delegated to lower levels (Rijpma, 1997)

Criterion 10 refers to control flaw 1.2.3 of the STAMP model. Criterion 11 refers to control flaws 1.2.3 and 2.1 of the model. Criterion 12 refers to the second characteristic of high reliability organizations (see page 40).

Feedback (monitoring, reporting and learning)

13. Adequate and frequent monitoring takes place to verify implementation of control measures and whether or not the system operates as desired (Leveson, 2004; Pidgeon and O'Leary, 2000)
14. Adequate reporting mechanisms are in place to bring the results of monitoring practices to the attention of relevant parties (Leveson, 2004; Cooke and Rohleder, 2006)
15. Adequate incident learning takes place through investigation of incidents (taking a holistic or systems view) and discussion of the consequences of such investigations amongst all relevant parties, feeding into the activities captured under criteria 4 and 5 (Cooke and Rohleder, 2006)
16. The regime fosters a learning-favourable context – there are mechanisms for the encouragement of reporting, for preventing secrecy, for whistleblower protection, etc. (Pidgeon and O'Leary, 2000; Cooke and Rohleder, 2006)

Criterion 13 refers to control flaws 3.1, 3.3 and 3.4 of the STAMP model, the fourth issue raised by Pidgeon and O'Leary (2000) to enhance safety culture (see page 39) and the fifth suggestion of Cooke and Rohleder (2006) for effective incident learning (see page 43). Criterion 14 refers to control flaw 3.2 of the STAMP model and Cooke and Rohleder's (2006) third suggestion for effective incident learning (see page 43). Criterion 15 refers to the incident learning system of Cooke and Rohleder (2006) in general and more specifically to their second and third suggestion for effective incident learning (see page 43). Criterion 16 refers to the whistleblower issue raised by Pidgeon and O'Leary (2000) to enhance safety culture (see page 39) and the first and fourth suggestion of Cooke and Rohleder (2006) for effective incident learning (see page 43).

Resource allocation

17. Sufficient resources are allocated to any organizations or institutions that occupy themselves with ensuring safety of the socio-technical system(s) the regime targets (Cooke and Rohleder, 2006)

Criterion 17 refers to one of the final remarks made by Cooke and Rohleder (2006) saying that to prevent getting stuck in the disaster spiral sufficient resources need to be available to correct unsafe conditions identified in a system.

3.5.2 Evaluation criteria for accident response

Section 3.4 provided insight into the requirements for effective response to accidents. On the basis of this information 7 evaluation criteria are constructed which can be used to assess the effectiveness of the regime at the North Sea for the response to oil spills. Each criterion encompasses a number of issues brought up in the aforementioned section. The sources of the criteria (i.e. the issues to which they relate) are indicated below each criterion. As these issues serve the purpose of operationalizing the criteria they will be explicitly tied to their appropriate criterion in chapter 5. Therefore, to prevent unnecessary repetition, they will not be reiterated here. As the criteria are relatively straightforward (and given that there are only seven of them) no additional categorization is applied.

a. The national oil spill response system is properly compatible with relevant legislation and internally congruent (Alexander, 2005)

This criterion is based on the discussion of Alexander (2005) of 'legislative and organisational context' as well as his arguments on the need for stakeholder consensus and potential problems with (legislative) coercive tendencies (see page 51).

b. The national oil spill response system is comprehensive and clear (Alexander, 2005; Perry and Lindel, 2003)

This criterion is based on the discussion of Alexander (2005) of 'clarity of objectives' (see page 51), and the recommendation of Perry and Lindel (2003) to take a comprehensive multi-hazard approach (see page 50).

c. The national response system is based on adequate knowledge of the nature of potential oil spill situations (Alexander, 2005; Perry and Lindel, 2003)

This criterion is based on Alexander's (2005) discussion of 'hazard, vulnerability and risk analysis' (see page 51), and Perry and Lindel's (2003) first recommendation (see page 49).

d. There is a clear understanding of the tasks that need to be performed, and these tasks are fully set out (Alexander, 2005)

This criterion is based on the discussion of Alexander (2005) of 'logistics' (see page 51).

e. There are adequate physical resources, and there is a clear understanding of when and how they are to be deployed (Alexander, 2005)

This criterion is based on the discussion of Alexander (2005) of 'logistics' (see page 51).

f. There are adequate human resources, and there is a clear understanding of when and how they are to be deployed (Alexander, 2005; Perry and Lindel, 2003)

This criterion is based on the discussion of Alexander (2005) of 'logistics' (see page 51) and Perry and Lindell's (2003) second and fourth recommendation (see pages 49 and 50).

g. Mechanisms for maintaining the emergency response arrangements operable and up to date are in place (Alexander, 2005; Perry and Lindel, 2003)

This criterion is based on the discussion of Alexander (2005) of 'arrangements' (see page 52), and Perry and Lindell's (2003) sixth and seventh recommendation (see page 50).

3.6 Concluding remarks

This chapter set off to come up with evaluation criteria, based on disaster studies, which can be used to evaluate the regime for accidental oil spills from drilling platforms at the North Sea. To this end, two types of literature were reviewed: literature on accident prevention on the one hand and literature on accident response on the other. The former involved a discussion of such theories as man-made disasters theory, normal accident theory and high reliability organizations. These non-holistic theories were shown to culminate in (holistic) systems-theoretic approaches to safety. Based on one specific systems-theoretic approach to safety, called STAMP, criteria were devised to evaluate efforts to prevent accidental oil spills at the North Sea. The latter type of literature review involved a discussion of emergency planning. Two slightly different approaches (one focusing on the planning process, the other on the contents of emergency plans) provided input for evaluation criteria to assess efforts to respond to oil spills at the North Sea. The criteria feed into chapter 5 where definitive evaluation criteria are presented based on this chapter as well as the previous one and the following.

4. DEEPWATER HORIZON OIL SPILL

4.1 Introduction

This chapter aims to provide additional criteria that can be used to assess the effectiveness of the regime for accidental oil spills from drilling platforms at the North Sea (sub-question a). This is done by looking into the recommendations issued by the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, which was created in the aftermath of the Deepwater Horizon oil spill to provide an analysis of what had happened, and to issue recommendations to improve the safety of oil drilling and the response to spills. Section 4.2 provides a short background on the Commission and its main findings. Section 4.3 discusses the recommendations that were made regarding oil spill prevention. Section 4.4 discusses the recommendations that relate to the improvement of oil spill response. Both sections mainly focus on elements relevant for the North Sea regime. Section 4.5 will present a number of evaluation criteria that flow forth from discussions in the previous two sections. These can be used to evaluate the regime at the North Sea for accidental oil spills from drilling platforms. Lastly, section 4.6 finalizes this chapter in the form of some concluding remarks about the obtained results and their role in upcoming chapters.

4.2 National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling

On May 22, 2010, the United States' President Barack Obama announced the constitution of the "National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling", more shortly denoted as the Oil Spill Commission (OSC). It was to investigate the blow-out that occurred when the Deepwater Horizon rig was drilling the Macondo well under more than 1,500 meters of Gulf of Mexico water and about 4,000 meters of sea floor. The blow-out caused the greatest environmental disaster in U.S. history. The Commission – which was to be independent and non-partisan – was charged to provide the President, policymakers, industry, and not in the least the American people with a clear and fair elucidation of what happened, of the immediate and root causes, and of consequent opportunities to change offshore energy production into a more safe and sound enterprise. The Commission strived

to avoid singling out just one bad actor or crucial misstep – the report takes an expansive view (OSC, 2011).

The investigation of the Commission yielded four central findings. First, the oil spill can be seen as the embodiment of a long lasting culture of complacency. Over the course of years the oil industry was moving into ever more challenging environments. However, as profits expanded while accidents remained absent investments to keep up with the increased risks strongly lagged behind the actual need thereof. Second, failures on the drilling rig itself can be traced back to a lack of consistent commitment to safety by industry, from the highest management levels on down. The organizational culture allowed for missed warning signals, failure to share information and poor perception of the risks involved. Third, government itself failed as well: federal regulation and oversight proved to be clearly insufficient. Legal authority, regulations, available expertise and management all fell short to provide a proper framework for deepwater drilling to take place in. Fourth, the preparedness to respond to an oil spill of the magnitude of Deepwater Horizon was greatly inadequate. For over 20 years no real improvements in response technologies had been made, coordination of the response effort – to integrate local, state and federal actors – exhibited many weaknesses, and the joint public-private response revealed the need for public and private investment. Consequently, the response by no means led to the desired result (OSC, 2011).

The Commission notes that even though thorough research underpins their suggestions for improvement, a lot still remains unclear. The 'blow-out preventer', for instance, was still being analyzed at the moment the report was published. The Commission therefore chose to focus on issues which were most likely to yield practical recommendations. The lessons learned from the Deepwater Horizon disaster are considered to be relevant not only to the U.S. situation, but to the rest of the world as well (OSC, 2011).

4.3 Recommendations of the Commission relating to oil spill prevention

The National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling presents its recommendations grouped into 9 distinct areas. Four of these relate to aspects of

oil spill prevention; they will be discussed here. Two discuss oil spill response and are accordingly discussed in the next section. One area (industry's role) discusses both prevention and response and is therefore divided over both sections. The remaining two are about restoring the local environment and the issue of moving into ever more challenging regions (deepwater drilling); these are beyond the scope of this thesis. The recommendations regarding oil spill prevention cover the following topics (OSC, 2011):

- Improving the Safety of Offshore Operations: Government's Role;
- Improving the Safety of Offshore Operations: Industry's Role;
- Safeguarding the Environment;
- Ensuring Financial Responsibility, and;
- Promoting Congressional Engagement to Ensure Responsible Offshore Drilling

Improving the Safety of Offshore Operations: Government's Role. The Commission identified 3 major problems with how the government performed its regulatory duties leading up to the disaster. First, a deepening deficit of technical expertise had developed over the years, particularly concerning high-risk areas. Second, institutions tasked with safeguarding the public interest – most notably the former Minerals Management Service (MMS) – showed signs of being insufficiently independent and lacking in integrity. Third, a severe lack of resources impeded leasing and regulating agencies to adequately execute the tasks they were charged with (OSC, 2011).

The Commission issued a number of recommendations in response to the above problems. Describing them in detail is beyond the current scope (they are specifically tailored to the US situation). First, the "safety case" approach as applied in the North Sea is mentioned as an example of good practice (chapter 9 will go into what this approach entails). Second, there is a call for robust safety and pollution-prevention standards developed through international cooperation. Third, the Commission stresses that safety agencies ought to be independent. Fourth, key regulatory agencies should have adequate, stable and secure funding at their disposal (OSC, 2011).

The Commission expands on these recommendations by pinpointing a number of additional, somewhat more specific actions. These include the development of detailed requirements for incident reporting, making such reports are publicly available, and providing whistleblowers with adequate protection. With regard to the inadequate functioning of the MMS, the Commission refers to its schizophrenic organizational structure; both revenue management and resource management were addressed within this one organization. These two distinctly different responsibilities require different skill sets and correspond to different institutional cultures. This situation eventually led to internal tensions and confusion of goals (OSC, 2011).

From the above we can derive a number of useful insights for the regime at the North Sea. First, the regulatory framework for oil exploitation activities – rules, regulations, standards, etc. – ought to be based on state-of-the-art expertise. Ideally, such expertise is available within government agencies. Cooperation with agencies from other nations may foster the development of 'best practices'. Second, such standards or regulations should be regularly updated. Third, there should be detailed requirements for incident reporting. Fourth, whistleblowers ought to be adequately protected. Fifth, agencies overseeing the safety of oil exploitation should be independent – any confusion of tasks must be prevented. Sixth, and finally, such agencies should be adequately and securely funded to allow them to fulfil their tasks and hire necessary expertise.

Improving the Safety of Offshore Operations: Industry's Role. The Commission identified a staggeringly poor safety culture within key industrial players involved in the blow-out. There were many instances in which time concerns dominated decision-making procedures, causing risks to be either ignored or insufficiently taken into account (OSC, 2011).

The Commission recommended the industry to set up a private organization to develop standards of excellence to ensure continuous improvement in safety. Additionally, the industry is urged to cooperate internationally to enhance safety and oil spill preparedness (OSC, 2011).

Safeguarding the Environment. The Commission voiced concerns about two issues. First, the way in which the MMS conducted environmental reviews was flawed. Decisions of the MMS were inconsistent, inappropriate and not transparent. Second, decisions to allow for drilling activities to be undertaken were not sufficiently backed up by strong scientific evidence to properly balance environmental and resource development interests (OSC, 2011).

The Commission issued a number of recommendations in response to the above concerns. Describing them in detail is beyond the current scope (they are specifically tailored to the US situation). The central take-home message for the North Sea regime is that environmental concerns should occupy a prominent place in decision-making around oil exploitation. Such concerns need to be incorporated into the process on a well-informed basis and in a consistent manner. Procedures need to be in place outlining how the environment is taken into account, and scientific knowledge – e.g. through consultation of specialized agencies (whenever necessary) – needs to be central to the whole affair.

Ensuring Financial Responsibility. At the time the Deepwater Horizon oil spill occurred there was a statutory 75 million dollar cap in the U.S. on damages to be paid by oil companies causing an oil spill. When it became clear that real damages were in the order of tens of billions of dollars, BP decided to waive this cap. The Commission noted that there is no guarantee any other company would have done the same, especially if such a company's financial means are less substantial than those of BP. Additionally, determining the level of financial responsibility to be borne by individual companies had been a rather ill-considered exercise. Even though each oil drilling activity is different, no specific circumstances were mandatory to be taken into account (OSC, 2011).

The Commission issued a number of recommendations in response to the above situation. Describing them in detail is beyond the current scope (they are specifically tailored to the U.S. financial regime). The recommendations reflect the idea that assigning the responsibility of damages to culpable parties may strengthen incentives within the oil industry to prevent oil spills. For such a strategy to be effective liability caps must be sufficiently, and realistically, high and involved companies must be able to show they are actually able to pay

up when necessary – bankruptcy ought not to effectively act as a cap. Determining the desired level of responsibility ideally involves taking into account information of the drilling activity itself (e.g. geological and environmental data) as well as of a company's experience and expertise.

Promoting Congressional Engagement to Ensure Responsible Offshore Drilling. The Commission signalled a protracted lack of systematic attention of U.S. Congress towards ensuring safe and environmentally sound offshore drilling. Part of the problem was the fragmented structure of congressional committees somehow involved in overlooking offshore drilling. None of them was particularly charged with safety and environment separate from issues of resource development and royalty collection. Furthermore, Congress failed to provide the agencies regulating offshore oil and gas development with funding that kept pace as the oil industry increasingly engaged itself in more challenging activities. There was a constant danger of agency funding to be reduced (OSC, 2011).

The Commission issued a number of recommendations in response to the above state of affairs. These are aimed at U.S. Congress and are therefore difficult to translate to the North Sea regime. In the U.S., Congress apparently has an important role in overlooking offshore drilling, while such responsibilities may be placed differently in other countries. What stands out from the recommendations is the need for setting clear responsibilities to ensuring that at regular intervals information is gathered about developments that might require changes to be made in the regime. Those that shape legislation need to be aware when there is a need for change. Additionally, adequate funding of regulating agencies needs to be assured. Such funding needs to be continuously checked against the need thereof in the light of changes in the activities of the industry. Political opportunism should never result in reduced funding.

4.4 Recommendations of the Commission relating to oil spill response

This section discusses the recommendations put forward by the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling that relate to oil spill response. These recommendations cover the following topics (OSC, 2011):

- Improving the Safety of Offshore Operations: Industry's Role;
- Strengthening Oil Spill Response, Planning, and Capacity, and;
- Advancing Well-Containment Capabilities

Improving the Safety of Offshore Operations: Industry's Role. Whereas industry had devoted billions of dollars to developing state-of-the-art drilling tools, no significant investments were made to acquire the capabilities to deal with the foreseeable consequences of a disaster. As a result, the oil exploitation industry was alarmingly unprepared to handle a spill of this magnitude (OSC, 2011).

The Commission consequently recommended that the oil and gas industry should create and maintain readily deployable resources for rescue, response, and containment. This involves the development of large-scale rescue, response, and containment capabilities (including equipment, procedures, and logistics), supported by extensive training and full-scale field exercises (OSC, 2011). The responsibility for oil spill response may be placed differently in different countries. An important lesson to take home is that in case of a requirement for industry to contribute to response, there must be clarity about their capability to do so.

Strengthening Oil Spill Response, Planning, and Capacity. The Commission identified three critical shortcomings in the response to the Deepwater Horizon oil spill. First, the planning for a response to a demanding oil spill was largely ineffective. Second, coordination between different levels of government left much to be desired. Both these issues are reflected in poor alignment of the efforts of the different government agencies involved in the response. The response plans drawn up by MMS had not been distributed to other relevant institutions, and at no point had any of the plans been made publicly available. No entity outside of MMS had the possibility to scrutinize oil spill preparations. Lack of coordination led institutions to compete, rather than to cooperate. Third, the specific response measures and resources which were available for use in the response effort, including chemical dispersants and berms, were inadequately understood, i.e. information concerning their efficacy was lacking. The U.S. government did not posses the expertise, or the capacity, to supervise the response. In particular, efforts to tame the well were beyond government control (OSC, 2011).

The Commission issued a number of recommendations in reaction to the flawed response to the Deepwater Horizon oil spill. These can be translated into the following relevant lessons. First, adequate response to an oil spill requires that government agencies, at all levels, are familiar with their own tasks as well as those of others. Providing information about response plans to relevant agencies and the public allows for efficiency to be bolstered and potential flaws to be filtered out. Second, if response plans are to be actually meaningful, the measures they encompass must be fully understood. There needs to be a view on what response measures ought to be taken under what circumstances. This includes when to use chemical dispersants, which still remains a controversial issue. These matters need to be appreciated in terms of clear protocols for their use, and research and development into possible improvements.

Advancing Well-Containment Capabilities. The Commission noted that the most painful failure in the response effort was the inability to stop the flow of oil from the damaged Macondo well. Government expertise was insufficient to guide this part of the response even though external experts had been consulted – the latter raised concerns (for instance about conflicts of interest) that could not be resolved. Another problem was that there were no explicitly formulated well containment options available, apart from closing the blow-out preventer stack and drilling a relief well (which takes months). The Commission emphasized that it is the industries' responsibility to provide such options, and to ensure that diagnostic tools are in place to provide reliable information regarding the state of the well (OSC, 2011).

The recommendations of the Commission in reaction to the above make clear that operators should have a clear view on how to stop an uncontrolled flow of oil. And in so far possible, relevant expertise on the matter should be available within government as well. In addition, proper diagnostic information (provided by sensors on the oil well in question) should be available to support decisions on how to effectively contain a specific spill (OSC, 2011).

4.5 Evaluation criteria

This section translates the discussion of the recommendations of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling of sections 4.3 and 4.4 into criteria that can be used to evaluate the regime at the North Sea for accidental oil spills from drilling platforms. There will be significant overlap between the criteria presented below and those from the previous two chapters. This is because the Commission looked into many of the issues addressed in 'disaster studies' and, to a lesser extent, regime theory.

First, criteria related to oil spill prevention are presented (building on the discussion in section 4.3), after which the criteria for oil spill response are discussed (building on the discussion in section 4.4).

4.5.1 Evaluation criteria for oil spill prevention

For the sake of readability the following evaluation criteria are divided into 7 categories: preconditions for government oversight, decision-making for oil exploitation activities, quality of regulations, regulatory agencies, incident reporting, financial incentives, and industrial safety culture.

Preconditions for government oversight

1. Governmental bodies responsible for crafting legislation have information at their disposal, which is regularly updated, about issues or developments that may require changes to be made in the regime.
2. There are mechanisms to protect regulatory agencies against having their budgets cut as a consequence of political opportunism. The level of funding is determined on the basis of what is required given the nature of to be regulated activities.

These criteria are based on the discussion of 'Promoting Congressional Engagement to Ensure Responsible Offshore Drilling' of the Commission's report (OSC, 2011).

Decision-making for oil exploitation activities

3. Environmental concerns are incorporated in a meaningful way in decisions regarding whether oil exploitation activities may take place in certain areas. Procedures are clear, consistent and have a solid scientific basis.

This criterion is based on the discussion of 'Safeguarding the Environment' of the Commission's report (OSC, 2011).

Quality of regulations

4. The regime is based on state-of-the-art expertise and incorporates international 'best practices'.
5. Regulations are reviewed and updated when necessary.

These criteria are based on the discussion of 'Improving the Safety of Offshore Operations: Government's Role' of the Commission's report (OSC, 2011).

Regulatory agencies

6. Agencies responsible for regulating the oil industry in the area of safety and the environment are independent, i.e. there can be no confusion of tasks – especially with regard to matters of resource development.
7. Regulatory agencies are adequately and securely funded.

These criteria are based on the discussion of 'Improving the Safety of Offshore Operations: Government's Role' of the Commission's report (OSC, 2011).

Incident reporting

8. There are detailed requirements for reporting incidents, including requirements for publicly availability.
9. There is adequate whistleblower protection.

These criteria are based on the discussion of 'Improving the Safety of Offshore Operations: Government's Role' of the Commission's report, in particular the additional actions put forward on top of the recommendations (OSC, 2011).

Financial incentives

10. There is a properly high cap on damages to be paid by companies causing an oil spill, meaning that this cap realistically reflects the total of damage incurred by a spill based on the specificities of the environmental situation and track record of the company. No cap at all would obviously do the trick as well.
11. Companies engaging in potentially harmful activities are required to show they are able to pay up when a spill occurs. Bankruptcy should not effectively act as a cap.

These criteria are based on the discussion of 'Ensuring Financial Responsibility' of the Commission's report (OSC, 2011).

Industrial safety culture

12. There is a private organisation which ensures certain safety standards are upheld within the oil exploitation industry.
13. Industry cooperates internationally to establish safe practices.

These criteria are based on the discussion of the prevention part of 'Improving the Safety of Offshore Operations: Industry's Role' of the Commission's report (OSC, 2011).

4.5.2 Evaluation criteria for oil spill response

For the sake of readability the following evaluation criteria are divided into 3 categories: well-containment, response planning and coordination, and response capabilities.

Well-containment

a. Operators have a clear view on how to stop the flow of oil after a blow-out has occurred. This may be part of the permit-granting process for allowing oil drilling

activities. This includes provisions for obtaining diagnostic information about the state of the well and plans for maintaining or regaining well integrity.

b. There is sufficient government expertise to oversee efforts of well containment and in support thereto government can obtain information on the state of the well.

These criteria are based on the discussion of 'Advancing Well-Containment Capabilities' of the Commission's report (OSC, 2011).

Response planning and coordination

c. Contingency plans are available which stipulate how responsibilities are established under what kind of circumstances.
d. Contingency plans are distributed to relevant parties, and are publicly available.

These criteria are based on the discussion of 'Strengthening Oil Spill Response, Planning, and Capacity' of the Commission's report (OSC, 2011).

Response capabilities

e. Adequate oil spill response equipment is readily available. Such equipment may be at the disposal of governments or industry, whether or not through international cooperation.
f. Procedures and logistics related to oil spill response are established and tested and trained for.
g. There is adequate knowledge concerning the effectiveness of response measures. This knowledge is reflected in clear protocols for their use.
h. Significant efforts of research and development are undertaken to improve oil spill response resources and knowledge of their effectiveness.

These criteria are based on the discussion of the response part of 'Improving the Safety of Offshore Operations: Industry's Role' and the discussion of 'Strengthening Oil Spill Response, Planning, and Capacity' of the Commission's report (OSC, 2011).

4.6 Concluding remarks

This chapter set off to come up with evaluation criteria, based on the findings of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, which can be used to evaluate the regime for accidental oil spills from drilling platforms at the North Sea. The Commission issued a number of recommendations with the principal aim to address the weaknesses of the U.S. regime that allowed for a disaster of the magnitude of the Deepwater Horizon to occur. The discussion in this chapter has shown that there are many issues that are relevant for regimes outside of the U.S. as well. The recommendations of the Commission relate to both oil spill prevention and response. Regarding oil spill prevention they cover the topics of 'government's role', 'industry's role', 'safeguarding the environment', 'ensuring financial responsibility' and 'promoting congressional engagement'. Regarding oil spill response the recommendations cover the topics of 'industry's role', 'strengthening oil spill response, planning, and capacity' and 'advancing well-containment capabilities'. Based on these recommendations 13 evaluation criteria were devised for oil spill prevention and 8 criteria for oil spill response. The criteria show significant overlap with those from the previous two chapters. This is because the recommendations target many of the sorts of issues that are at the heart of disaster studies and, to a lesser extent, regime theory. The criteria feed into chapter 5 where definitive evaluation criteria are presented – eliminating the mentioned overlap – based on this chapter as well as the previous two.

5. EVALUATION CRITERIA

5.1 Introduction

This chapter presents the definitive criteria by means of which the regime for accidental oil spills from drilling platforms at the North Sea will be evaluated. The previous three chapters yielded criteria from regime theory, disaster studies and the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. Here, criteria as proposed by consulted experts of the regime are brought into the equation (sub-question b.). The definitive criteria are constructed through the integration of these criteria with those obtained from literature. Section 5.2 elaborates on the evaluation criteria that came up during the interviews with the consulted experts. Section 5.3 takes the criteria from the previous three chapters together with the expert criteria and presents the final set of evaluation criteria. Additionally, this section operationalizes the criteria by presenting indicators that support the judgements of whether or not a criterion is met according to the available data. Section 5.4 finalizes this chapter in the form of some concluding remarks about the obtained results.

5.2 Evaluation criteria from experts

As set out in section 1.3 a total of 13 experts were consulted to strengthen the set of criteria used for the evaluation of the regime at the North Sea and to provide an inside look into how the regime performs in practice. Experts were drawn from government actors, the oil industry and civil society from the Netherlands, Norway and the UK. The Secretariat of the OSPAR Commission and the Bonn Agreement was consulted as well. Of all experts 12 gave their view on what would be valid evaluation criteria. Below an account is given of the evaluation criteria which the experts would use to judge the effectiveness of the regime for accidental oil spills at the North Sea.

The State Supervision of Mines (SSM) proposed the following criteria (SSM interview, 2011):

1. One front-office for regulation of the oil industry

2. Focus on prevention – in particular prevention of loss of control over wells
3. Regulatory agencies have good procedures for determining priorities to focus on
4. Companies should be continuously challenged to perform on top of their game
5. Transparent and clear coordination for oil spill response, facilitated by exercises and clarity of the methods to be used (e.g. whether or not to use chemical dispersants)
6. Good and up-to-date ways to determine the pathway of spilled oil

Rijkswaterstaat Noordzee (RWS NZ) proposed the following criteria (RWS NZ interview, 2011):

1. A single venue for coordination of response efforts
2. Clear responsibilities (which are not too fragmented among people or organizations)
3. Clear chain of command

The Netherlands Oil and Gas Exploration and Production Association (NOGEPA) proposed the following criteria (NOGEPA interview, 2011):

1. Goal setting legislation
2. Harmonization among the different nations of the regime
3. Sufficient knowledge within the government

The Petroleum Safety Authority Norway proposed the following criteria (PSA interview, 2011):

1. The operators on the continental shelf need to be prudent
2. The regime must be goal setting
3. Good peer reviews ought to serve as compensation for the relative freedom inherent in a goal setting regime
4. Responsibilities need to be clear

The Climate and Pollution Agency (Klif) proposed the following criteria (Klif interview, 2011):

1. The regime must ensure continuous improvement
2. Measures taken must be cost effective

The Norwegian Oil Industry Association (OLF) proposed the following criteria (OLF interview, 2011):

1. The regime must foster continuous improvement
2. Incidents must be learned from
3. Responsibilities must be clearly defined
4. Measures must be cost effective (no symbolic effect)

The Norwegian Clean Seas Association for Operating Companies (NOFO) proposed the following criteria (NOFO interview, 2011):

1. The chain of actors involved in oil spill response (e.g. operators, subcontractors and NOFO itself) must have proper knowledge
2. In order to be adequately prepared one must train, train and train

Bellona proposed the following criteria (Bellona interview, 2011):

1. Regulations must adapt to new challenges
2. Good oil spill response requires good coordination and the authority to do so

The Health and Safety Executive's offshore division (HSE) proposed the following criteria (HSE interview, 2011):

1. Vigilance must be high at all times
2. Learning needs to occur both nationally and internationally

3. The safety and environment side of the story need to be properly linked

Greenpeace UK proposed the following criteria (Greenpeace UK interview, 2011):

1. Transparency must be ensured (of the interactions between government, regulator and industry)
2. There needs to be proper liability for oil companies
3. Clarity about responsibilities to pinpoint accountability

The Secretariat of the OSPAR Commission and the Bonn Agreement proposed the following criteria (OSPAR Secretariat interview, 2011):

1. Adequate reaction to incidents, i.e. introspection: is what we have good enough?
2. Risk-based approach to oil spills; taking a broader perspective by accounting *inter alia* for the vulnerability of different areas
3. Oil spill response must be based on risk assessments to determine whether there are sufficient resources available seen against the potential consequences for vulnerable habitats

Oil Spill Response ltd. (OSR) proposed the following criteria (OSR interview, 2011):

1. Government ought to enforce adequately to keep everyone sharp
2. Good policies and regulations in place
3. Good competence among those involved
4. Condition monitoring and auditing needs to take place
5. There need to be sufficient response resources
6. The regime needs to facilitate learning by means of monitoring and self-regulation

The above criteria are converted into three lists. The choice was made to only include criteria which were either explicitly mentioned in at least two interviews, or which point to recurring themes that came up. One list is to be applied to the international regime for the prevention

of and response to accidental oil spills from drilling platforms at the North Sea, one is to be applied to the national regimes for the prevention of accidental oil spills, and one is to be applied to the national regimes for the response to oil spills. Section 5.3 will discuss why the international regime and national ones are evaluated by different sets of evaluation criteria.

Before presenting the three lists, it is important to note that – apart from making a distinction between the international regime and the national ones – arguments could be made for constructing different sets of evaluation criteria for each individual national regime as well. One can imagine that as the national regimes are embedded in (slightly) different cultures the requirements for what would be an effective regime may be potentially different as well. During the conducted interviews this came to the fore more than once. A recurrent remark was that "the regimes in every country should be evaluated based on their own merits" (e.g. PSA interview, 2011). I do not adopt such an approach here. The main reason for this is that it would not be possible to compare the different national regimes on a criterion which is used in the evaluation of the regime of one nation only. On top of that, given the number and variety of criteria already constructed this would complicate matters even more.

Expert criteria to be applied to the international regime for accidental oil spills:

1. The regime takes a holistic approach
2. The regime is able to take the lessons from incidents
3. The regime fosters harmonization among involved nations

Expert criteria to be applied to the national regimes for the prevention of accidental oil spills:

a. The regime uses goal setting regulation
b. Government agencies keep everyone sharp through adequate enforcement
c. The regime is able to take the lessons from incidents
d. The regime is adequately transparent; the workings of the regime can be scrutinized
e. The regime takes a holistic approach
f. There are clear responsibilities

g. There are good procedures in place for regulatory agencies to determine their priorities
h. There is a focus on preventing loss of control over an oil well
i. The government has adequate competence (knowledge) at its disposal for performing its regulatory/supervisory tasks
j. The regime encompasses ways to ensure operators are competent

Expert criteria to be applied to the national regimes for the response to oil spills:

I. The regime uses goal based regulation
II. Government agencies keep everyone sharp through adequate enforcement
III. The regime is able to take the lessons from incidents
IV. The regime is adequately transparent; the workings of the regime can be scrutinized
V. There is a clear view on the response tasks that need to be performed
VI. There is good coordination and a clear chain of command
VII. There are adequate response resources based on risk assessments
VIII. Training and exercises are undertaken to prepare for response operations

5.3 Integration and operationalization of the criteria

This section integrates the wealth of evaluation criteria provided by chapter 2 (regime theory), chapter 3 (disaster studies), chapter 4 (National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling) and section 5.2 (consulted experts). Below, three tables present the definitive criteria for the evaluation of the regime for accidental oil spills from drilling platforms at the North Sea. The tables include the indicators that will be used to determine whether or not a criterion is met (i.e. the operationalization of the criteria). Table 1 provides criteria for the evaluation of the international regime. Table 2 provides criteria for the evaluation of the national regimes for the prevention of accidental oil spills. Table 3 provides criteria for the evaluation of the national regimes for the response to oil spills.

Following from the above, and as touched upon in the previous section, the international regime and the national regimes are evaluated by means of different sets of criteria. This is because the international regime and the national regimes are different in nature. As the following chapters will show, the international regime more or less acts as a framework for the national regimes to perform in. Moreover, the obtained evaluation criteria are different in nature as well: the criteria from regime theory target (international) regimes while those from disaster studies target socio-technical systems (prevention) and emergency planning arrangements (response). The latter two types of criteria very much relate to how the regime is put in practice. This happens on the national rather than the international level. Because of this, it turned out to make no sense to apply the detailed criteria from disaster studies to the international regime. The international regime will thus be evaluated by means of the criteria from regime theory (and the experts) only, while the national regimes will also be subject to the criteria from disaster studies and the Deepwater Horizon report.

The following table lists the criteria for the evaluation of the international regime for the prevention of and response to accidental oil spills from drilling platforms at the North Sea, the sources from which the criteria are derived and associated indicators. The table will be followed by an account of the type(s) of data used for checking if a criterion is met.

Table 1 – Criteria for the evaluation of the international regime for accidental oil spills from drilling platforms at the North Sea

No.	Criterion	Source(s)	Indicator(s)
1.	The regime encompasses all relevant actors	Regime theory, criterion no. 1	Interviewees are happy with actor group composition; All North Sea nations are involved; All interests are represented
2.	The regime addresses all issues that relate to the problem it was designed for	Regime theory, criterion no. 2; Consulted experts, criterion no. 1	All issues related to oil drilling are addressed by the regime; The regime takes a holistic approach
3.	Commitments that follow from the regime are sufficiently stringent and binding	Regime theory, criterion no. 3	Regulatory agencies indicate to have a good legal/regulatory basis on which to conduct their activities; Commitments are formulated

			to be enforceable; By and large there is agreement on commitments between involved actors;
4.	The regime comprises sufficient mechanisms for reviewing implementation and compliance	Regime theory, criterion no. 4	There are adequate instruments to check implementation of and compliance with formulated commitments; Interviewees do not indicate that important commitments remain unverified
5.	The regime comprises sufficient mechanisms to enforce implementation and compliance	Regime theory, criterion no. 5	There are instruments to 'punish' non-compliance through (negative) incentives; Interviewees indicate these measures are adequate;
6.	The regime is sufficiently robust to cope with challenges caused by internal affairs	Regime theory, criterion no. 6	Interviewees indicate a good/respectful relation between different actors; There are procedures for the settlement of disputes; No actor feels disadvantaged by the workings of the regime
7.	The regime is sufficiently robust to cope with challenges caused by external affairs	Regime theory, criterion no. 7	There are no indications of external issues impacting on the regime (in particular economic issues)
8.	The regime is able to adapt to changing requirements, when necessary	Regime theory, criterion no. 8; Consulted experts, criterion no. 2	Relevant international bodies initiate learning processes in response to incidents to identify possible improvements; Necessary changes to the regime are implemented
9.	Transparency is ensured	Regime theory, criterion no. 9	There are clear procedures for reporting by international actors; The general public can get information on North-Sea-wide regime performance; NGOs have proper access to information; NGOs can participate in relevant venues;
10.	Regime bodies have sufficient means to perform their tasks	Regime theory, criterion no. 10	International regime bodies indicate they have proper expertise, manpower and

			funding to perform their tasks; None of the interviewees indicates missing expertise of (other) regime bodies; Resources can be assumed to stay intact for the foreseeable future
11.	The regime fosters harmonization among involved nations	Consulted experts, criterion no. 3	All reasonably expectable steps are undertaken to harmonize regulations (etc.) among nations; Actors indicate to be satisfied with level of harmonization

The following data will be used to check if the criteria are met (numbers correspond with the numbering of the above criteria):

1. Interviews; participation in relevant international conventions; participation in relevant international forums
2. Interviews; international conventions; laws, regulations, etc.
3. Interviews
4. Interviews; international conventions, laws, regulations, etc.
5. Interviews (mainly for assessing sufficiency); enforcement procedures for EU legislation and international conventions
6. Interviews; dispute settlement procedures enshrined in international conventions and related to international laws, regulations, etc.
7. Interviews
8. Interviews; relevant processes in international regime bodies/venues
9. Interviews; reporting requirements in international conventions, laws and regulations; reporting documents themselves
10. Interviews
11. Interviews

The following table lists the criteria for the evaluation of the national regimes for the prevention of accidental oil spills from drilling platforms at the North Sea, the sources from

which the criteria are derived and associated indicators. The table will be followed by an account of the type(s) of data used for checking if a criterion is met.

Table 2 – Criteria for the evaluation of the national regimes for the prevention of accidental oil spills from drilling platforms at the North Sea

No.	Criterion	Source(s)	Indicator(s)
General regime characteristics			
1.	The regime encompasses all relevant actors	Regime theory, criterion no. 1; Deepwater Horizon report, criterion no. 12	Interviewees are happy with actor group composition; Domestic actors are involved (in particular the oil industry) to facilitate implementation; There is a private organization which ensures safety standards are upheld within industry
2.	The regime addresses all issues that relate to the problem it was designed for	Regime theory, criterion no. 2; Consulted experts, criterion e	All issues related to the prevention of oil spills are addressed by the regime; The regime takes a holistic approach
3.	Commitments that follow from the regime are sufficiently stringent and binding	Regime theory, criterion no. 3; Consulted experts criterion a	Regulatory agencies indicate to have a good legal/regulatory basis on which to conduct their activities; Commitments are formulated to be enforceable; By and large there is agreement on commitments between involved actors; Regime is largely goal setting
4.	The regime comprises sufficient mechanisms for reviewing implementation and compliance	Regime theory, criterion no. 4; Disaster studies, criterion no. 13	There are adequate instruments to check implementation of and compliance with commitments; Such review occurs frequently; Interviewees do not indicate that important commitments remain unverified
5.	The regime comprises sufficient mechanisms to enforce implementation and compliance	Regime theory, criterion no. 5; Consulted experts, criterion b	There are instruments to 'punish' non-compliance through (negative) incentives; Interviewees indicate these measures are adequate

6.	The regime is sufficiently robust to cope with challenges caused by internal affairs	Regime theory, criterion no. 6; Deepwater Horizon criteria 10 and 11	Negotiations on means and measures occur in a cooperative setting; Interviewees indicate a good/respectful relation between different actors; There are procedures for the settlement of disputes between regime bodies and industry; There is a properly high cap (or no cap) on damages to be paid by industry in the event of an oil spill; Companies are required to show they are able to pay up when a spill occurs
7.	The regime is sufficiently robust to cope with challenges caused by external affairs	Regime theory, criterion no. 7	There are no indications of external issues impacting on the regime (in particular economic issues)
8.	The regime is able to adapt to changing requirements when necessary	Regime theory, criterion no. 8; Disaster studies, criteria no. 15 and 16; Deepwater Horizon report, criterion 1 and 9; Consulted experts, criterion c	Incidents are investigated (by taking a systems view); The results and consequences of investigations are discussed among all relevant actors; There is openness about discussing matters of safety among actors; There is adequate whistleblower protection; Corrective actions are implemented
9.	Transparency is ensured	Regime theory, criterion no. 9; Disaster studies, criterion no. 14; Deepwater Horizon report, criterion no. 8; Consulted experts, criterion d	There are clear procedures for reporting by companies as well as by regulatory agencies; There are clear procedures for making information (e.g. of incidents) publicly available; NGOs have proper access to information; NGOs can participate in relevant venues;
10.	Regime bodies have adequate and secure means to perform their tasks	Regime theory, criterion no. 10; Disaster studies, criteria 3 and 17;	Regime bodies dealing with safety and environment indicate they have proper expertise, manpower and

		Deepwater Horizon report criteria 1, 2, 4 and 7; Consulted experts, criterion i	funding to perform their tasks; None of the interviewees indicates missing expertise of (other) regime bodies; The expertise of regime bodies regarding involved systems and the context in which they operate is adequate and up-to-date; Knowledge gaps are addressed; Resources can be assumed to stay intact for the foreseeable future; Level of resources based on the nature of to be regulated activities
Actors			
11.	Relevant regime bodies have shared goals with regard to system safety	Disaster studies, criterion no. 1	Regime bodies have explicitly formulated aims regarding safety/oil spill prevention; These goals are similar
12.	The regime encourages management commitment to safety amongst oil companies	Disaster studies, criterion no. 2	The regime actively involves the senior management of oil companies
13.	Responsibilities and tasks of regime bodies are clearly delegated and mapped	Disaster studies, criteria 10 and 11; Consulted experts, criterion f	Regime bodies have clearly circumscribed tasks and responsibilities; There is clear communication between regime bodies whose responsibilities may overlap
14.	There are good procedures in place for regulatory agencies to determine their priorities	Disaster studies criteria 4 and 5; Consulted experts, criterion g and h	Regime bodies supervising the safety of oil drilling have elaborate procedures for determining their (inspection) priorities; These priorities correspond to identified hazards; Preventing loss of well control is included in the procedure;
15.	Regulatory agencies are independent	Deepwater Horizon report, criterion no. 6	Supervisory agencies for safety and the environment do not have financial or resource development responsibilities as well

16.	Industry cooperates internationally to establish safe practices	Deepwater Horizon report, criteria 4 and 13	Oil companies (e.g. through industry associations) participate in international forums to discuss safety issues and to establish best practices
Norms, rules and decision making procedures			
17.	Environmental considerations are incorporated in decision-making around allowing for oil exploitation activities in a clear, consistent and scientifically prudent manner	Deepwater Horizon report, criterion no. 3	There are clear procedures for deciding on where oil drilling may take place; These procedures involve scientific knowledge; The procedures are consistently applied
18.	The regime has proper procedures for establishing that oil companies that want to drill are competent	Consulted experts, criterion j	There are clear requirements and review procedures for ensuring the competence of oil companies, prior to drilling
19.	Safety measures are taken and regularly reviewed based on state-of-the-art expertise and up-to-date hazard identification	Disaster studies, criteria no. 4 and 5; Deepwater Horizon report criteria 1, 4 and 5	Laws and regulations require the safety measures taken by industry to be state-of-the-art; Laws and regulations require these measures are based on up-to-date hazard identification; Laws and regulations are regularly reviewed
20.	Diverging views regarding involved systems and their associated risks are respected and accounted for	Disaster studies, criterion no. 6	Regulator and regulatees discuss safety issues to get on the same page; There are forums for discussing best regulatory practices;
21.	Redundancy is (mandated to be) built into safety systems of the oil industry	Disaster studies, criterion no. 7	Laws and regulations require multiple independent barriers to ensure safety; Redundancy is taken along in inspections; Industry indicates redundancy to be a part of their (safety) systems
22.	Safety measures are duly implemented	Disaster studies, criterion no. 8	There are no identifiable time-lags in the implementation of safety measures (at whatever regime level – i.e. decision making, on the ground, etc.)

23.	Authority for execution of safety measures is delegated to lower levels and there is adequate conceptual slack thereto	Disaster studies, criteria no. 9 and 12	Laws and regulations allow safety critical decisions for which situation specific knowledge is needed to be made 'on the ground'; The to be followed procedures are not overly prescriptive enshrined in legislation

The following data will be used to check if the criteria are met (numbers correspond with the numbering of the above criteria):

1. Interviews; participation in national forums; documents or website of industry associations
2. Interviews; laws, regulations, etc.
3. Interviews; regulatory review documents; laws, regulations, etc.
4. Interviews; review instruments of supervisory agencies (via documents or websites); laws, regulations, etc.
5. Interviews (mainly for assessing sufficiency); enforcement strategies of supervisory agencies (via documents or websites); sanctions enshrined in laws and regulations
6. Interviews; forums for cooperation between actors; dispute-settlement procedures enshrined in relevant laws and regulations; laws and regulations regarding liability; oil spill liability funds, if applicable
7. Interviews; decision-making procedures enshrined in laws and regulations
8. Interviews; relevant processes in regime bodies, forums or other venues; research documents
9. Interviews; reporting requirements in relevant laws and regulations; if available, reporting documents themselves; documents, websites of relevant actors
10. Interviews; documents referred to in interviews
11. Websites or documents of relevant actors
12. Interviews
13. Interviews; websites and documents of relevant regime bodies
14. Interviews; documents referred to in interviews; formulated priorities; laws, regulations, etc.

15. Interviews (for independence strategies); documents and websites of relevant regime bodies (for task descriptions)
16. Interviews; documents or websites of industry associations
17. Interviews; laws and regulations pertaining to the licensing process or opening of new drilling areas
18. Interviews; laws, regulations, etc.
19. Interviews; documents mentioned in interviews; laws, regulations, etc.
20. Interviews; documents referred to in interviews; relevant national forums
21. Interviews; laws, regulations, etc.
22. Interviews
23. Interviews

The following table lists the criteria for the evaluation of the national regimes for the response to oil spills at the North Sea, the sources from which the criteria are derived and associated indicators. The table will be followed by an account of the type(s) of data used for checking if a criterion is met.

Table 3 – Criteria for the evaluation of the national regimes for the response to oil spills from drilling platforms at the North Sea

No.	Criterion	Source(s)	Indicator(s)
General regime characteristics			
1.	The regime encompasses all relevant actors	Regime theory, criterion no. 1	Interviewees are happy with actor group composition; Domestic actors are involved (in particular the oil industry) to facilitate implementation
2.	The regime addresses all issues that relate to the problem it was designed for	Regime theory, criterion no. 2	All issues related to the response to oil spills are addressed by the regime;
3.	Commitments that follow from the regime are sufficiently stringent and binding	Regime theory, criterion no. 3; Consulted experts, criterion I	Relevant regime bodies indicate to have a good legal/regulatory basis on which to conduct their activities; Commitments are formulated to be enforceable;

			By and large there is agreement on commitments between involved actors; The regime is largely goal setting
4.	The regime comprises sufficient mechanisms for reviewing implementation and compliance	Regime theory, criterion no. 4	There are adequate instruments to check implementation of and compliance with formulated commitments; Such review occurs frequently; Interviewees do not indicate that important commitments remain unverified
5.	The regime comprises sufficient mechanisms to enforce implementation and compliance	Regime theory, criterion no. 5; Consulted experts criterion II	There are instruments to 'punish' non-compliance through (negative) incentives; Interviewees indicate these measures are adequate
6.	The regime is sufficiently robust to cope with challenges caused by internal affairs	Regime theory, criterion no. 6	Negotiations on means and measures occur in a cooperative setting; Interviewees indicate a good/respectful relation between different actors; There are procedures for the settlement of disputes between regime bodies and industry;
7.	The regime is sufficiently robust to cope with challenges caused by external affairs	Regime theory, criterion no. 7	There are no indications of external issues impacting on the regime (in particular economic issues)
8.	The regime is able to adapt to changing requirements, when necessary	Regime theory, criterion no. 8; Consulted experts, criterion III	Relevant international bodies initiate learning processes in response to incidents to identify possible improvements; Necessary changes to the regime are implemented
9.	Transparency is ensured	Regime theory, criterion no. 9; Deepwater Horizon report, criterion d; Consulted experts, criterion IV	Oil spill response plans are publicly available; There is no indication that any NGO would like to have information they cannot get their hands on
10.	Regime bodies have sufficient means to perform their tasks	Regime theory, criterion no. 10	Supervisory and executing organisations with respect to oil spill response indicate they

			have the expertise, manpower and funding to perform their tasks; Level of resources based on the nature of to be preformed tasks; Resources can be assumed to stay intact for the foreseeable future
National oil spill response system			
11.	The national oil spill response system is properly compatible with relevant legislation and internally congruent	Disaster studies, criterion a; Deepwater Horizon report, criterion c	Response plans in sync with corresponding laws and each other (in case of multiple plans); Legal and jurisdictional matters are lined out; Arrangements are a result of stakeholder consensus
12.	The national oil spill response system is comprehensive and clear	Disaster studies, criterion b	Scope and objectives are set out in the plan; Conditions for activation are specified; All type of oil spill events are covered; Clear language in plan
13.	The national response system is based on adequate knowledge of the nature of potential oil spill situations	Disaster studies, criterion c	Analysis of past hazards has found its way into the plan; Analysis of conceivable emergency events has taken place; Knowledge about how humans, equipment and physical structures behave during disaster is included
14.	There is a clear understanding of the tasks that need to be performed, and these tasks are fully set out	Disaster studies, criterion d; Consulted experts, criterion V	Warning, evacuation, etc. worked out; Search and rescue organised; Oil recovery and containment operations are organised
15.	There are adequate human resources, and there is a clear understanding of when and how they are to be deployed	Disaster studies, criterion f; Deepwater Horizon report, criterion c; Consulted experts, criterion VI	Responsibilities are stipulated; Command structure fully described; Lines of communication and supporting means are specified; Emphasis on appropriate rather

			than speedy intervention; Involvement of non-governmental parties outlined; Involvement of foreign assistance outlined
16.	Mechanisms for maintaining the emergency response arrangements operable and up to date are in place	Disaster studies, criterion g; Deepwater Horizon report, criterion f; Consulted experts, criterion VIII	Arrangements in place for: testing, exercising, training, disseminating plan contents, updating the plan, etc.
17.	The regime incorporates a proper strategy for stopping the flow of oil after a well blow-out	Deepwater Horizon report, criterion a; Deepwater Horizon report, criterion b	There is a clear requirement for oil companies to be able to stop an uncontrolled flow of oil; Regime bodies have the expertise to oversee such efforts
Oil spill response equipment			
18.	There are adequate physical resources, and there is a clear understanding of when and how they are to be deployed	Disaster studies, criterion e; Deepwater Horizon report, criteria e and g; Consulted experts, criterion VII	There is clarity about what response resources are available; Interviewee indicates these resources are sufficient; The amount of available equipment based on adequate risk assessment; There are protocols for what response equipment is to be used when
19.	The regime encourages significant efforts of research and development to improve oil spill response resources and knowledge of their effectiveness	Deepwater Horizon report, criterion h	The regime sets commitments for actors to invest in the improvement of response capacities; Relevant actors are involved in significant research and development projects

The following data will be used to check if the criteria are met (numbers correspond with the numbering of the above criteria):

1. Interviews; oil spill response plans, if available
2. Interviews; oil spill response plans, if available; laws, regulations, etc.

3. Interviews; laws, regulations, etc.
4. Interviews; review instruments of supervisory agencies (via documents or websites); laws, regulations, etc.
5. Interviews (mainly for assessing sufficiency); oil spill response plans, if available; enforcement strategies of supervisory agencies (via documents or websites); sanctions enshrined in laws and regulations
6. Interviews; forums for cooperation between actors; dispute-settlement procedures enshrined in relevant laws and regulations;
7. Interviews; decision-making procedures enshrined in laws and regulations; websites or documents of regulatory agencies (for task descriptions)
8. Interviews; relevant processes in regime bodies, forums or other venues; research documents
9. Interviews; reporting requirements in relevant laws and regulations; if available, reporting documents themselves; documents, websites of relevant actors
10. Interviews; documents referred to in interviews
11. Interviews; oil spill response plans, if available; laws, regulations, etc.
12. Oil spill response plans, if available
13. Interviews; oil spill response plans, if available; websites and documents of oil spill response organizations
14. Interviews; oil spill response plans, if available
15. Interviews; oil spill response plans, if available; websites and documents of oil spill response organizations; laws, regulations, etc.
16. Interviews; oil spill response plans, if available; websites and documents of oil spill response organizations; laws, regulations, etc.
17. Interviews; research documents; laws, regulations, etc.
18. Interviews; oil spill response plans, if available; websites and documents of oil spill response organizations
19. Interviews; websites and documents of oil spill response organizations; laws, regulations, etc.

5.4 Concluding remarks

This chapter set off to provide definitive criteria by means of which the regime for accidental oil spills from drilling platforms at the North Sea will be evaluated. This was done by integrating and operationalizing (i.e. constructing indicators for) the criteria obtained from regime theory (presented in chapter 2), disaster studies (presented in chapter 3) and the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling (presented in chapter 4). In addition, experts were consulted to strengthen and expand these literature criteria. The experts were drawn from government actors, the oil industry and civil society from the Netherlands, Norway and the UK. The Secretariat of the OSPAR Commission and the Bonn Agreement was consulted as well. The integration yielded 3 lists of evaluation criteria: one to be applied to the international regime (table 1), one to be applied to the national regimes for the prevention of accidental oil spills (table 2) and one to be applied to the national regimes for the response to oil spills (table 3). Thus, table 1 will structure the evaluation in chapter 6 (the international regime), whereas table 2 and 3 will structure the evaluations in chapter 7 (the Netherlands), chapter 8 (Norway) and chapter 9 (United Kingdom).

6. THE INTERNATIONAL REGIME

6.1 Introduction

So it begins – this chapter presents the first of 4 evaluations that together tell the story of the extent to which the regime for the prevention of and response to accidental oil spills from drilling platforms at the North Sea is effective. This chapter presents an evaluation of the international regime. Section 6.2 highlights the key regime bodies and arrangements that make up the regime (sub-question c. and d.). Section 6.3 evaluates the international regime for the prevention of accidental oil spills (sub-question f.). Section 6.4 evaluates the international regime for the response to oil spills (sub-question g.). The two evaluations include, where applicable, the opinions of the consulted experts that were introduced in section 1.3 (sub-question e.). Given the many issues to which the evaluation criteria refer, quite some additional information on top of that of section 6.2 is needed to clarify the choices of why a certain criterion is, or is not, determined to be met. In other words, whereas section 6.2 provides a short introduction of what the regime comprises, sections 6.3 and 6.4 present a more in depth description of how the regime works. Section 6.5 presents the conclusions drawn from the evaluations of both parts (prevention and response) of the regime.

6.2 Overview of the regime

6.2.1 Key regime bodies

The international regime addressing accidental oil spills from drilling platforms at the North Sea is quite fragmented. There are no international or regional supervisory bodies to guide the conduct of national regime bodies (or other national actors). Nor is there, at the moment at least, an integrated piece of legislation or regulation that addresses the matter. The most relevant regime bodies are shown in figure 6, below. The figure shows that some regime bodies are involved in both oil spill prevention and response, while others are involved in oil spill response only. Three governance levels can be discerned on which these bodies operate: the global level, the EU level and the regional level (which for the purpose of this thesis may

be seen as the North Sea level, notwithstanding the fact that OSPAR actually has a wider scope, covering the North-East Atlantic).

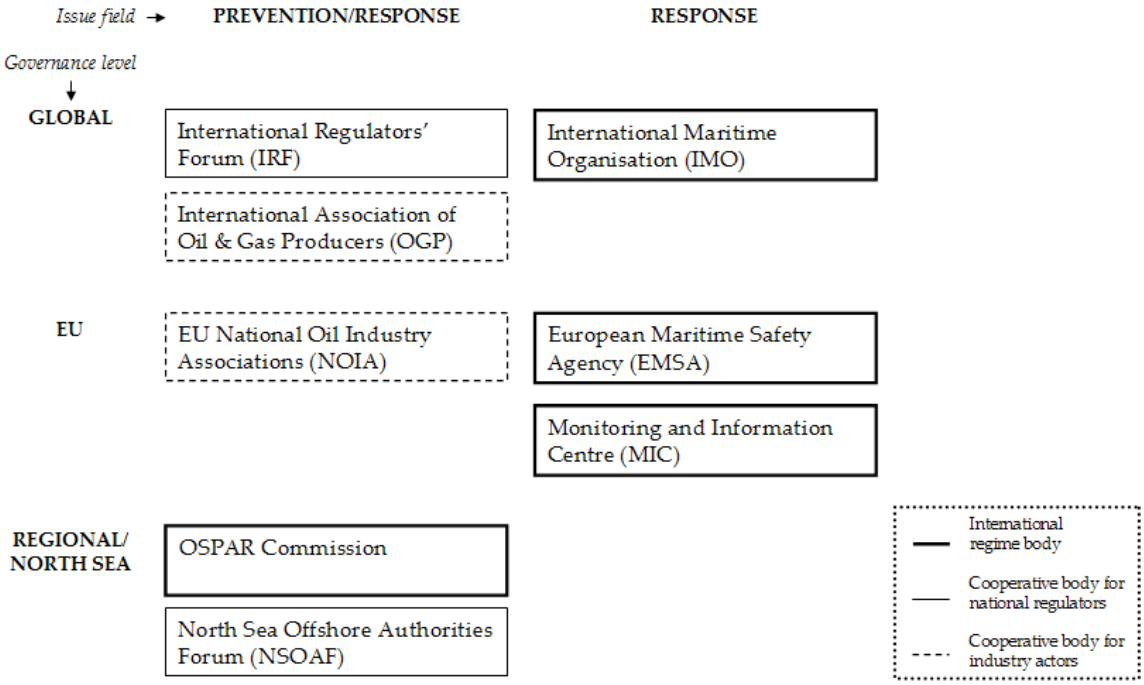

Figure 6 – Key international regime bodies for oil spill prevention and response at the North Sea

Simply put there are three types of international regime bodies. First, there are international regime bodies which are a reflection of the cooperation between nation states. Second, there are bodies that serve as a meeting ground for national regulators of the oil and gas industry. Third, there are bodies that act as forums for industry actors. The latter two can be seen as each others counterparts. The first of the above categories does not so much represent a coherent group of organizations. Below, a short introduction into the key regime bodies.

International Regulators' Forum (IRF)

The IRF is a global forum in which representatives from government agencies in charge of supervising the offshore oil and gas industry take part. It was founded in 1994. Its objectives are to promote best sustainable safety performance globally, to enable an exchange on information among regulators on health and safety and the regulation thereon, and to

provide a network for mutual support and advice. Of the three countries this thesis focuses on participating agencies are: State Supervision of Mines (the Netherlands), Petroleum Safety Authority (Norway) and Health and Safety Executive (United Kingdom). Other participants include the National Offshore Petroleum Safety Authority (NOPSA) from Australia and the Bureau of Ocean Management, Regulation and Enforcement (BOEMRE) from the United States (IRF, 2012).

North Sea Offshore Authorities Forum (NSOAF)

Similar to the IRF the NSOAF provides a forum for government regulators of nations that border the North Sea. It was founded in 1989. Its primary goal is to "ensure and encourage continuous improvement in health, safety, environmental care and the welfare of offshore workers" (De Jong, 2011, p. 3). For the Netherlands, Norway and the UK the same agencies participate as that do in the IRF. Other participating countries are Denmark, Faroer Islands, Germany, Republic of Ireland and Sweden. The NSOAF has an annual plenary meeting, several working groups (e.g. on health and safety, wells and EU related matters) and there are regular bilateral meetings of members. Through these mechanisms information is shared such as reports on incidents and near misses, reports on new (national or EU) legislation and safety notes and bulletins. Additionally, the NSOAF provides a venue for secondment of staff, multi-national audits and specialist meetings. These activities serve to improve learning amongst regulators, hereby developing good practices as well as common approaches and methodologies (De Jong, 2011).

International Association of Oil and Gas Producers (OGP)

OGP is a global forum encompassing oil and gas companies, industry associations and major upstream service companies. It was founded in 1974. The forum serves two main purposes. First, it works to identify and share best practices of health, safety, environment, security, social responsibility, engineering and operations among its members. Second, it acts as a tool to represent the interests of the oil and gas industry before international regulators and legislators such as the EU, OSPAR and the IMO. Among its members are the industry

associations from the Netherlands, Norway and the UK. These are NOGEPA, the OLF and Oil and Gas UK, respectively. The OGP encompasses a wide range of other organizations as well. Among oil and gas companies there are Shell International Exploration and Production BV, Statoil and BP plc. Associations like the International Association of Drilling Contractors (IADC) and the International Petroleum Industry Environmental Conservation Association (IPIECA) are affiliated to OGP as well (OGP, 2012).

EU National Oil Industry Associations (NOIA)

NOIA is a forum for the industry associations of EU countries. It can be seen as the industry counterpart of the NSOAF. NOIA allows for discussing issues of common interest so as to break down regulatory barriers between the different countries and to share best practices. For the Netherlands, Norway and the UK the industry associations mentioned above for OGP participate in NOIA as well (NOGEPA interview, 2011).

OSPAR Commission

The OSPAR Convention is a framework for the protection of the marine environment of the North-East Atlantic. It was signed in 1992 as a successor to the Oslo Convention (1972) against dumping and the Paris Convention (1974) on land-based pollution. The contents of the Convention will be discussed in section 6.2.2. The OSPAR Commission consists of representatives of each of the Contracting Parties. It supervises implementation, reviews the condition of the maritime area and draws up programmes and measures to further the Conventions' aims. To this end the Commission adopts decisions (which are legally binding) and recommendations. Among its Contracting Parties are the Netherlands, Norway and the United Kingdom (OSPAR Commission, 2012; OSPAR Convention, 1992).

International Maritime Organization (IMO)

The IMO is a specialized agency of the United Nations with responsibility for safe and secure shipping and the prevention of marine pollution by ships. IMO's involvement in the regime

is limited to tasks in relation to the OPRC Convention (discussed in section 6.2.2). IMO conferences were instrumental in the development of the OPRC Convention. Tasks that tie into this Convention are the organisation of Research and Development Forums for the exchange of information to enhance state-of-the art pollution preparedness and response, and development of a range of training courses in which trainees are educated in all aspects of oil spill planning, response and management – the OPRC Model Courses. The IMO has global coverage encompassing 170 Member States and three Associate Members. The former include the Netherlands, Norway and the UK (IMO, 2012).

European Maritime Safety Agency (EMSA)

The EMSA is a European Union initiative to bolster cooperation and coordination among Member States in the field of maritime safety and prevention of pollution from ships. It was set up in 2003, shortly after two tanker accidents that resulted in significant oil pollution – the Erika (1999) and Prestige (2002) oil spills. EMSA can assist Member States in responding to large scale incidents through its 'Stand-by Oil Response Vessel Network for European Waters'. It has furthermore established 'CleanSeaNet', a satellite monitoring system covering all European sea areas by means of which oil pollution can be monitored. Additionally, it has set up the expert exchange programme 'EMPOLLEX', which gives experts from participating countries a chance to share professional experience through discussing best practices, or by attending workshops, seminars, exercises, and training modules (EMSA, 2012).

Monitoring and Information Centre (MIC)

The MIC is the operational heart of the Community Mechanism for Civil Protection of the EU. This Mechanism was established by Decision 2007/779/EC of the European Commission (discussed in section 6.2.2). The MIC can assist countries affected by a (major) disaster in three ways. First, it provides a central forum where information can be accessed and shared about the availability of resources that may come of use in the response to a disaster. Second, it can disseminate information about preparedness and response as well as provide updates of ongoing emergencies and Mechanism interventions. Third, it can support coordination

during disaster by matching the offers of assistance or resources to the need thereof and by appointing EU field experts to help at the disaster site if needed (European Commission, 2012).

6.2.2 Key arrangements

The key international arrangements that describe the regime can be categorized in a similar fashion (as regards governance level) as figure 6 did for the just discussed regime bodies. There are arrangements at the United Nations (UN) level, EU level and regional level. The arrangements listed below are taken along in the evaluation of the regime.

At the UN level:

- United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention)
- International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC Convention)

United Nations Convention on the Law of the Sea (UNCLOS)

UNCLOS describes the rights and responsibilities of nations with respect to the use of seas and oceans. It sets out the legal status of the defined waters, the kind of activities that may be undertaken on and below the surface, and obligations to protect the environment. UNCLOS divides the world's oceans into different zones: the Territorial Sea (to a maximum of 12 nautical miles offshore), the Exclusive Economic Zone or EEZ (extending to a maximum of 200 nautical miles offshore) and the Continental Shelf (extending to the outer edge of the continental margin to a maximum of 350 nautical miles offshore). From an environmental point of view UNCLOS encompasses several important provisions. There is an obligation for States to prevent, reduce and control pollution caused by exploration or exploitation of natural resources. Furthermore, it states that States shall jointly develop and promote

contingency plans for responding to pollution incidents in the marine environment. In addition, it encourages States to participate in regional and global programmes in relation to marine pollution. UNCLOS was open for signature in 1982 and entered into force in 1994 (UNCLOS, 1982).

Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention)

The Espoo Convention requires Contracting Parties to take appropriate measures to prevent, reduce and control significant adverse transboundary environmental impacts. For activities listed in its appendix, of which offshore hydrocarbon production is one, Contracting Parties are mandated to perform an environmental impact assessment prior to making the decision to authorize the proposed activity. The Convention includes a list of what ought to be part of such an assessment. Additionally, it sets out that public likely to be affected by any such activity be given the opportunity to participate in relevant environmental impact assessment procedures. The Espoo Convention was open for signature in 1991 and entered into force in 1997 (Espoo Convention, 1991).

International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC)

The OPRC requires Contracting Parties to, individually or jointly, take measures for dealing with oil pollution incidents. It provides a global framework for international cooperation in the case of major (potential) marine pollution. The Convention requires Contracting Parties to establish a national oil spill response system (including a national contingency plan, designating a responsible national authority, etc.), to establish minimum levels of oil spill combating capabilities and to cooperate in a number of ways if called upon. It also requires Contracting Parties to make sure that operators of offshore units have oil pollution emergency plans that are congruent with national systems. There are about 100 parties to the Convention, including the Netherlands, Norway and the UK. It was adopted in 1990 and entered into force in 1995 (OPRC, 1990).

At the EU level:

- Directive 85/227/EEC on the assessment of certain public and private projects on the environment
- Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna
- Directive 92/91/EEC concerning the minimum requirements for improving the safety and health protection of workers in the mineral-extracting industries through drilling
- Directive 94/22/EC on the conditions for granting and using authorizations for the prospection, exploration and production of hydrocarbons
- Directive 2004/35/EC on environmental liability with regard to the prevention and remedying of environmental damage
- Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)
- Directive 2008/98/EC on waste and repealing certain Directives
- Directive 2009/147/EC on the conservation of wild birds

- Decision 2007/779/EC establishing a Community Civil Protection Mechanism

- Proposal for a Regulation of the European Parliament and of the Council on safety of offshore oil and gas prospection, exploration and production activities (COM(2011) 688 final)

Directive 85/227/EEC on the assessment of certain public and private projects on the environment

This Directive harmonizes requirements for environmental impact assessment among EU Member States. It was amended a number of times *inter alia* to comply with the UN Espoo Convention. It sets out that projects with potential adverse effects on the environment are to be subjected to an environmental impact assessment prior to giving consent. The extraction of petroleum is one of such projects. The Directive provides a list of what needs to be taken along in the making of an environmental impact assessment. It also specifies the information

that is to be made available to the concerned public (including NGOs) and requires early and effective opportunities be given to the public to participate in the environmental decision-making procedures (Directive 85/227/EEC).

Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna

This Directive is better known as the 'Habitats Directive'. The Habitats Directive lists a great number of habitat types and species of special significance that are to be protected. One of the means to achieve this is by assigning so-called 'Special Areas of Conservation'. Member States are required to strive for the maintenance or restoration of these areas. Consequently, potentially polluting activities are to be avoided at these sites. Any project that may be started in such areas requires a prior assessment of its effects. Together with designated areas following Directive 2009/147/EC (Birds Directive) the Special Areas of Conservation (SACs) form a – supposedly – coherent European ecological network called 'Natura 2000'. There can only be departed from the Directive if there are "imperative reasons of overriding public interest." However, in such a case compensatory measures must be taken to maintain the overall coherence of Natura 2000 (Directive 92/43/EEC).

Directive 92/91/EEC concerning the minimum requirements for improving the safety and health protection of workers in the mineral-extracting industries through drilling

This Directive is the principal piece of EU legislation regarding safety in the oil exploitation industry. It primarily focuses on health and safety of workers and the working environment. The Directive sets requirements in relation to such issues as fire protection, alarm systems, rescue facilities, and so on. Apart from these specific requirements there are provisions for maintenance, regular review of safety and health measures and well control (the latter being far from comprehensive). A specific section of the Directive concerns the offshore sector in particular. This section requires an employer to draw up a safety and health document that includes an identification of hazards, assessment of the associated risks, precautions taken to address these risks and an account of the management system showing that the Directive is complied with under all circumstances (Directive 92/91/EEC).

Directive 94/22/EC on the conditions for granting and using authorizations for the prospection, exploration and production of hydrocarbons

This Directive is the principal legal framework for granting exploration and production licences. It mainly describes some procedural requirements for the authorization process. Insofar safety and the environment are concerned the Directive states that authorizations must be granted on the basis of criteria taking into account, amongst other issues, the technical and financial capability of the applicant. The authority responsible for licensing may also take into consideration the history of the applicant and may impose conditions and requirements for the purpose of, amongst other issues, the protection of the environment (Directive 94/22/EC).

Directive 2004/35/EC on environmental liability with regard to the prevention and remedying of environmental damage

This Directive establishes a framework for EU Member States of environmental liability based on the 'polluter-pays' principle. It hereby aims to prevent and remedy environmental damage. The responsibility for such prevention and remediation is placed in the hands of the operator (the one who holds an authorization for an activity, or the one who controls the activity). The operator shall bear all costs for preventive and remedial actions – there is no cap on damages to be paid. The Directive applies to the coastal strip and territorial sea of Member States (Directive 2004/35/EC).

Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)

The EU Marine Strategy Framework Directive (MSFD) establishes a framework within which Member States ought to take measures to ensure that by 2020 a good environmental status is achieved in the marine environment. To achieve such a status the Directive calls for marine strategies that *inter alia* serve to prevent and reduce inputs in the marine environment in order to ensure that there are no significant impacts on marine ecosystems. The MSFD

requires each Member State to develop a marine strategy in accordance with a plan of action outlined in the Directive. The Directive encourages regional coordination and therefore encourages institutional structures like OSPAR. The MSFD does not go into the details of how a good environmental status should be attained. This is what Member States need to work out by themselves (Directive 2008/56/EC).

Directive 2008/98/EC on waste and repealing certain Directives

This Directive sets rules for dealing with waste. It does this by applying the polluter-pays principle, the precautionary principle and the principle of preventive action. The Directive imposes the obligation for polluters to clean up their mess (Directive 2008/98/EC). The Court of Justice of the EU has ruled that the Directive fully applies to oil spills (COM(2011) 688 final).

Directive 2009/147/EC on the conservation of wild birds

This Directive is better known as the 'Birds Directive'. The Birds Directive first saw daylight in 1979, but was amended so many times a new one was created in 2009 in the interest of clarity. It lists a number of bird species that are to be protected. To this end Member States must draw up 'Special Protection Areas' (SPAs) for which they take appropriate steps to avoid pollution, habitat deterioration and any kinds of disturbances. The SPAs together with the SCAs following Directive 92/43/EEC (Habitats Directive) form the Natura 2000 network (Directive 2009/147/EC).

Decision 2007/779/EC establishing a Community Civil Protection Mechanism

By means of this Decision the Monitoring and Information Centre (MIC), as discussed above, came into being. The general purpose of the Decision was to provide, on request, support in the event of major emergencies and to facilitate improved coordination of assistance intervention provided by the Member States and the Community. The Decision describes the procedures to be followed upon an emergency for which assistance is requested through the

MIC. To achieve adequate communication the 'Common Emergency Communication and Information System' (CETIS) is established. Other provisions basically set rules for what Member States should have organized in order to effectively participate in the Mechanism (Decision 2007/779/EC).

Proposal for a Regulation of the European Parliament and of the Council on safety of offshore oil and gas prospection, exploration and production activities (COM(2011) 688 final)

After the Deepwater Horizon disaster the European Commission conducted an analysis on offshore practices and the legislative framework in the EU (COM(2010) 560 final). This analysis showed that the fragmentation of and gaps in EU legislation had led to considerable disparities between Member States in the regulatory practices relating to offshore activities. In reaction to the analysis the Commission proposed a Regulation to provide for a reduction in the risk of a major accident in Union waters and to limit the consequences should one occur. The Regulation would be the first EU instrument to cover all important aspects for regulating offshore oil and gas exploitation in one integrated piece of legislation – it serves to complement and unite many of the above discussed Directives. It complements Directive 2004/35/EC on environmental liability by extending its territorial applicability to cover all marine waters. It expands on Directive 92/91/EC on worker health and safety by including environmental assessment, submission of a risk assessment to the regulator for consent, the establishment of a notification scheme for well operations, and more. Furthermore, the proposed Regulation strengthens obligations during the licensing process described in Directive 94/22/EC by requiring improved assessment of the technical and financial capacity of the applicants. Finally, the proposal sets new requirements on emergency response for both Member States and industry to complement the EU Civil Protection Mechanism, the MIC and the EMSA. The main reason the Commission opted for a Regulation as opposed to a Directive is that the former acts on industry directly and therefore does not need any implementation measures that would cause delay (COM(2011) 688 final).

Regional:

- OSPAR Convention
- Bonn Agreement (1983, amended in 2001)

OSPAR Convention

As already touched upon in the discussion of the OSPAR Commission, the Convention sets out a framework for the protection of the marine environment of the North-East Atlantic. Signed in 1992, it is a successor to the Oslo (1972) and Paris (1974) conventions. OSPAR lays down commitments for its Contracting Parties to take all possible steps to prevent and eliminate pollution, to protect the maritime area against the adverse effects of human activities and to restore damaged marine areas when practicable. OSPAR incorporates the precautionary principle, the polluter pays principle and the concepts of Best Available Techniques (BAT) and Best Environmental Practice (BEP). Even though the occurrence of oil spill accidents is not so much at the heart of the Convention as is intentional oil pollution, it does set a framework guiding the attitude of Contracting Parties towards regulating any kind of activity in the North-East Atlantic that could potentially harm its environment (OSPAR Convention, 1992; OSPAR Secretariat interview, 2011).

Bonn Agreement (1983, amended in 2001)

The Bonn Agreement was forged in response to the Torrey Canyon tanker accident in 1967. It first came into being in 1969, was remade in 1983 and subsequently amended in 2001. The Torrey Canyon accident showed the necessity of international cooperation in the North Sea area for dealing with oil spill response. The Bonn Agreement has 10 members, among which the Netherlands, Norway, the United Kingdom and the European Union. The Agreement entails that Contracting Parties keep their zones of responsibility under surveillance for (threats of) marine pollution, inform other Parties of any threats, adopt common operational approaches to response operations, provide support when necessary, share research and development and carry out joint exercises. The zones of responsibility generally coincide

with the EEZs of the Contracting Parties. For areas where interests of Contracting Parties overlap zones of joint responsibility were established. One of such zones is the quadripartite zone involving Belgium, France, the United Kingdom and the Netherlands covering the approaches to Rotterdam. Lessons learnt from the so-called BONNEX exercises, together with outcomes of incident investigations, are incorporated in the Bonn Agreement Counter-Pollution Manual, which acts as a basis for response to major accidents (Bonn Agreement, 1983; Bonn Agreement, 2009).

6.3 Evaluation of the international regime for the prevention of accidental oil spills from drilling platforms at the North Sea

Based on the sources that were briefly introduced in section 6.2 and interviews with relevant organizations (section 1.3 shows which were consulted) we evaluate the international regime for the prevention of accidental oil spills in line with the criteria constructed in chapter 5. The result of the evaluation is shown in table 4, below. The table lists the different criteria, the verdict of whether or not the criteria are met, the associated indicator(s) and the source(s) from where the indicators originated.

Table 4 – Results of the evaluation of the international regime for the prevention of accidental oil spills from drilling platforms at the North Sea

Criterion	Met?	Indicator(s)	Source(s)
1. The regime encompasses all relevant actors	+	All North Sea nations are parties to relevant international institutions; industry and NGO interests are represented	Interviews; international conventions
2. The regime addresses all issues that relate to the problem it was designed for	+/–	Many issues are covered but new European Commission proposal shows current omissions	Interviews; EU directives; proposal for new EU Regulation
3. Commitments that follow from the regime are sufficiently stringent and binding	+	Interviewees indicate to be satisfied with goal setting regime; no problems identified with potential for enforcement	Interviews
4. The regime comprises sufficient mechanisms for reviewing implementation and compliance	+	Clear procedures for checking implementation of OSPAR commitments and EU directives (by European Commission)	OSPAR Convention; website of European Commission

5. The regime comprises sufficient mechanisms to enforce implementation and compliance	+	Enforcement through arbitration (OSPAR) or EU Court of Justice (directives and regulations); the latter can also issue fines	OSPAR Convention; website of European Commission; OSPAR Secretariat interview
6. The regime is sufficiently robust to cope with challenges caused by internal affairs	+	There are government and industry forums; OSPAR operates on consensus basis; dispute-settlement mechanisms are O.K.; no interviewees note regime instability	Interviews
7. The regime is sufficiently robust to cope with challenges caused by external affairs	+	No external issues mentioned during interviews	Interviews
8. The regime is able to adapt to changing requirements, when necessary	+	There are a lot of venues in which potential improvements are discussed; European Commission proposal reflects learning potential	Interviews; proposal for new EU Regulation
9. Transparency is ensured	+	OSPAR produces QSRs; NGOs participate in OSPAR; NSOAF and IRF results are made public	Interviews; OSPAR QSR 2010; OSPAR and IRF websites
10. Regime bodies have sufficient means to perform their tasks	+	No resource problems encountered	Interviews (incl. with OSPAR Secretariat; OGP website
11. The regime fosters harmonization among involved nations	+/–	Harmonization through IRF and NSOAF; proposal for new EU Regulation illuminates disparities; interviews show more steps can be taken	Proposal for a new EU Regulation; interviews (most notably with NOGEPA)

1. The regime encompasses all relevant actors

All nations bordering the North Sea participate in the relevant international conventions. The European Union and Norway are parties to UNCLOS, the Espoo Convention and OSPAR. EU directives obviously apply to all EU Member States. And even though Norway is not an EU country, it does take along many of the commitments laid down in such directives (OLF interview, 2011). Moreover, on many issues Norway works together with the EU. The Petroleum Safety Authority Norway, for instance, indicates to be involved in following up all activities in the EU in the wake of the Deepwater Horizon oil spill (PSA interview, 2011).

On top of this, the OGP on a global level and NOIA on a North Sea level represent industry interests in the regime. The IRF on a global level and NSOAF on a North Sea level are the governmental responses thereto (PSA interview, 2011); they balance the playing field so to say. NGOs are involved in the international regime through participation in meetings from the OSPAR Commission and consultations with the European Commission. With regard to the former, involved NGOs include Greenpeace international, the Advisory Committee on the Protection of the Sea (ACOPS), Friends of the Earth (FOE), Seas at Risk and the World Wildlife Fund (WWF). Not only environmental NGOs take part; OGP participates as well. These organizations are so-called 'observers', but reportedly contribute actively to the work of the Commission and they help shape the development of policy – hereby translating the Convention's principles into practical action (OSPAR Commission, 2012). The latter type of involvement comes down to answering to public hearings and meeting with the Commission to convey the environmental voice (Bellona interview, 2011). All in all, none of the interviewees indicated to feel any important actors are missing in the international regime.

2. The regime addresses many of the issues that relate to the problem it was designed for, but some gaps can be identified

Important issues to be addressed are authorization (licensing, permitting and other forms for giving consent for oil exploitation operations), proper risk and environmental assessment, safety measures (including well control) and liability. The EU directives described in section 6.2.2 touch upon all these issues, but the proposal for a new Regulation from the European Commission (COM(2011) 688 final) identifies a number of issues in need of improvement. First, requirements for taking into account the technical and financial capacity of applicants in authorization processes needs improvement. Second, Directive 92/91/EC fails to reflect the importance of providing for adequate well control – the Directive devotes a mere two sentences to the issue (Directive 92/91/EC). In addition, it does not require risk assessments to be submitted to a regulator for consent. Third, the current environmental liability directive (Directive 2004/35/EC) only applies to the coastal strip and territorial sea of Member States while most oil exploitation activities are undertaken beyond these areas. These issues thus demonstrate a mixed picture. Of course many issues are actually taken on board, so to say

the regime is completely deficient at this point would be an exaggeration. Because of the omissions and current lack of an integrated, holistic international framework this criterion is awarded an intermediate score.

3. Commitments that follow from the regime are sufficiently stringent and binding

The relevant commitments are largely of a goal setting nature. The chapters to come will show that this is not only true for the international regime, but for the national ones as well. Virtually all interviewees indicated to be happy with this state of affairs – government agencies and industry alike. For starters, an interview with the Netherlands Institute for the Law of the Sea (NILOS), a research institute focusing on issues in relation to UNCLOS, yielded the insight that if Member States were to construct a new, equivalent convention probably nothing better would come out of it than the current one. UNCLOS is considered to be a solid framework convention (NILOS interview, 2011). Further, the OSPAR Convention is said to be looked at as a leading example by other regional seas arrangements (OSPAR Secretariat interview, 2011). Notwithstanding the goal setting nature of the international regulatory framework there are no issues with its enforceability. None of the interviewees indicated the stringency or binding nature of international commitments to be insufficient.

4. The regime comprises sufficient mechanisms for reviewing implementation and compliance

International conventions are automatically incorporated into national legislation after being adopted. With EU directives there are specified timeframes within which national legislation must be adjusted. As regards the OSPAR Convention, Contracting Parties are obligated to report to the OSPAR Commission at regular time intervals on the measures they have taken to implement its provisions, as well as on adopted decisions and recommendations (article 22). The OSPAR Commission subsequently reviews these reports (article 23) to assess compliance (OSPAR Convention, 1992). For EU directives, Member States are obligated to craft texts of 'national implementing measures' and send them to the European Commission. Every two months the European Commission verifies if EU directives are transposed into national legislation. Contrary to directives, EU regulations take direct effect and as such need

not be transposed into national legislation. EU regulations are directly enforceable (European Commission, 2012).

5. The regime comprises sufficient mechanisms to enforce implementation and compliance

The international regime is characterized by a combination of hard and soft law. OSPAR works via consensus. Consensus is considered to be conducive to implementation, whereas majority voting is considered to potentially hamper compliance given that commitments may be imposed on a relatively large group of unwilling actors. OSPAR does not have a compliance body, but in the annual meetings 'blame and shame' can be applied (OSPAR Secretariat interview, 2011). Ultimately, as a last resort, there is a system of arbitration. Article 32 of the OSPAR Convention lays down the procedures for the settlement of disputes (OSPAR Convention, 1992). It would, however, be rather unusual for such a procedure to be set in motion. Low compliance levels may eventually lead to an issue being addressed through EU legislation – i.e. hard law (OSPAR Secretariat interview, 2011). EU directives are enforced by the European Commission. In the case of non-compliance of a Member State 'infringement proceedings' may be initiated. Such a procedure involves sending a letter of formal notice to the Member State in question, stating the timeframe within which compliance must be ensured. The Member State is given the opportunity to voluntarily conform to the requirement and explicate its problems to comply. Ultimately, the European Commission (or other EU Member States, organizations or individuals) may start a litigation procedure at the EU Court of Justice. If a Member State does not follow the ruling of the EU Court of Justice a fine may be issued (European Commission, 2012).

6. The regime is sufficiently robust to cope with challenges caused by internal affairs

An indicator for the above statement is that after the Deepwater Horizon accident no specific friction between regime actors arose. Of course, calls of enormous discontent made by both environmental NGOs and the general public were ubiquitous, but the structure of the regime was not negatively affected. This illustrates the high level of cooperation between relevant bodies in the regime. At no point during the interviews did any sound of regime instability

come to the fore. The internal robustness of the regime is reflected in its consensus seeking nature. A variety of international forums from government (IRF and NSOAF) and industry (OGP and NOIA) allow for constructive discussions in the face of problems. Institutions like these, and for instance OSPAR, add to the regime's stability. In exceptional circumstances, though, there is always the opportunity to settle disputes through formal mechanisms (as touched upon in the discussion of criterion 5).

7. The regime is sufficiently robust to cope with challenges caused by external affairs

As explained in chapter 2, external affairs are taken to refer to issues of economic or political nature. Economic decline could impact on a regime to water down commitments. Political conflicts (among regime members) could hinder effective cooperation. There are no signs that economic interests have impacted on the international regime or the way it is put in practice. To the contrary: the Deepwater Horizon accident occurred amidst economic hardship, but (regulatory) responses (including the new proposal for an EU Regulation) have still been profound. Moreover, the nations that are part of the regime have a well established history of cooperation, which makes it unlikely that political conflicts would trickle down into the regime. During the interviews no external issues of concern were identified.

8. The regime is able to adapt to changing requirements, when necessary

There is a plethora of venues where discussions on the effectiveness of the international regime for the prevention of oil spills may be held. We have come across OSPAR, NSOAF, IRF and the European Commission which are government oriented, and OGP and NOIA which are industry oriented. The Deepwater Horizon oil spill provides a reference point to see whether or not actual learning (and thus adaptation to changing requirements) occurs. In the wake of the disaster, OSPAR issued a recommendation compelling Contracting parties to review existing regulatory frameworks (OSPAR Recommendation 2010/18). The NSOAF has used its 'Wells Working Group' to take forward some important issues – it crosschecked NOIA and regulator initiatives against the failures identified in U.S. reports. The NSOAF concluded that the regulatory regimes are fundamentally sound, but there still remain

concerns about human barriers (values, beliefs and competences) and organizational barriers (safety culture, supervision and competency assurance). The NSOAF has worked with the European Commission to develop the proposal for a new Regulation (Walker, 2011). The IRF convened an extraordinary meeting (the first in its 17-year history) in which affiliated regulators and four industry organizations (including the OGP) shared their experience in recent incidents including the Deepwater Horizon accident. One of the main outcomes of this meeting was the decision to develop an audit protocol for looking at BOP integrity and operational issues (IRF, 2012). The work of the European Commission is captured in the proposal for a new Regulation as was discussed earlier this chapter. This is where any learning from the Deepwater Horizon disaster can be firmly embedded into the regime. Of course, it remains to be seen whether the proposal will be adopted without being watered down. But for the sake of the present discussion I will assume this to be the case. All in all the above reflects the ability of the regime to improve if circumstances so dictate.

9. Transparency is ensured

Transparency at the international level is somewhat less salient than on the national level, given that it is at the latter level – currently – that oil companies and regulators report on their performance. Nevertheless, as (the environmental impacts of) oil spills do not respect national borders the regime must be amenable to scrutiny at the international level as well. To this end the OSPAR Commission issues Quality Status Reports (QSRs). These provide information on the environmental status of the North-East Atlantic. They also describe the activities undertaken, for instance through the Offshore Industry Committee (OIC), to bring about improvements (OSPAR, 2010). NGOs can participate in the OSPAR Commission as observers and are able to take an active role in policy development (OSPAR Commission, 2012). The results from IRF meetings are made publicly available as well (IRF, 2012). If the proposal for a new EU Regulation is adopted, a whole new transparency framework at the international level is introduced. The proposal requires the European Commission to set up a common data reporting format by means of which operators and Member States will share and make publicly available all kinds of information (without the need for request). This includes information relating to the unintended release of oil, to loss of well control, failure

of main safety components of the installation and serious accidents. The proposal further introduces the obligation for Member States to draft annual reports including information about the number and type of performed investigations, enforcement actions taken, major regulatory changes and the safety and environmental performance of offshore oil and gas operations in their jurisdiction. Every two years the European Commission shall publish a report about the safety of EU offshore operations based on this information. Subject to certain provisions in relation to *inter alia* public security, the course of justice and commerce (Directive 2003/4/EC) the competent authorities of Member States will make available to the public any information received pursuant to the Regulation, upon request. Finally, for the purpose of public participation in licensing procedures, information shall be made available by both the Member State and the operator in question to facilitate the public in issuing comments and opinions (COM(2011) 688 final).

10. Regime bodies have sufficient means to perform their tasks

There are no regime bodies on the international level with executive responsibilities, e.g. performing inspections. So, requirements in terms of resources are relatively modest. The NSOAF, for instance, rotates chairmanship; a lead country facilitates meetings. Assumedly, the IRF and NOIA work in a similar way. OGP, on the other hand, requires a fee to be paid by its members dependent on e.g. production level and geographical scope (OGP, 2012). Lastly, OSPAR has a small administrative budget for its by 12 people manned Secretariat. For delivering on the objectives of its strategy and the different work programmes OSPAR also operates on a lead-country basis. This way the individual countries take up much of the costs (OSPAR Secretariat interview, 2011). During the interviews no concerns were expressed of (imminent) resource shortages.

11. The regime fosters harmonization among involved nations, but there is still work to do

Through the IRF and NSOAF supervisory practices among national regulators are tried to be harmonized. However, the proposal for a new Regulation from the European Commission states: "[t]here are considerable disparities and fragmentation among Member States' laws

and practices applying to offshore activities […]" (COM(2011) 688 final). This is said to reflect the virtual absence of international law instruments and gaps in relevant EU law. Adoption of the Regulation would be a step towards further harmonization. But, even if this instrument is adopted there still remain disparities as to how national regulators operate. As one interviewee noted, there are still significant differences between inspection regimes: while the U.K., for instance, has a very solid documentation phase and less day-to-day oversight, the Netherlands has less formal acceptance but scrutinizes drilling reports on a daily basis (NOGEPA interview, 2011). An EU Agency could potentially help in creating a more unified European (and North Sea) supervisory system. This was considered in the proposal for a new Regulation from the European Commission, but deemed it too expensive in light of potential benefits (COM(2011) 688 final).

6.4 Evaluation of the international regime for the response to oil spills at the North Sea

Based on the sources that were briefly introduced in section 6.2 and interviews with relevant organizations (section 1.3 shows which were consulted) we evaluate the international regime for the response to oil spills in line with the criteria constructed in chapter 5. The result of the evaluation is shown in table 5, below. The table lists the different criteria, the verdict of whether or not the criteria are met, the associated indicator(s) and the source(s) from where the indicators originated.

Table 5 – Results of the evaluation of the international regime for the response to oil spills from drilling platforms at the North Sea

Criterion	Met?	Indicator(s)	Source
1. The regime encompasses all relevant actors	+	All North Sea nations are parties to relevant international institutions	Interviews; OPRC Convention; Bonn Agreement
2. The regime addresses all issues that relate to the problem it was designed for	+/–	Many issues are covered but new European Commission proposal shows current omissions	Interviews; EU directives; proposal new EU Regulation; Bonn Agreement
3. Commitments that follow from the regime are sufficiently stringent and binding	+	Interviewees indicate to be satisfied with goal setting regime	Interviews

4. The regime comprises sufficient mechanisms for reviewing implementation and compliance	+	Implementation checked by European Commission and in meetings of Bonn Agreement	Bonn Agreement; website of European Commission
5. The regime comprises sufficient mechanisms to enforce implementation and compliance	+	Enforcement by EU Court of Justice (directives, regulations), may issue fines; not complying with Bonn Agreement would be nonsensical	Bonn Agreement; website of European Commission; OSPAR Secretariat interview
6. The regime is sufficiently robust to cope with challenges caused by internal affairs	+	See table 4	See table 4
7. The regime is sufficiently robust to cope with challenges caused by external affairs	+	See table 4	See table 4
8. The regime is able to adapt to changing requirements, when necessary	+	Apart from what is mentioned in table 4, the Bonn Agreement facilitates information exchange and it captures lessons learned in the Counter-Pollution Manual	Interviews; Bonn Agreement; proposal for EU Regulation
9. Transparency is ensured	+	Bonn Agreement operates very transparently; EU proposal requires public national response plans	Interviews; Bonn Agreement; proposal for EU Regulation
10. Regime bodies have sufficient means to perform their tasks	+	No resource problems encountered	Interviews (incl. with OSPAR Secretariat; proposal for EU Regulation
11. The regime fosters harmonization among involved nations	+/–	See table 4. Bonn Agreement ensures harmonization through Counter-Pollution Manual, but does not cover requirements for operators' response plans	Proposal for new EU Regulation; Bonn Agreement

1. The regime encompasses all relevant actors

All nations bordering the North Sea participate in the relevant international agreements: the OPRC Convention and the Bonn agreement. The EU directives apply to all EU Member States and, as discussed, Norway generally takes these along as well. Furthermore, all relevant nations participate in the IMO. Norway does not participate in the EMSA. However,

given that the EU is a Contracting Party to the Bonn Agreement EMSA may, at least in theory, be drawn upon even in Norwegian waters.

2. The regime addresses many of the issues that relate to the problem it was designed for, but some gaps can be identified

Important issues to be addressed are the responsibilities of oil companies, those of nations and international cooperation. The OPRC sets a clear framework for especially the first two issues. Contracting Parties are required to have a national system that includes a competent authority and a national oil spill response plan. It also requires Contracting Parties to make sure that the contingency plans from oil companies are congruent to the national system. The EU Directive on waste (Directive 2008/98/EC) assigns the first responsibility for cleaning up an oil spill to the one who has caused it. Perhaps most importantly, regional cooperation in the North Sea area is established through the Bonn Agreement. But, notwithstanding the enormous importance of the Bonn Agreement to effective oil spill response, it does not cover requirements for individual Contracting Parties or oil companies of how their response systems should be shaped – at least not explicitly. As there are as of yet no such requirements at the European level either, the rather general framework provided by the OPRC Convention is currently the only guiding international institution on the issue. And even though it requires both governments and industry to have oil spill response plans (which are congruent) it does not specify, for instance, requirements for industry response plans and procedures for how to bring the response to an oil spill in practice. This does not necessarily mean that the regime is fundamentally flawed in respect of oil spill response at the North Sea; individual countries can set such requirements through national legislation. The proposal for a new Regulation on the by the European Commission (COM(2011) 688 final), however, does incorporate the above mentioned issues. Thus, current omissions are considered undesirable. Therefore this criterion is awarded an intermediate score.

3. Commitments that follow from the regime are sufficiently stringent and binding

The relevant commitments are largely of a goal setting nature. As the previous section pointed out, virtually all interviewees – both from government and industry organizations – indicated to be happy with this state of affairs. The discussion of criterion 2, above, highlighted that the international regime currently passes through some important responsibilities to lower levels – the OPRC Convention leaves setting detailed requirements in the hands of national authorities. Even though adoption of the proposal for a new EU Regulation (COM(2011) 688 final) would significantly add to the stringency and binding nature of the regime, the choice was made to cover this issue under the previous criterion – the proposal concerns additional requirements rather than making current ones more stringent or binding. Given that none of the interviewees indicated to consider the stringency or binding nature of any of the commitments to be insufficient, the criterion is determined to be met.

4. The regime comprises sufficient mechanisms for reviewing implementation and compliance

International conventions are automatically incorporated into national legislation after being adopted. With EU directives there are specified timeframes within which national legislation may be adjusted. As touched upon earlier, the European Commission checks compliance with directives every two months. EU regulations take direct effect and as such do not need implementation via national legislation. For the Bonn Agreement, reviewing implementation is performed in meetings of the Contracting Parties, as specified in the Rules of Procedure (Bonn Agreement, 1983).

5. The regime comprises sufficient mechanisms to enforce implementation and compliance

The reasoning behind why this criterion is met largely coincides with the discussion of this criterion in the previous section (see page 110). EU legislation is enforced by the European Commission and the EU Court of Justice. The Bonn Agreement does not so much specify obligations for individual Contracting Parties, rather it facilitates cooperation between them.

Given this aim, not complying with the Agreement would be a rather senseless thing to do. A noncompliant nation, then, would be better of by simply denouncing the Agreement altogether.

6. The regime is sufficiently robust to cope with challenges caused by internal affairs

The reasoning behind why this criterion is met coincides with the discussion of this criterion in the previous section (see page 110).

7. The regime is sufficiently robust to cope with challenges caused by external affairs

The reasoning behind why this criterion is met coincides with the discussion of this criterion in the previous section (see page 111).

8. The regime is able to adapt to changing requirements, when necessary

The discussion of this criterion in the previous section (page 111) equally applies here. In addition, learning in the realm of oil spill response also occurs through the Bonn Agreement. Article 4 of the Agreement contains provisions for Contracting Parties to inform one another of new effective counter-pollution measures and new surveillance technologies. Article 14 lays down that one of the duties of meetings of the Contracting Parties is to review the effectiveness of measures taken under the Agreement (Bonn Agreement, 1983). On top of this, the Bonn Agreement Counter-Pollution Manual incorporates lessons from exercises and accident investigations (Bonn Agreement, 2012).

9. Transparency is ensured

Again, the discussion of this criterion in the previous section (page 112) equally applies here. Further, the Bonn Agreement has a very transparent way of working. Its Rules of Procedure dictate that all documents of the Bonn Agreement and its subsidiary bodies are made available to any person on request, except those that could be misleading (e.g. draft reports)

or contain private (e.g. personnel or contractual) information (Bonn Agreement, 1983). The Bonn Agreement's website offers a wide arrange of information about policies, aerial surveillance, meetings and the Counter-Pollution Manual (Bonn Agreement, 2012). The proposal for a new EU Regulation furthermore requires the oil spill response plans of Member States to be made available to the public as appropriate (COM(2011) 688 final).

10. Regime bodies have sufficient means to perform their tasks

The IMO and EMSA were not consulted as part of this thesis. While the IMO does not have a particularly big role to play in the regime, EMSA could get involved through the EU Civil Protection Mechanism. The explanatory memorandum of the EU proposal for a new Regulation notes that "[s]teps were already taken to expand EMSA's competence to cover also accidents of offshore installations (beyond its primary focus on maritime shipping)" (COM(2011) 688 final, p. 4). For the Bonn Agreement secretariat functions are provided by the OSPAR Secretariat (Bonn Agreement, 1983). On this basis it is assumed resources are sufficient.

11. The regime fosters harmonization among involved nations, but there is still work to do

This verdict ties into the discussion above of issues not covered by the supranational regime. Most importantly, the lack of requirements for oil spill response plans of operators. The Bonn Agreement provides a venue for information exchange, which is mainly aimed at creating common understanding among Contracting Parties regarding policies and strategies for oil spill response. The Bonn Agreement Counter-Pollution Manual sets out guidelines on such issues as command structures, radio communications and organization of vessels and operatives away from their bases. More specific policies (e.g. on using chemical dispersants) are included as well (Bonn Agreement, 2012). So, whereas harmonization is fostered for individual nations, that for operators (which are the first line of defence in case of an oil spill) is lacking. The proposal for a new EU Regulation is a way to set this straight, but given that it is not accepted yet this criterion is awarded an intermediate score.

6.5 Conclusions

The international regime for accidental oil spills from drilling platforms at the North Sea is fragmented. There are no overarching regime bodies on either the prevention or the response side of the regime. From an actors point of view the international regime is characterized by cooperative arrangements between government regulators on the one side and cooperative arrangements between industry players on the other. The former include the IRF and the NSOAF while of the latter OGP and NOIA are noteworthy. These serve to exchange good practices, align interests and represent their members before e.g. the European Commission. In addition to the above the IMO and EMSA have an, albeit modest, role in the response to oil spills. The kinds of actors on the international stage and their mandates are a reflection of North Sea states keen to retain their sovereignty in the field of offshore oil drilling while acknowledging the added value of cooperation.

The international legislation in place shows the same picture. The OSPAR Convention and Bonn Agreement provide for cooperation to establish a healthy North-East Atlantic and good transboundary oil spill response on the North Sea, respectively, while at the EU level there is a plethora of directives that address separate aspects of offshore oil drilling – all in relative isolation. Health and safety, environmental assessment and environmental liability, to name a few issues, are captured under different EU directives. These directives require the creation or adaptation of EU Member States' national legislation in order to be implemented. As with the field of actors, the international legislation shows that North Sea nations like to protect the authority to regulate offshore activities by themselves while recognizing the need for some degree of regulatory alignment.

The international regime for the prevention of accidental oil spills from drilling platforms at the North Sea meets the vast majority of criteria used to evaluate its effectiveness. The regime encompasses all relevant actors and interviews with relevant regime bodies (both international and national) revealed an overall satisfaction with its stringency and binding nature. The combination of hard and soft law is considered to provide sufficient tools for reviewing implementation and enforcing compliance when necessary. The regime generally

fosters an atmosphere of consensus. Neither internal nor external affairs were shown to be likely to have an impact on the regime's robustness. One of the particular strengths of the regime is the amount of venues at which learning takes place. Following the Deepwater Horizon disaster the IRF, NSOAF, OGP, NOIA, OSPAR and the European Commission all took it upon them to, each in their own way, reconsider current practices and to propose improvements. These efforts are reflected in a European Commission proposal for a new EU Regulation. As the proof of the pudding is in the eating adoption of this proposal would definitively show the regime is able to adapt to changing requirements. Transparency is ensured through OSPAR's Quality Status Reports as well as through IRF publications. Two criteria which could not be established as being met by the regime are about the issues it encompasses and harmonization. These two are somewhat interlinked. The regime fails to address safety and environmental issues in licensing procedures, does not incorporate significant provisions for well control and there is no adequate liability beyond the territorial seas. Partly due to these omissions and the fragmented nature of international legislation in general a lot of steps are yet to be made to harmonize supervisory practices among EU regulators. The proposal for a new EU Regulation goes a long way to improve the regime on these unfulfilled criteria, albeit a new EU supervisory agency may be necessary to provide a true holistic, harmonized international framework for the prevention of accidental oil spills.

The international regime for the response to oil spills from drilling platforms at the North Sea meets the vast majority of criteria used to evaluate its effectiveness too. The reasoning behind this largely coincides with the discussion of the prevention part of the regime. The same criteria were determined to be met. The Bonn Agreement deserves specific mentioning in its contribution to the ability of the regime to adapt to changing requirements and the regime's level of transparency. The Bonn Agreement's Counter-Pollution Manual provides a continuous way of improving oil spill response procedures and a wide range of relevant documents are available through its website. On a more critical note, the international regime for the response to oil spills at the North Sea does not encompass requirements for oil spill response plans of operators. Apart from this being an omission in the issues that ought to be addressed, it is a reason to consider harmonization to be suboptimal as well.

All in all, the international regime for accidental oil spills from drilling platforms at the North Sea is effective. Is it perfect? No. The outcome of any assessment of effectiveness will be either 'yes, but' or 'no, but'. The vast majority of evaluation criteria is met by the regime and there is evidence that improvements can be expected in the near future on the issues that relate to criteria which the regime does not meet.

7. THE NATIONAL REGIME OF THE NETHERLANDS

7.1 Introduction

This chapter will elaborate on the extent to which the national regime of the Netherlands for accidental oil spills from drilling platforms at the North Sea is effective. It presents two evaluations: one of the regime for the prevention of accidental oil spills, one of the regime for the response to oil spills. Section 7.2 highlights the key regime bodies and arrangements that make up the regime (sub-question c. and d.). Section 7.3 evaluates the national regime of the Netherlands for the prevention of accidental oil spills (sub-question f.). Section 7.4 evaluates the national regime of the Netherlands for the response to oil spills (sub-question g.). The two evaluations include, where applicable, the opinions of the consulted experts that were introduced in section 1.3 (sub-question e.). Given the many issues to which the evaluation criteria refer, quite some additional information on top of that of section 7.2 is needed to clarify the choices of why the criteria are, or are not, determined to be met. In other words, whereas section 7.2 provides a short introduction of what the regime comprises, sections 7.3 and 7.4 present a more in depth description of how the regime works. Section 7.5 presents the conclusions drawn from the evaluations of both parts (prevention and response) of the regime.

7.2 Overview of the regime

7.2.1 Key regime bodies

The Dutch regime is clearly organized. There is basically one government agency in charge of regulating the oil industry: the State Supervision of Mines (SSM). This is confirmed by the Netherlands Oil and Gas Exploration and Production Association (NOGEPA), which represents oil and gas operator companies on the Dutch continental shelf. They say that as it comes to supervision on the North Sea the SSM is simply 'it' (NOGEPA interview, 2011). The single most important piece of legislation in the Netherlands is the Mining Act and its accompanying Decree and Regulation. The key task of the SSM is seeing to it that the oil and

gas industry adheres to this legislation (SSM interview, 2011). The most relevant regime bodies are shown in figure 7, below.

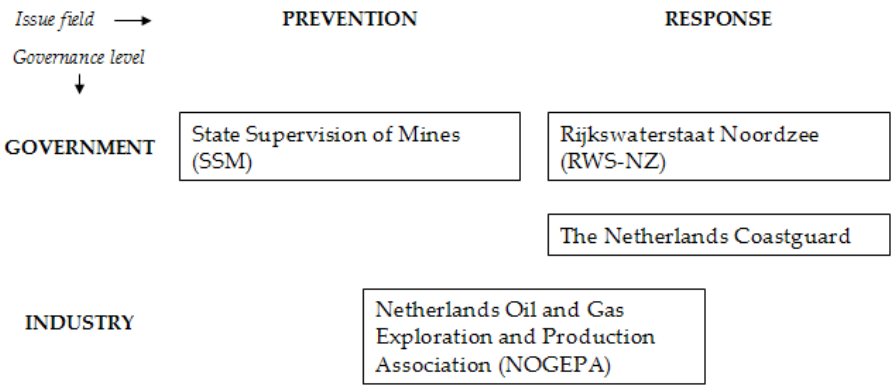

Figure 7 – Key regime bodies in the Netherlands for oil spill prevention and response at the North Sea

As figure 7 shows the SSM is, in relation to the topic of this thesis, primarily involved in the prevention of accidental oil spills. The only role of the SSM regarding oil spill response is reviewing oil spill response plans of oil companies. The dominant players in the response to oil spills, from an operational point of view, are Rijkswaterstaat Noordzee (RWS NZ) and the Netherlands Coastguard. Being an industry association, NOGEPA represents its members on all conceivable issues and therefore has no specific focus on either prevention or response. Below, a short introduction into the key regime bodies.

State Supervision of Mines (SSM)

The State Supervision of Mines (or in Dutch: Staatstoezicht op de Mijnen – SodM) is the supervisory agency of oil and gas exploitation in the Netherlands. It is the *front office* for all companies involved in the mining industry. The SSM conducts its supervisory tasks in an 'integral' fashion, meaning that its inspectors are charged with keeping an eye on all relevant subjects – safety, environment, labour conditions and so on (SSM interview, 2011). Its tasks include the provision of information (e.g. to companies regarding how they can comply with legislation), issuing permits, monitoring, verification (e.g. by performing inspections) and doing research. In addition, the SSM provides policy and administrative advice to the Ministry of Economic Affairs, Agriculture and Innovation, of which it is part (SSM, 2009).

Netherlands Oil and Gas Exploration and Production Association (NOGEPA)

NOGEPA is the industry association of oil and gas companies that operate on the Dutch onshore and offshore. Members of NOGEPA own an exploration or production license and are actual operators – i.e. companies participating in licenses for the sole purpose of risk or profit sharing are no members (NOGEPA interview, 2011). NOGEPA provides a forum for aligning interests in the area of safety and the environment between companies, as well as between companies and government. Through several committees NOGEPA is involved in sharing best practices and findings from inspections and audits, learning from accidents through safety bulletins, developing guidelines, sharing safety and health systems, and organizing safety training (NOGEPA, 2012).

Rijkswaterstaat Noordzee (RWS NZ)

Rijkswaterstaat Noordzee is the coordinating manager (or 'steward', if you will, depending on how one translates the Dutch term) of the Dutch part of the North Sea. RWS NZ is one of the regional services of 'Rijkswaterstaat' – which is the executive arm of the Ministry of Infrastructure and Environment that is responsible for the main infrastructure facilities in the Netherlands. RWS NZ is responsible for the safety on and environmental integrity of the North Sea. In relation to the oil industry its tasks are limited to combating spills. In such a case the Coastguard would coordinate the response effort and draw upon RWS NZ for the operational execution. RWS NZ also issues advice to the Ministry for safeguarding coexisting user functions on the North Sea (RWS NZ interview, 2011).

Netherlands Coastguard

The Netherlands Coastguard is an independent civil organization carrying out a wide array of tasks on the North Sea for six Ministries. One of its tasks is to coordinate the response to incidents at sea. During a response effort the Coastguard Centre is the focal point for information and serves as operational command centre (Netherlands Coastguard, 2012). Operational command is in the hands of the Director Coastguard, which may be perceived as

the North Sea's 'Chief Fire Officer' (RWS NZ interview, 2011). Other tasks of the coastguard include providing emergency traffic, search and rescue, environmental monitoring and monitoring mining activities (Netherlands Coastguard, 2012).

7.2.2 Key arrangements

The key arrangements that describe the regime of the Netherlands are reflected in legislation and a number of policy documents. The arrangements listed below will be taken along in the evaluation of the regime.

- Mining Act, Decree and Regulation
- Water Act and Decree
- North Sea Installations Act
- Working Conditions Act, Decree and Regulation
- Working Times Act and Decree
- Environmental Management Act & Environmental Assessment Decree
- Integral Management Plan North Sea (IBN) 2015
- North Sea Accident Control Act
- Incident Control Plan North Sea (IBP NZ)
- Capacity Memorandum 2006-2010

Mining Act, Decree and Regulation

The Mining Act is the most important piece of Dutch legislation outlining how oil and gas exploitation ought to take place. It provides a framework for the conditions under which mining activities are allowed, and allocates related responsibilities. Regarding the allocation of mining licenses the Act specifies that the technical and financial capacity of the applicant are taken into account, as well as the way in which the applicant intends to perform the activities and the efficiency and (social) responsibility the applicant has shown in the past. The Act furthermore obliges the holder of a license to take all necessary measures which can be reasonably expected of him to prevent adverse environmental effects and unsafe

practices. On top of that, the Act appoints the SSM and enables safety zones to be established extending up to 500 meters from an offshore installation (Mijnbouwwet, 2002).

The Mining Decree sets out more detailed provisions. These include specifications of where offshore installations may be placed (and criteria these installations must meet), obligations to craft work plans for certain activities, requirements for drilling activities, the obligation for operators to take measures to stop any discharge of oil, the obligation to have an emergency plan (and an enumeration of what such a plan should contain) and reporting requirements (Mijnbouwbesluit, 2002).

The Mining Regulation includes specific prescriptions such as the procedure that will be followed for granting licenses, the requirement of a daily report to be submitted about the state of wells that are in use, the contents of work plans and devices that need to be in place – a blow-out preventer, information and communication systems, etc. (Mijnbouwregeling, 2002).

Water Act and Decree

The Water Act sets the objective of protecting and improving Dutch water systems. To this end the managers/stewards of water systems – RWS NZ for the North Sea – must draw up a management plan that includes provisions for the protection of that system and for the kind of activities allowed in that system. The Act assigns tasks to RWS NZ, including taking measures to combat any pollution which is caused by, what they call, an 'unusual event', i.e. by an accident. The Water Act furthermore confirms that the polluter pays principle applies (Waterwet, 2009).

The Water Decree lays down some prescriptions for the management plans mentioned above and policy in general. Reference is made to the OSPAR Convention and the EU Marine Strategy Framework Directive (Waterbesluit, 2009).

North Sea Installations Act

The North Sea Installations Act describes how criminal law and regulations are applied at offshore installations. The Act and corresponding Decree (Besluit ex artikel 4 Wet installaties Noordzee, 1964) allow inspectors of the SSM (buitengewoon opsporingsambtenaren) to perform the activities needed fulfil the responsibilities bestowed on them (Wet installaties Noordzee, 1964).

Working Conditions Act, Decree and Regulation

The Working Conditions Act sets out general obligations of both employers and employees concerning health and safety. In short, it is the employer's duty to ensure a safe working environment for employees as far as can be reasonably expected of him. Employers must analyse and evaluate risks, prevent or minimize the risk to major accidents, and report incidents. The Act grants SSM inspectors the task to ensure compliance and it establishes sanctions in case of disobedience. Apart from fines, the sanctions include stopping activities or initiating criminal prosecution in serious circumstances (Arbeidsomstandighedenwet, 1999).

The Working Conditions Decree lists more concrete regulations. For industries that involve drilling, it is the duty of employers to draw up a health and safety management system. Such a system "comprises the whole of policy, organisation, planning, execution, monitoring, evaluation, screening and improvement used to ensure health and safety" (article 2.42e, paragraph 1). Such a system must be accompanied by a health and safety document that describes any risks and the measures taken to prevent or minimize them. On a regular basis safety drills must be held. Furthermore, criteria are set with regard to the design and state of mining installations, isolation of wells in case something goes wrong, communication, and presence of safety and rescue equipment. On a more general note there are requirements for equipment to have a certificate of soundness (Arbeidsomstandighedenbesluit, 1997).

The Working Conditions Regulation goes into even further detail. It sets out the procedures for drawing up a health and safety document (in which the corresponding management system needs to be outlined) and describes the issues it needs to cover. The annexes of the Regulation contain checklists of what needs to be in the health and safety document, emergency plans, fire control plans, risk analyses, *et cetera* (Arbeidsomstandighedenregeling, 1997).

Working Times Act and Decree

The Working Times Act and Decree set out provisions to prevent people from working too many hours in a given period of time, which could have a negative impact on their health and, potentially, the safe execution of their tasks. The Decree has a specific section outlining the maximum number of consecutive days and hours one may be employed in a given timeframe in the mining industry. A distinction is made between people who are employed in a regular pattern, and people who are not – this has to do with whether or not one works at one location or switches between locations (Arbeidstijdenwet, 1995; Arbeidstijdenbesluit, 1995).

Environmental Management Act & Environmental Assessment Decree

The Environmental Management Act lays down general provisions outlining how people ought to take the (potential) environmental impact of any actions into consideration. All are obliged to take sufficient care of the environment. If there are reasons to believe an action might have detrimental effects, such action should be refrained from or measures should be taken to prevent, limit or undo the effects. The Act also establishes when an environmental assessment should be performed, and what should be the contents thereof. Additionally, it describes the decision-making process for applications that require an environmental assessment (Wet milieubeheer, 1979).

The Environmental Assessment Decree lists the activities, plans and decisions for which an environmental assessment is to be conducted – oil and gas exploitation being one of them.

For construction of offshore installations, however, the competent authority (i.e. the SSM) decides if an environmental assessment is necessary (Besluit milieueffectrapportage, 1994).

Integral Management Plan North Sea 2015 (IBN 2015)

The Integral Management Plan North Sea 2015 (or Integraal Beheerplan Noordzee 2015 – IBN 2015) is a 10-year plan describing how policy in relation to the development of the North Sea area is to be put in practice. RWS NZ is one of the agencies entrusted with this task. For the realization of policy goals the plan formulates management tasks. These tasks include implementation (i.e. regulation of functions through such activities as licensing, constructing management plans, and emergency response), enforcement (e.g. by inspections), knowledge and information management (e.g. about ecological state) and evaluation of management practices and identification of improvements (IDON, 2005).

For the purpose of licensing the IBN 2015 introduces an 'integral assessment framework'. This is a unified mechanism by means of which a decision can be made whether or not to allow an economic activity to take place at a certain location. The framework incorporates the precautionary principle by requiring preventive measures to be taken when there are reasonable grounds to believe an activity can do harm to human health or the environment. It further sets out the conditions under which a license will be granted, including mandatory research of alternative locations if ecological or spatial considerations so merit. The framework also involves an assessment to determine whether limiting and compensatory measures taken to mitigate any (ecological) damage are adequate (IDON, 2005).

For the purpose of emergency response the IBN 2015 describes the 'incident organisation' (part of RWS NZ), which is responsible for combating spills of oil and other hazardous substances. RWS NZ and the Netherlands Coastguard together perform aerial surveillances to detect oil spills. Combating oil spills happens according to the identification-assessment-control-aftercare chain, taking into account the ecological or economic vulnerability of specific areas (IDON, 2005).

Lastly, the IBN 2015 elaborates on protected areas that were assigned following the EU Bird and Habitats Directive and the OSPAR Convention. For the Netherlands these are the Frisian Front (Friese Front), the Klaverbank, the Doggersbank and parts of the coastal sea. If on the basis of an environmental assessment environmental damage may be foreseen for any of these areas the compelling public interest of the activity is weighed against the importance of the natural characteristics of the area. In general, however, it is expected that oil and gas exploitation projects in the Netherlands will only have a limited or marginal impact on ecology (IDON, 2005).

North Sea Accident Control Act

The North Sea Accident Control Act contains provisions in relation to shipping accidents. However, the Act can be applied to virtually all users of the North Sea if circumstances so dictate (RWS NZ interview, 2011). It sets requirements for the reporting of incidents and of measures taken in relation thereto, gives the Minister the option to issue advice in order to limit any damage done as caused by the accident and grants the Minister the authority to intervene if the advice does not sort the desired effect, e.g. by doing research as to the state of the ship or by taking over the control of the ship (Wet bestrijding ongevallen Noordzee, 1992).

Incident Control Plan North Sea (IBP NZ)

The Incident Control Plan North Sea (Incidentenbestrijdingsplan Noordzee – IBP NZ) is a conceptual document outlining how incidents at the North Sea are dealt with. It will replace the former Contingency Plan North Sea (Rampenplan Noordzee) 2009. Its legal basis is the North Sea Accident Control Act. The IBP NZ describes the coordination of the many actors that get involved in case of an incident at the North Sea. On top of RWS NZ and the Netherlands Coastguard these include Rijkswaterstaat's regional services, the Departmental Coordination Centre Crisis Control (DCC), operational emergency services (police, fire department, etc.), municipalities, provinces and companies. The IBP NZ is an overarching

contingency plan on the basis of which the government's response to North Sea incidents is structured (Rijkswaterstaat, 2011).

The IBP NZ is structured along the line of a number of scenarios. Relevant scenarios for oil spill response are 'marine and coastal pollution' and 'ecological incident'. The scenarios incorporate a great deal of information, including involved actors, information management, (legal) responsibilities and the availability of clean-up equipment. The plan also maps the division of responsibilities geographically. It furthermore describes the relevant (internal) processes of those involved and tries to unite the processes under a common denominator (Rijkswaterstaat, 2011).

As regards incidents involving mining installations, the plan applies to both accidents of internal causes (fire, explosion, etc.) and external causes (e.g. ship collision). It excludes, however, 'source control' (i.e. stopping the flow of oil at the source – the oil well). The latter is the responsibility of the Ministry of Economic Affairs, Agriculture and Innovation, of which the SSM is part. The IBP NZ, Coastguard, and RWS NZ, on the other hand, are related to the Ministry of Infrastructure and Environment (Rijkswaterstaat, 2011).

Capacity Memorandum 2006-2010

The Capacity Memorandum 2006-2010 (there does not seem to be one for 2010 onwards yet) describes the goals, strategy and required equipment for adequate response to the release of environmentally hazardous substances at sea and on shores. The memorandum sets the aim of being able to recover 15,000 m^3 of oil in three days or less. This goal is tied to what is considered the biggest oil spill threat in the Dutch part of the North Sea: a shipping accident. The risk of a significant oil spill from an offshore installation on the Dutch continental shelf is considered to be rather low. The response strategy builds on a phased approach. Upon identification of an oil spill immediate action can be undertaken by government-owned equipment. In the meantime preparations are made to scale up the response organization. Ships of market parties are an essential part in this response phase. When an oil spill turns out to persist for a significant amount of time additional, contracted reserve equipment will

be appealed to – market parties cannot be obliged to take part in the action indefinitely. The memorandum furthermore describes the types of response equipment available and their suitability for different circumstances. Available equipment includes sweeper arms on ships, chemical dispersants, mobile booms and sand barriers (Rijkswaterstaat, 2006).

7.3 Evaluation of the national regime of the Netherlands for the prevention of accidental oil spills from drilling platforms at the North Sea

Based on the sources that were briefly introduced in section 7.2 and interviews with relevant organizations (section 1.3 shows which were consulted) we evaluate the regime of the Netherlands for the prevention of accidental oil spills in line with the criteria constructed in chapter 5. The result of the evaluation is shown in table 6, below. The table lists the different criteria, the verdict of whether or not the criteria are met, the associated indicator(s) and the source(s) from where the indicators originated.

Table 6 – Results of the evaluation of the regime of the Netherlands for the prevention of accidental oil spills from drilling platforms at the North Sea

Criterion	Met	Indicator(s)	Source(s)
General regime characteristics			
1. The regime encompasses all relevant actors	+	Government involved through SSM; Industry represented by NOGEPA; NOGEPA involved in safety standards; Limited involvement of NGOs given small scale of Dutch oil exploitation	Interviews (most notably with NOGEPA)
2. The regime addresses all issues that relate to the problem it was designed for	+	Important topics are addressed in consulted legislation; SSM as front office enables a holistic approach	Legislation; SSM interview
3. Commitments that follow from the regime are sufficiently stringent and binding	+	Largely goal setting commitments; Interviewees happy with legislation;	Legislation; SSM interview; NOGEPA interview

		Regime in practice extends beyond what legislation dictates	
4. The regime comprises sufficient mechanisms for reviewing implementation and compliance	+	Legislation sets reporting requirements; SSM indicates to have sufficient instruments for review of compliance	Legislation; SSM interview; SSM document (interventiebeleid)
5. The regime comprises sufficient mechanisms to enforce implementation and compliance	+	Three dimensions of enforcement; Shutting down operations very effective; Reputation damage key incentive; No indication of desirability of heavier sanctions	SSM interview; NOGEPA interview; SSM document (interventiebeleid)
6. The regime is sufficiently robust to cope with challenges caused by internal affairs	+	Relations SSM and NOGEPA based on cooperation; Respectful relationship between actors; There are dispute-settlement opportunities; No cap on damages to be paid; Solvability of oil companies unclear	SSM interview; NOGEPA interview; Mining Act
7. The regime is sufficiently robust to cope with challenges caused by external affairs	?	Too little data; Procedure for allocation of licenses unclear	Interviews; Mining Act
8. The regime is able to adapt to changing requirements when necessary	+	Following Deepwater Horizon SSM scrutinized industry's (management) systems; NOGEPA produced a number of 'products'; Whistleblower protection unclear	SSM interview; NOGEPA interview
9. Transparency is ensured	+	License applications published; Legislation specifies data that becomes public; SSM publishes much info; No issues with transparency mentioned in interviews	Interviews; Legislation; SSM website
10. Regime bodies have adequate and secure means to perform their tasks	+/–	SSM is sufficiently equipped; NOGEPA finds SSM effective; 70% of SSM employees have industry background;	SSM interview; NOGEPA interview

		Threat of budget cuts; Potential change in government knowledge due to retirements	
Actors			
11. Relevant regime bodies have shared goals with regard to system safety	+	SSM and NOGEPA have similar goals regarding safety	SSM document; NOGEPA document (annual report)
12. The regime encourages management commitment to safety amongst oil companies	+	Self-assessments of companies led by senior management; SSM demands responsibilities are not transferred to specialists	SSM interview
13. Responsibilities and tasks of regime bodies are clearly delegated and mapped	+	The SSM's tasks are outlined in the Mining Act; No confusion of tasks as the SSM is the front office for all oil exploitation related affairs	SSM interview; Mining Act
14. There are good procedures in place for regulatory agencies to determine their priorities	+	The SSM has an elaborate strategy for setting priorities; Loss of well control is one of the priorities	SSM interview
15. Regulatory agencies are independent	?	SSM's objectives may not always coincide; There are checks to safeguard independence; Further research needed	SSM interview
16. Industry cooperates internationally to establish safe practices	+	NOGEPA involved to share best practices within industry; International cooperation through NOIA, OGP and OCES	NOGEPA interview; NOGEPA website; OCES agreement
Norms, rules and decision making procedures			
17. Environmental considerations are incorporated in decision-making around allowing for oil exploitation activities in a clear, consistent and scientifically prudent manner	?	Natura 2000 requirements are taken along; The way this (or other vulnerabilities) influences decision-making unclear; Further research needed	Habitats and Birds Directive; NOGEPA interview
18. The regime has proper procedures for establishing that oil companies that want to drill are competent	+	Technical capability part of operator part of licensing process	Mining Act

19. Safety measures are taken and regularly reviewed based on state-of-the-art expertise and up-to-date hazard identification	+	SSM conducts 'temperature readings'; Emphasis on KPIs; Meetings in NSOAF and IRF for state-of-the-art knowledge	SSM interview; SSM documents
20. Diverging views regarding involved systems and their associated risks are respected and accounted for	+	Cooperation SSM and NOGEPA; SSM uses Australian model that involves continuous feedback;	SSM interview
21. Redundancy is (mandated to be) built into safety systems of the oil industry	+	Both SSM and NOGEPA have a clear view on the necessity (and limitations) of using multiple barriers	SSM interview; NOGEPA interview
22. Safety measures are duly implemented	?	No data available for a verdict on this criterion	N.a.
23. Authority for execution of safety measures is delegated to lower levels and there is adequate conceptual slack thereto	+	Goal-setting legislation; Each employee with responsibility over a process has authority to stop operations	Legislation; NOGEPA interview

1. The regime encompasses all relevant actors

There is a government regulator in the form of the SSM. Oil companies are represented through NOGEPA, which has several committees that focus on issues like sharing best practices, learning from accidents and developing guidelines. None of the interviewees indicated to miss any relevant actors. The involvement of NGOs is rather limited. It was noted that there is not so much for them to achieve in offshore oil drilling in the Netherlands given that there are other, more pressing matters to address as it comes to the North Sea's environmental status, such as the depletion of fish stocks (NOGEPA interview, 2011). This seems to be valid reasoning if one considers that oil exploitation on the Dutch continental shelf happens on but a small scale.

2. The regime addresses all issues that relate to the problem it was designed for

Important topics to be addressed are authorization (licensing, permitting and other forms for giving consent for oil exploitation operations), proper risk and environmental assessment,

safety measures (including well control) and liability. Licensing is addressed in the Mining Act, which specifies on what basis decisions are made (Mijnbouwwet, 2002). The Mining Regulation sets out what data needs to be provided by the applicant for that purpose (Mijnbouwregeling, 2002). The Working Conditions Act lays down the obligation for employers to conduct risk analysis (Arbeidsomstandighedenwet, 1999). The Working Conditions Decree introduces the health and safety management systems (and an accompanying document) that tie identified risks to the measures that ought to minimize these risks (Arbeidsomstandighedenbesluit, 1997). The Working Conditions Regulation describes the procedures and contents for devising health and safety systems and documents (Arbeidsomstandighedenregeling, 1997). Through the Environmental Management Act and Environmental Assessment Decree the procedures for environmental assessment are set (Wet milieubeheer, 1979; Besluit milieueffectrapportage, 1994). Safety measures are covered by the Mining Act, the Working Conditions Act and their related decrees and regulations. The Mining legislation sets general requirements, while containing more detailed provisions regarding e.g. well design and safety devises (Mijnbouwwet, 2002). The Working Conditions legislation adds more well control requirements and, as mentioned, mandates health and safety management systems to be in place (Arbeidsomstandighedenwet, 1999). Liability is covered in the Water Act by enshrining the polluter-pays principle (Waterwet, 2009).

3. Commitments that follow from the regime are sufficiently stringent and binding

The commitments the follow from Dutch legislation are to a great extent goal setting. The consulted experts all agreed that this is a good thing. The more prescriptive legislation gets the greater the risk of it turning obsolete within a short period of time. Moreover, given the facts that each oil well is different and that companies have different types of technical expertise it is virtually impossible to come up with unified prescriptive requirements (NOGEPA interview, 2011). In this regard the SSM noted that the combination of goal setting regulation and stimuli provided by SSM activities allows for continuous improvement. In fact, there is more going on in the area of safety and environment than strictly mandated by legislation (SSM interview, 2011).

4. The regime comprises sufficient mechanisms for reviewing implementation and compliance

There are many reporting requirements, most of which laid sown in the Mining Act and Working Conditions Act. The former requires operators to construct *inter alia* a 5 year work plan, a production plan and daily reports on the state of the oil wells (Mijnbouwwet, 2002). The latter requires a health and safety document to be drafted (Arbeidsomstandighedenwet, 1999). The SSM has four instruments for reviewing compliance. First, there is monitoring in the form of tracking developments and processes through information companies are legally required to provide. Second, there is verification in the form of inspection projects and checking if administrative obligations (e.g. health and safety documents and well activity reports) are performed according to the norms that were set. Third, there is auditing either by the SSM itself or by review of internal audits of companies. Fourth, there is research in the form of SSM projects, the review of research reports crafted by companies and investigation of complaints (SSM, 2009a).

5. The regime comprises sufficient mechanisms to enforce implementation and compliance

Enforcement as enacted by the SSM has three dimensions. First, there is the dimension of 'spontaneous compliance'. Disseminating information on the legislation (the interpretation thereof and findings of compliance levels), stimulating the introduction of health and safety systems, and discussing such matters in various commissions and forums are ways to encourage companies to take necessary measures by themselves. Second, there is the dimension of supervision. The instruments for the purpose of supervision are those outlined in the discussion of the previous criterion. Third, there is the dimension of sanctioning. There are administrative and criminal sanctions. Administrative sanctions, in order of severity, are an administrative warning (a letter indicating a certain situation needs to improve within a certain period of time), an incremental penalty payment (an order to take a certain measure or improve a certain situation, otherwise financial penalties of increasing amounts are issued) and administrative coercion (a direct and unconditional order to take measures or, in a worst case, shutting down an activity altogether). Criminal sanctions are an *ultimum remedium* (i.e. last resort) involving the start-up of a litigation process. Criminal sanctions

include a prison sentence, financial penalty, shutting down an enterprise, and/or public disclosure of the court ruling (SSM, 2009a). The SSM considers the sanctions as such not to be effective. Rather the confrontation with government and resulting damage in reputation causes companies to want to comply with legislation (SSM interview, 2011). This view is shared by NOGEPA, which states that sanctions basically act as a back-up. The most severe sanction would be stopping an oil drilling operation; no financial sanction measures up to that (NOGEPA interview, 2011). Both SSM and NOGEPA do not seem to feel heavier sanctions are necessary.

6. The regime is sufficiently robust to cope with challenges caused by internal affairs

The SSM and NOGEPA cooperate on a lot of issues and interviews with both organizations revealed there is a respectful relation between the two. A reflection of this is the SSM having observer status in NOGEPA working groups (NOGEPA interview, 2011). NOGEPA being the representative of oil companies that operate on the Dutch continental shelf, I assume the same holds for the relationship between SSM and the individual companies. Furthermore, the SSM indicated to favour cooperation over sanctioning as it increases the support for the 'safety cause' (SSM interview, 2011). On top of this, the Mining Act specifies that any dispute over a decision made by the SSM may be settled through an appeal before the Raad van State, i.e. the Council of State (Mijnbouwwet, 2002).

There is no cap on damages to be paid in the event of an oil spill. The polluter pays principle is enshrined in Dutch legislation. There is, however, a potential problem with pinpointing accountability (RWS NZ interview, 2011). Blame can be tossed around making it potentially difficult to recover the costs. The financial status of oil companies applying for a license on the Dutch offshore is taken along in the associated decision-making process. However, the Mining Act is not entirely clear about if this also involves the potential (financial) damage resulting from an oil spill. The SSM reportedly assessed the solvability of oil companies in regard of this issue (RWS NZ interview), but the nature of the assessment, the results and consequences were not available for study. The overall picture described above, however, provides a sound enough basis to consider this criterion met.

7. It could not be conclusively established if the regime is sufficiently robust to cope with challenges caused by external affairs

There is too little data to confirm or refute that the regime is sufficiently robust to cope with external affairs. No signs of external issues impacting on the regime were encountered during interviews, albeit these were not explicitly addressed. One of the issues of interest here is whether or not economic considerations could play an illegitimate role in decision-making processes within the regime. The Mining Act puts the responsibility for allocating licenses in the hands of the Minister of Economic Affairs, Agriculture and Innovation. He is supported in making his decisions by advisors including the SSM and RWS NZ (Mijnbouwwet, 2002). Given that the licensing procedure could not be looked into in detail it could not be ascertained whether or not it encompasses sufficient safeguards to prevent economic considerations to supersede the attention that ought to be paid to safety and the environment.

8. The regime is able to adapt to changing requirements when necessary

Following the Deepwater Horizon disaster both the SSM and NOGEPA have been very active in reviewing current practices around offshore drilling on the Dutch continental shelf and in pinpointing possible improvements of the regime. NOGEPA members were asked by the SSM to conduct a self-assessment of their drilling practices, of which the results were verified in the field. SSM concluded there were no significant shortcomings as it comes to oil spill prevention (SSM interview, 2011). In a reaction to the findings from the assessments NOGEPA formed working groups that produced a number of 'products' to improve current practices. These include a checklist for well design, a list of standards for well components, independent assessment of well design by a well examiner and a so-called 'bridging-document' that facilitates the connection between multiple safety (management) systems (NOGEPA interview, 2011).

9. Transparency is ensured

Applications for licenses are published in the 'Staatscourant' – a newspaper published by the Dutch government listing all kinds of announcements. They are also published in the Official Journal of the European Union (Mijnbouwwet, 2002). The Mining Decree sets out other data that is made publicly available. It lists reporting requirements for operators to the Minister and after a given amount of time that information is disclosed according to the provisions of freedom of information legislation (Wet openbaarheid van bestuur). General information (e.g. the amount of extracted oil and the licences used for the operation) is disclosed within 4 weeks of the Minister being informed, while other more detailed information (of geological or geophysical nature) becomes available after 5 or 10 years (Mijbouwbesluit, 2002). The SSM publishes a range of supervision related information on its website. This includes their annual reports, policies, intervention strategies, safety bulletins and much more. The internal audits conducted by operators on the Dutch continental shelf in reaction to Deepwater Horizon are available as well, following freedom of information requests (SSM, 2012). Making a verdict of whether or not all of this ensures a sufficiently transparent regime is rather arbitrary. The interviews have not revealed any transparency issues, but then again no Dutch NGOs were consulted – these might have a different point of view. With no information as to the contrary, I consider transparency to be ensured.

10. Regime bodies have adequate means to perform their tasks, but the security thereof can be questioned

The interviews showed the SSM to be sufficiently equipped to fulfil its tasks at the moment, but budget cuts are a threat. If financial resources decline it is up to the political arena to decide on what cannot be done anymore (SSM interview, 2011). Another issue is the changing landscape of government officials (e.g. SSM inspectors). There may be some changes in the near future due to retirements, which could result in a loss of knowledge. Ensuring current knowledge levels to remain intact may be a costly business (NOGEPA interview, 2011).

Notwithstanding the above, at the moment the SSM has a good knowledge base. There is knowledge of both a technical (mining processes) and juridical nature. About 70% of SSM's inspectors have an industry background (SSM interview, 2011). The SSM establishes its risk-based supervision on the basis of an Australian model (the name of which could not be retrieved) and the 'bow tie model'. The former involves establishing the context, risk identification, risk analysis, devising a strategy and carrying out inspections. Every step in the model includes communication with the subjected company. Continuous monitoring and evaluation takes place. For each of the SSM's strategic objectives so-called 'undesirable events' are established. Through the bow tie model these events are linked to their corresponding barriers, both preventive and repressive ones. The undesirable events are grouped in order of importance and linked to the appropriate activities the SSM must undertake to address them (SSM interview, 2011). This strategy feeds into the process of prioritization (see criterion 14). NOGEPA confirms that the SSM has a solid knowledge base, stating that in general the SSM knows what it is talking about. NOGEPA is of the opinion that the SSM is Europe's most effective supervisory agency (NOGEPA interview, 2011).

11. Relevant regime bodies have shared goals with regard to system safety

One of SSM's strategic objectives is preventing disasters and major accidents and reducing the number of serious and fatal occupational accidents (SSM, 2009). One of NOGEPA's objectives is promoting safe and environmentally responsible operations (NOGEPA, 2009).

12. The regime encourages management commitment to safety amongst oil companies

The SSM likes to make sure that the senior management of oil companies has complete awareness of how safety at the work floor is maintained. This entails that management cannot pass on responsibilities in relation thereto to specialists within the organization. For this reason a strong emphasis is put on key performance indicators (KPIs). These are indicators telling an operator whether or not operations are run the way they are supposed to. Senior management is triggered to show the SSM what indicators it employs to provide timely alerts if something goes awry. In addition, the self-assessments following the

Deepwater Horizon disaster (see criterion 8) had to be presented by the directors of the oil companies themselves (SSM interview, 2011).

13. Responsibilities and tasks of regime bodies are clearly delegated and mapped

The SSM is the front office for all oil and gas exploitation issues on the Dutch continental shelf. Being the sole regulator there can be no confusion of tasks. The SSM has a clear mandate as set out in the Mining Act (Mijnbouwwet, 2002). The tasks of the SSM are listed in section 7.2.1. In the area of oil spill response the SSM cooperates with RWS NZ.

14. There are good procedures in place for regulatory agencies to determine their priorities

The SSM has an elaborate strategy to determine its (inspection) priorities. First, relevant articles of legislation (from for instance the Mining Act and Working Conditions Act) are grouped. Next, an estimate is made of the risks tied to whatever it is these articles address, based on the potential probability of what could happen if the articles are not complied with and the consequences thereof. Then, in combination with actual compliance levels it is determined what should be at the heart of inspection projects. Critical issues are subject to greater scrutiny, for instance through more frequent inspections. Loss of well control is one of the SSM's current priorities (SSM interview, 2011).

15. It could not be conclusively established if regulatory agencies are independent

Ensuring the independence of regulatory agencies is a challenge. There is quite some exchange of personnel between the SSM and industry. About 70% of inspectors of the SSM have an industry background and the disparity in remuneration causes movement of personnel the other way around as well. This has both advantages and disadvantages. The overall view of the consulted experts is that the former prevails over the latter. Having experience in the industry helps in identifying any weak spots. It also promotes inspectors being accepted as legitimate interlocutor. People at the SSM are trained to acquire a wide range of relevant capabilities (e.g. interrogation techniques) to perform well on the job and

there are a number of checks and balances (e.g. extensive screening of outgoing letters and rotation of inspectors between companies) to prevent unwanted situations (SSM interview, 2011). The SSM has a broad set of objectives that include both improving safety in the oil industry and promoting efficient resource development. These objectives may not always coincide. Even though checks exist to prevent a bias towards industry interests, more thorough research on the independence issue is warranted to establish whether or not current practices are satisfactory.

16. Industry cooperates internationally to establish safe practices

As we have come across earlier this chapter NOGEPA has several committees that focus on issues like sharing best practices, learning from accidents and developing guidelines (NOGEPA, 2012). Cooperation with industry associations from other North Sea countries occurs through NOIA. On the global level NOGEPA participates in OGP (NOGEPA interview, 2011). NOGEPA is also the Dutch representative of the oil and gas industry as it comes to international cooperation between companies when an accident occurs. Such cooperation takes place through the OCES agreement (OCES, 2011).

17. It could not be conclusively established if environmental considerations are incorporated in decision-making around allowing for oil exploitation activities in a clear, consistent and scientifically prudent manner

There is the Natura 2000 network (following the Habitats and Bird Directive), but the way in which the location of offshore marine protected areas is taken along in the decision-making process is unclear. There are reasons to believe that under normal circumstances oil drilling does not necessarily have a detrimental impact on its immediate surroundings (NOGEPA interview, 2011). Interviews and other available data could not conclusively demonstrate, however, whether or not any further considerations are made, e.g. regarding the impact an oil spill would have on areas beyond the immediate vicinity of an installation.

18. The regime has proper procedures for establishing that oil companies that want to drill are competent

The technical capability of the operator is part of the licensing process as laid down in the Mining Act. The SSM advises the Minister of Economic Affairs, Agriculture and Innovation on this aspect (Mijnbouwwet, 2002).

19. Safety measures are taken and regularly reviewed based on state-of-the-art expertise and up-to-date hazard identification

The SSM uses an effect-oriented approach in enacting its supervision. There are so-called temperature readings, i.e. preliminary checks, on those issues where the SSM considers it necessary for operators to improve their performance on. Additionally, at the end of a given supervisory project a final effect reading serves to determine the progress made and room for improvement. As touched upon above, in the supervisory process there is a strong emphasis on KPIs. Temperature readings, effect readings and the KPIs allow for a constant, up-to-date view on offshore operations. To ensure the measures in place and supervisory practices are state-of-the-art the SSM participates in meetings within the NSOAF and IRF (SSM interview, 2011).

20. Diverging views regarding involved systems and their associated risks are respected and accounted for

As the discussion thus far indicates, there is a lot of cooperation between the SSM and industry (NOGEPA and the individual operators). The Australian model the SSM uses to structure its supervision involves continuous feedback with the subjected operator (SSM interview, 2011). Communication and deliberation allows the parties to get on the same page regarding the risks that need to be addressed and the measures that need to be taken in relation thereto.

21. Redundancy is (mandated to be) built into safety systems of the oil industry

In the latter stages of the development of inspection projects redundancy is tied to the safety critical *components* of the scrutinized systems. However, this is sort of a grey zone, given that the interrelation between many of the components makes it more appropriate to speak of safety critical *systems* (SSM interview, 2011). Moreover, the concept of redundancy should be treated with care as one can imagine that if there are 10 barriers to encapsulate a certain risk, it would be no surprise to find that 7 of these barriers are not working at all (NOGEPA interview, 2011).

22. It could not be conclusively established if safety measures are duly implemented

It could not be ascertained whether or not the regime operates expeditiously. This criterion aims to establish whether or not there are any time-lags in the performance of the regime. For instance, are necessary changes in laws and regulations implemented quickly enough? The available data does not allow for a verdict on this issue.

23. Authority for execution of safety measures is delegated to lower levels and there is adequate conceptual slack thereto

An indication of adequate conceptual slack is the goal-setting nature of the regime's legislation. Furthermore, every employee with specific responsibility over part of an oil drilling operation has the authority to stop the activities if something goes wrong. This is often accepted and respected (NOGEPA interview, 2011).

7.4 Evaluation of national regime of the Netherlands for the response to oil spills at the North Sea

Based on the sources that were briefly introduced in section 7.2 and interviews with relevant organizations (section 1.3 shows which were consulted) we evaluate the national regime of the Netherlands for the response to oil spills at the North Sea in line with the criteria

constructed in chapter 5. The result of the evaluation is shown in table 7, below. The table lists the different criteria, the verdict of whether or not the criteria are met, the associated indicator(s) and the source(s) from where the indicators originated.

Table 7 – Results of the evaluation of the national regime of the Netherlands for the response to oil spills from drilling platforms at the North Sea

Criterion	**Met?**	**Indicator(s)**	**Source(s)**
General regime characteristics			
1. The regime encompasses all relevant actors	+	RWS NZ and Coastguard main operational players; SSM reviews response plans; Actor field considered O.K.	RWS NZ interview
2. The regime addresses all issues that relate to the problem it was designed for	+	Legislation describes industry's and the state's responsibilities; Incident Control Plan describes structure of response	Legislation; IBP NZ
3. Commitments that follow from the regime are sufficiently stringent and binding	+	RWS NZ indicates legislation forms good basis for its tasks; SSM reviews response plans; Largely goal setting legislation	RWS NZ interview; SSM interview; Mining Act
4. The regime comprises sufficient mechanisms for reviewing implementation and compliance	+	Compliance review is task of SSM; See criterion 4 in table 6	Mining Decree; See table 6
5. The regime comprises sufficient mechanisms to enforce implementation and compliance	+	Contents of emergency response plans outlined in legislation; Enforcement is task of the SSM; See criterion 5 in table 6	Legislation; See table 6
6. The regime is sufficiently robust to cope with challenges caused by internal affairs	+	Disputes expected mainly between SSM and industry, RWS NZ involvement indirect; See criterion 6 in table 6	See table 6
7. The regime is sufficiently robust to cope with challenges caused by external affairs	?	Too little data; Procedure for consenting with oil spill response plans unclear	Interviews
8. The regime is able to adapt to changing requirements, when necessary	+	RWS participated in learning processes between SSM and industry; OCES agreement revised	RWS NZ interview; NOGEPA interview

9. Transparency is ensured	+	New Incident Control Plan will be publicly available; Many reporting requirements; Number of operational and accidental spills is published	RWS NZ interview; Mining Decree; SSM annual report
10. Regime bodies have sufficient means to perform their tasks	+/–	Currently means of RWS NZ are adequate; Budget cuts are an imminent threat	RWS NZ interview
National oil spill response system			
11. The national oil spill response system is properly compatible with relevant legislation and internally congruent	–	IBP NZ compatible with relevant legislation; Extensive stakeholder consultation; There is a major problem of congruence between the IBP NZ and industry plans	RWS NZ interview; Legislation; IBP NZ
12. The national oil spill response system is comprehensive and clear	+	Scope and objectives set out in IBP NZ; IBP NZ uses scenarios and describes relevant processes; IBP NZ uses clear language	IBP NZ
13. The national response system is based on adequate knowledge of the nature of potential oil spill situations	+	Knowledge from SSM, NOGEPA and industry incorporated in IBP NZ; Vulnerability of areas is linked to the needed response capacity; Experiences of past incidents have fed into current response strategies	RWS NZ interview; Capacity Memorandum 2006-2010; IBP NZ
14. There is a clear understanding of the tasks that need to be performed, and these tasks are fully set out	+	IBP NZ describes all activities; Response procedures outlined (e.g. Bonn Agreement and dispersant protocol)	IBP NZ
15. There are adequate human resources, and there is a clear understanding of when and how they are to be deployed	+	Capacity Memorandum 2006-2010 describes necessary response capacity; IBP NZ describes command structures and lines of communication; Bonn Agreement procedures and involvement of volunteers outlined	RWS NZ interview; Capacity Memorandum 2006-2010; IBP NZ

16. Mechanisms for maintaining the emergency response arrangements operable and up to date are in place	+	Industry must train and regularly update plans; IBP NZ updated at least once a year; RWS NZ regularly organizes exercises; IBP NZ will be accessible to everyone	RWS NZ interview; IBP NZ; Mining Decree; Mining Regulation
17. The regime incorporates a proper strategy for stopping the flow of oil after a well blow-out	+	Legislation sets detailed requirements for well operations; There are only few self-flowing oil wells	SSM interview; Mining Decree; Mining Regulation
Oil spill response equipment			
18. There are adequate physical resources, and there is a clear understanding of when and how they are to be deployed	+/–	Capacity Memorandum 2006-2010 and IBP NZ provide detailed and substantiated picture of response equipment; Resources may fall short for incidents farther than 60 km offshore	IBP NZ; Capacity Memorandum 2006-2010
19. The regime encourages significant efforts of research and development to improve oil spill response resources and knowledge of their effectiveness	?	No requirements in legislation; SRGH may be consulted for further research; Too little data	Legislation

1. The regime encompasses all relevant actors

Regarding government response to an oil spill the Netherlands Coastguard and RWS NZ are the main players – the former as coordinator, the latter as the executing agency. Once a spill reaches the shore the coastal services of Rijkswaterstaat get involved as well as the 'safety regions' (cooperative arrangements between municipalities). The SSM has a role to play in reviewing the oil spill response plans of industry. The actor field is considered o.k., given the relatively few active players and clarity about who is in charge (RWS NZ interview, 2011).

2. The regime addresses all issues that relate to the problem it was designed for

Relevant issues that should be addressed are the responsibility of oil companies in an oil spill, the responsibility of government and the alignment between the two. The Mining Act requires license holders to take all reasonable measures to prevent adverse environmental effects (Mijnbouwwet, 2002). The Mining Decree states that any discharge must be stopped and that for that purpose an emergency response plan must be in place (Mijnbouwbesluit, 2002). The Water Act gives RWS NZ the responsibility to take measures to combat pollution (Waterwet, 2009). The Incident Control Plan North Sea (IBP NZ) sets out how the response to an oil spill will be structured, outlining which parties are involved and how they should cooperate (Rijkswaterstaat, 2011).

3. Commitments that follow from the regime are sufficiently stringent and binding

RWS NZ indicates the laws and regulations provide a good basis for performing its tasks. No issues were encountered that may cause problems (RWS NZ interview, 2011). Emergency response plans of the oil companies must be submitted for consent to the Minister of Economic Affairs, Agriculture and Innovation (Mijnbouwwet, 2002). The SSM checks if the plans adhere to what the Mining Decree prescribes. The role of RWS NZ herein is limited to issuing advice to the SSM (RWS NZ interview, 2011).

4. The regime comprises sufficient mechanisms for reviewing implementation and compliance

Reviewing implementation and compliance is one of the tasks of the SSM. The tools available for this purpose were discussed in the previous section under the same criterion. In relation to oil spill response, as mentioned above, it comes down to the SSM checking whether or not the emergency response plans of the oil companies adequately incorporate what the Mining Decree requires them to.

5. The regime comprises sufficient mechanisms to enforce implementation and compliance

The requirement of having an emergency response plan as well as what should be the contents thereof are clearly set out in legislation. The SSM has various enforcement tools outlined in the previous section under the same criterion.

6. The regime is sufficiently robust to cope with challenges caused by internal affairs

Once again most of the reasons behind why this criterion is thought to be met coincide with what has been discussed in the previous section under the same criterion. Most quarrels can be expected to occur between oil companies and the supervisory agency of the government, which in this case is the SSM. RWS NZ's involvement is more indirect. For instance, in the wake of the Deepwater Horizon disaster they were invited to join the presentations of the oil companies before the SSM about the self assessments they had to perform. Oil spill response was also included in these self-assessments (RWS NZ interview, 2011).

7. It could not be conclusively established if the regime is sufficiently robust to cope with challenges caused by external affairs

This issue may be less significant for the response regime than that for prevention. Similar to the discussion in the previous section, the decision-making process of the responsible Minister could not be looked into in detail (in this case pertaining to consenting with the emergency response plans). Other, economic issues are discussed under criterion 10, below.

8. The regime is able to adapt to changing requirements, when necessary

Following the Deepwater Horizon disaster RWS NZ participated, as mentioned above, in the learning processes between the SSM and the oil companies (RWS NZ interview, 2011). One of the outcomes of the assessments was a revision of the OCES agreement by NOGEPA (OCES, 2011). It is unclear what the individual companies have done in the area of oil spill response in reaction to the findings of the self-assessments.

9. Transparency is ensured

The Incident Control Plan North Sea will be made publicly available (RWS NZ interview, 2011). Furthermore, the Mining Decree requires companies to report any oil spills to the SSM (Mijnbouwbesluit, 2002). In its annual reports the SSM provides an overview of both operational and incidental oil spills (SSM, 2010). Whether or not all of this is sufficient is a rather arbitrary decision. No Dutch NGOs were interviewed, so their side of the story cannot be told here. With no information as to the contrary, I consider transparency to be ensured.

10. Regime bodies have sufficient means to perform their tasks, but the security thereof can be questioned

RWS NZ will not be able to escape budget cuts. RWS NZ indicates that this is a political choice and all they can do is to inform decision-makers of the risks involved in any cuts. Both in the area of manpower and available response resources budget cuts are to be expected (RWS NZ interview, 2011).

11. The national oil spill response system is properly compatible with relevant legislation, but its congruence with the individual response plans of oil companies is highly unsatisfactory

The national oil spill response plan is properly compatible with relevant legislation, but its interoperability with the individual response plans of oil companies is highly unsatisfactory. The Incident Control Plan North Sea (IBP NZ) is based on the North Sea Accident Control Act (Wet bestrijding ongevallen Noordzee, 1992). It also satisfies the requirement for managers of Dutch water bodies to have a calamity plan for responding to threats of (environmental) damage, as prescribed by the Water Act (Waterwet, 2009). Although the North Sea Accident Control Act does not cover offshore drilling platforms the Mining Decree lays down the opportunity for RWS NZ to take control over response efforts in case of an oil spill at such a location (Mijnbouwbesluit, 2002). The IBP NZ outlines for each specific scenario (e.g. an oil spill) who has jurisdiction and explains the legal basis for any response action. The plan states that even though authorities sometimes overlap, in practice workable

solutions have always been found (Rijkswaterstaat, 2011). There is, however, a considerable problem with the congruence of government response as outlined in the IBP NZ and the individual response plans of oil companies. Despite extensive stakeholder consultation in the making of the IBP NZ, major differences in government's and industry's expectations about oil spill response remain: the self assessments of oil companies which were presented before the SSM showed that, bluntly put, the oil companies thought RWS NZ would simply clean up all the mess. Given that the first few hours ('golden hours') after an oil spill are of particular importance and that it takes a considerable amount of time for RWS NZ to reach a drilling platform, this is the moment par excellence for the oil companies themselves to take action. Currently talks are going on about at what point, i.e. at what oil spill volume, RWS NZ should get involved (RWS NZ interview, 2011).

12. The national oil spill response system is comprehensive and clear

The IBP NZ has two main objectives: clarifying coordination on the North Sea for combating incidents and providing a checklist for involved organisations of what their involvement in such operations entails. The plan covers all conceivable incidents. These are reflected in 7 scenarios. For each scenario the IBP NZ provides a detailed account of the processes that are set in motion. In clear language it describes the channels through which information is disseminated, responsibilities and the activities that need to be undertaken from the moment an oil spill is detected up to the actual clean-up operations. Oil spill reports are processed by the Netherlands Coastguard. If a verification flight confirms the need for intervention the Coastguard alerts with RWS NZ to mobilise response resources (Rijkswaterstaat, 2011).

13. The national response system is based on adequate knowledge of the nature of potential oil spill situations

The main sources of knowledge on what it takes to combat an oil spill are the SSM, NOGEPA and the shipping industry. Specialists from these organizations have been consulted by RWS NZ during the development of the IBP NZ (RWS NZ interview, 2011). The vulnerability of different areas is addressed in the Capacity Memorandum 2006-2010. It describes per area

(North Sea, Wadden Sea and the Eastern and Westernscheldt) the major risks as well as the ecological and economic values that need to be protected. Based on this information it is determined what clean-up capacity is required (Rijkswaterstaat, 2006). The IBP NZ also refers to a special response plan for the Wadden Sea (Rijkswaterstaat, 2011). On top of this the Capacity Memorandum 2006-2010 notes that Rijkswaterstaat has been involved in the response to the Sea Empress (United Kingdom, 1996), Erika (France, 1999) and Prestige (Spain, 2002) oil spills. These experiences and a near-miss in the Westernscheldt (2003) have fed into current oil spill response strategies in the Netherlands (Rijkswaterstaat, 2006).

14. There is a clear understanding of the tasks that need to be performed, and these tasks are fully set out

The IBP NZ describes all activities that need to be undertaken from the moment an oil spill is detected up to the actual clean-up operations. Upon receiving a report of an oil spill the Netherlands Coastguard will initiate a verification flight to assess the situation. Once it is determined that the spill is combatable RWS NZ will take care of all operational matters. To this end a number of procedures are incorporated in the plan. These include search and rescue, determination of what would be the most effective clean-up strategy (through the advice of a special Rijkswaterstaat commission), Bonn Agreement procedures and a decision tree about whether or not chemical dispersant should be used (Rijkswaterstaat, 2011).

15. There are adequate human resources, and there is a clear understanding of when and how they are to be deployed

The Capacity Memorandum 2006-2010 determines the availability of oil spill response equipment and consequently the availability of personnel to operate the equipment (RWS NZ interview, 2011). The IBP NZ, as we have already come across above, describes the command structure and lines of communication. It furthermore outlines the different procedures in relation to the Bonn Agreement (pollution warning, dissemination of additional information and actual requests for assistance) and the involvement of volunteers (Rijkswaterstaat, 2011).

16. Mechanisms for maintaining the emergency response arrangements operable and up to date are in place

The Mining Decree states that all personnel involved in offshore oil exploitation needs to be properly trained and instructed to perform the activities as described in the contingency plan of the oil company. This plan must be updated at least once every 5 years. The Decree also requires personnel involved in the drilling process to periodically train for potential loss of control over the well (Mijnbouwbesluit, 2002). The Mining Regulation provides a further specification of what such training should entail (Mijnbouwregeling, 2002). RWS NZ trains on average 2 times a year. Currently the process of education, training and exercising is being revised to create a fixed pattern for such activities for all of RWS NZ's services. The revision also entails a description of competences and performance indicators. There will be a 4-year-plan which will be concluded by a full fledge exercise. This exercise will be chopped up for different parts of the organisation: administrative-strategic versus operational-tactical. This year, 2012 that is, there will be an exercise in which the Netherlands Coastguard and the oil industry will participate. The IBP NZ, when final, is made digitally available and will be accessible to everyone (RWS NZ interview, 2011). It will be updated at least once a year (Rijkswaterstaat, 2011).

17. The regime incorporates a proper strategy for stopping the flow of oil after a well blow-out

The Mining Decree and Regulation set a great number of prescriptions as it comes to drilling activities and design of wells. The Mining Decree sets general requirements in relation to the safety of oil drilling activities (including the construction of wells) and sets out what needs to be reported (on a daily basis) to the SSM (Mijnbouwbesluit, 2002). The Mining Regulation sets requirements for the contents of working programs for well construction activities, well repair, safety devices (e.g. blow-out preventers), testing of safety devices and safety exercises (Mijnbouwregeling, 2002). There are no explicit provisions for well containment. For the Dutch situation this does not compromise the regime as there is no major threat of blow-outs of the proportion of what happened with the Deepwater Horizon. Oil wells on the Dutch

continental shelf are not under heavy pressure. Those few self flowing oil wells which are there contain very light oil – condensate (SSM interview, 2011).

18. There are doubts about the adequate availability of physical resources, while there is a clear understanding of when and how they are to be deployed

Based on risk and vulnerability analysis the Capacity Memorandum 2006-2010 determines the availability of oil spill response equipment. However, it notes that, as of 2005, for large conceivable incidents that occur from 60 kilometres offshore the capacity and availability of the means to respond fall short (Rijkswaterstaat, 2006). In combination, the IBP NZ and the Capacity Memorandum 2006-2010 provide a detailed picture of physical oil spill response resources available in the Netherlands. This is substantiated by thorough analyses and clear protocols for when what type of equipment should be deployed. However, as there are no recent sources to refute the observation of inadequate response capacity for incidents farther than 60 kilometres offshore this criterion is awarded an intermediate score.

19. It could not be conclusively established if the regime encourages significant efforts of research and development to improve oil spill response resources and knowledge of their effectiveness

The Mining Act, Decree and Regulation set no requirements for companies to develop or otherwise update their (knowledge of) oil spill response resources. The topic was not brought up in the interview with RWS NZ either. For future research on this issue the Spill Response Group Holland (SRGH) might be a relevant organization to contact. This organization represents Dutch companies that work in the field of oil and chemical response at sea, on the coast and on inland waters (SRGH, 2012).

7.5 Conclusions

The Netherlands has a clearly organized regime for accidental oil spills at the North Sea. There is one supervisory agency which oversees all aspects of offshore drilling: the State Supervision of Mines (SSM). The activities of the SSM cover both oil spill prevention and

response through regulating safety on offshore installations and reviewing the emergency response plans of oil companies. Government involvement in oil spill response is shaped by the Netherlands Coastguard and Rijkswaterstaat Noordzee (RWS NZ) – the former as a coordinator, the latter as operational organization. The oil industry is represented through the Netherlands Oil and Gas Exploration and Production Association (NOGEPA). This organization, apart from representing industry interests, also unfolds initiatives in the area of safety and the environment. NGOs do not seem to be very actively involved in the regime, probably due to the relatively modest size of the Dutch oil exploitation sector – the Dutch part of the North Sea predominantly harbours natural gas.

The Dutch legislation shows a similar picture. The lion's share of safety and environmental issues related to oil drilling is addressed through the Mining Act and its accompanying Decree and Regulation – these set out some more detailed provisions. The Mining Act, Decree and Regulation establish *inter alia* the procedure for licensing, measures for ensuring the safety on oil drilling installations and requirements for oil spill response (plans). The Working Conditions Act, Decree and Regulation complement this by requiring operators to have a health and safety management system which they document in a health and safety document. There are additional safety and emergency response requirements as well, all with the safety of workers as the central aim. Government response to oil spills is primarily based on the North Sea Accident Control Act and the Water Act. These acts designate RWS NZ as being responsible for ensuring the environmental integrity of the North Sea. To live up to this responsibility the Incident Control Plan North Sea provides guidance for the coordination of incident response and a checklist for involved organisations of what tasks they are supposed to perform.

The Dutch regime for the prevention of accidental oil spills from drilling platforms at the North Sea meets the vast majority of criteria which were used to evaluate its effectiveness. Consulted experts from the SSM, NOGEPA and RWS NZ are unanimously satisfied with how the regime functions. The goal setting nature of the regulatory framework is greatly appreciated as well as the cooperative rather than coercive way in which the SSM enacts its supervision. Despite the goal setting nature of the regime there are elaborate mechanisms for

compliance review and sufficient enforcement instruments – sanctions effectively act as a back-up. In the wake of the Deepwater Horizon disaster learning has taken place through SSM and NOGEPA initiatives. Some critique may be levelled at the regime as well. First, there is no assurance that supervisory resources will remain intact for the foreseeable future. Budget-cuts and a changing landscape of government officials (partly due to retirements) may impact on the quality of the supervisory regime. Second, it is unclear to what extent environmental considerations are properly taken into account in the licensing process. It is the Minister of Economic Affairs, Agriculture and Innovation who has the responsibility for granting licenses. The sources included in this evaluation did not shed light on the issue of whether or not the location of environmentally sensitive areas is taken along in the decision-making process. Third, the fact that there is quite some exchange of personnel between government and industry provides a challenge for independent supervision. Such exchange is inescapable and may in fact be advantageous to supervision as well: it may be a source of knowledge. The present evaluation could not go into the depth necessary to determine whether or not current measures to safeguard supervisory independence are sufficient.

The Dutch regime for the response to oil spills at the North Sea meets the vast majority of criteria which were used to evaluate its effectiveness too. The reasoning behind this largely coincides with the discussion of the prevention part of the regime. Points of critique are, first, the uncertainty of available resources into the future. RWS NZ may be confronted with budget-cuts. This may impact on the availability of response equipment. Second, there is uncertainty about the availability of sufficient response resources to combat incidents farther than 60 kilometres offshore. Third, and perhaps most important, there are significant issues with the interoperability of the national oil spill response strategy and that of the individual oil companies. Simply put, the companies considered it to be the task of RWS NZ to clean up any oil, while effective response requires oil companies to take action the first moments after a spill – RWS NZ cannot magically appear the instant a spill occurs and the first moments are actually the most important.

8. THE NATIONAL REGIME OF NORWAY

8.1 Introduction

This chapter will elaborate on the extent to which the national regime of Norway for accidental oil spills from drilling platforms at the North Sea is effective. It presents two evaluations: one of the regime for the prevention of accidental oil spills, one of the regime for the response to oil spills. Section 8.2 highlights the key regime bodies and arrangements that make up the regime (sub-question c. and d.). Section 8.3 evaluates the national regime of Norway for the prevention of accidental oil spills (sub-question f.). Section 8.4 evaluates the national regime of Norway for the response to oil spills (sub-question g.). The two evaluations include, where applicable, the opinions of the consulted experts that were introduced in section 1.3 (sub-question e.). Given the many issues to which the evaluation criteria refer, quite some additional information on top of that of section 8.2 is needed to clarify the choices of why the criteria are, or are not, determined to be met. In other words, whereas section 8.2 provides a short introduction of what the regime comprises, sections 8.3 and 8.4 present a more in depth description of how the regime works. Section 8.5 presents the conclusions drawn from the evaluations of both parts (prevention and response) of the regime.

8.2 Overview of the regime

8.2.1 Key regime bodies

Norway has a clear network of regime bodies. The Petroleum Safety Authority Norway (PSA) is the supervisory government agency for safety and working environment. The Norwegian Oil Industry Association (OLF) represents oil and gas operator companies on the Norwegian continental shelf. Oil spill response plans from oil companies are reviewed by the Climate and Pollution Agency (Klif). Operational oil spill response is performed by the Norwegian Clean Seas Association for Operating Companies (NOFO). Assistance may be provided by the Norwegian Coastal Administration (NCA) and local authorities united in

Inter-municipal Committees against Acute Pollution (IUAs). This state of affairs is shown in figure 8, below.

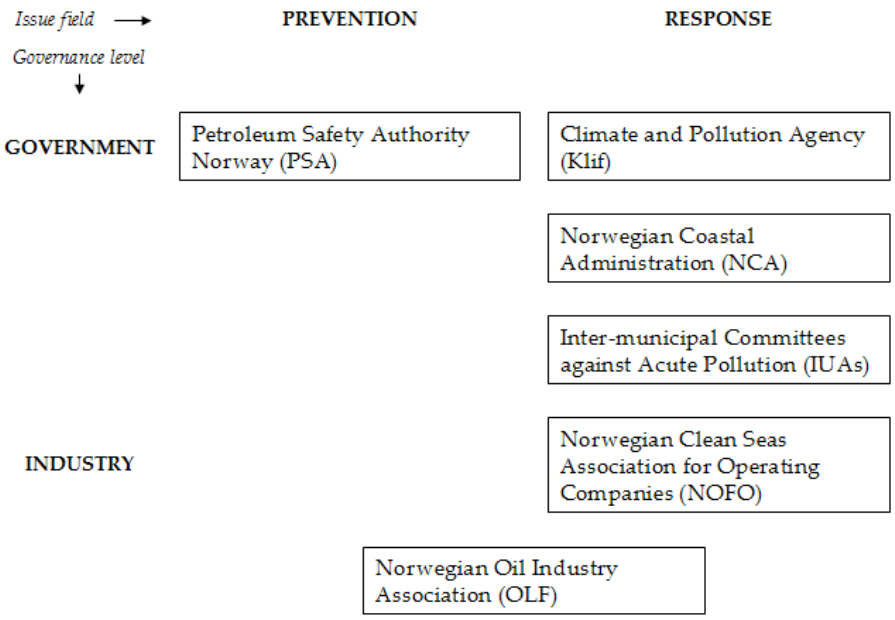

Figure 8 – Key regime bodies in Norway for oil spill prevention and response at the North Sea

Below, a short introduction into the key regime bodies.

Petroleum Safety Authority Norway

The Petroleum Safety Authority Norway (PSA) is the regulatory authority for the petroleum sector in Norway. It can be regarded as the Norwegian equivalent of the Dutch SSM. The PSA supervises issues of technical safety, operational safety and the working environment. Before 2004, which is when the PSA was established, these issues were regulated by the Norwegian Petroleum Directorate. The PSA has delegated authority from the Ministry of Labour. This means that it may issue regulation, and unfold activities accordingly, on behalf of the Ministry (PSA interview, 2011). The PSA has a coordinating role among the three most important government agencies revolving around the supervision of the petroleum sector. Apart from the PSA these are the Climate and Pollution Agency (discussed below) and the Norwegian Board of Health. The PSA performs inspections, provides advice and information

(both to industry and society at large) and provides input and support to the Ministry of Labour (PSA, 2012).

Norwegian Petroleum Directorate

The Norwegian Petroleum Directorate (NPD) is an administrative body for the Norwegian Ministry of Petroleum. Established in 1972, the NPD's paramount objective is to contribute to creating the greatest possible value for Norway from oil and gas activities by means of prudent resource management based on safety, emergency preparedness and safeguarding the external environment. The NPD's functions include advising the Ministry, collecting and analysing relevant data from the Norwegian continental shelf, optimizing the potential of Norway's resources and following up petroleum activities in cooperation with other authorities. The NPD sets frameworks, stipulates regulations and makes decisions. On top of this, the NPD plays an important role in the allocation of exploration and production licenses and it collects of fees from the industry (NPD, 2012).

Norwegian Oil Industry Association

The Norwegian Oil Industry Association (OLF) represents about 50 oil companies and 50 supplier companies (ranging from drilling services to catering) that are active on the Norwegian continental shelf. It can be regarded as the Norwegian equivalent of the Dutch NOGEPA. OLF's key objectives are to ensure attractive framework conditions and to get access to interesting exploration acreage on behalf of its members. The main roles of the OLF in ensuring the safety of oil exploitation are to coordinate activities between operators and to establish best practices and guidelines (OLF interview, 2011). OLF's work in the field of safety and environment is done through committees, working groups and a variety of forums. The OLF has 7 committees on different subjects, including an operations committee, a committee for licensing policy and a committee for the environment (OLF, 2012).

Climate and Pollution Agency

The Climate and Pollution Agency (Klif) is an agency of the Norwegian Ministry of the Environment. It operates in a wide variety of areas. The oil exploitation sector is a relatively minor part of its day to day business. Of its 340 employees 16 are part of the section for the oil and gas industry (Klif interview, 2011). Klif exercises regulatory authority and carries out inspections (by granting permits, establishing requirements, setting emission limits and ensuring compliance), monitors (and informs about) the state of the environment, provides advice to the Ministry of the Environment and participates in international environmental and development cooperation (Klif, 2012). The most relevant function of Klif in relation to accidental oil spills is setting demands for emergency preparedness (Interview Klif, 2011).

Norwegian Coastal Administration

The Norwegian Coastal Administration (NCA) is an agency of the Ministry of Fisheries and Coastal Affairs. It is responsible for maritime safety, maritime infrastructure, transport efficiency and emergency response to acute pollution. The NCA has national administrative authority in case of accidental oil spills. Its duty is to respond to major cases of acute pollution in so far as the preparedness and response thereto are not covered by private or municipal contingency plans. Oil spills from offshore oil drilling installations are covered by private contingency plans. This means that under normal circumstances the NCA would play no major operational role, except for observing oil spill response efforts of the industry. If there is an oil spill of such a magnitude that the industry's resources falls short the NCA can provide assistance and additional resources. In the case of industry failing to provide adequate oil spill response the NCA could take over the operation entirely (NCA, 2012).

Norwegian Clean Seas Association for Operating Companies

The Norwegian Clean Seas Association for Operating Companies (NOFO) is a not-for-profit coordinator of oil spill preparedness for operating companies on the Norwegian continental shelf. NOFO was created in 1978 in reaction to the Bravo blow-out of 1977. It establishes and

maintains oil spill contingency plans and executes oil spill response activities on behalf of its 30 members/owners. Given that in Norway the operating companies bear the responsibility, at all times, for the consequences of their activities NOFO is the pivotal actor in any oil spill response effort (NOFO interview, 2011). Other tasks of NOFO, apart from providing oil spill preparedness for its members, are developing new oil spill response technology, raising know-how and competence on oil spill preparedness in coastal and inshore zones, backing up local environmental efforts and oil spill preparedness through active cooperation with inter-municipal committees against acute pollution (IUAs), and ensuring good relations with government, municipal and private oil spill preparedness organizations (NOFO, 2012).

8.2.2 Key arrangements

The key arrangements that describe the regime of Norway are reflected in a number of Acts and Regulations. The arrangements listed below will be taken along in the evaluation of the regime.

- Petroleum Activities Act
- Pollution Control Act
- Framework Regulations
- Management Regulations
- Facilities Regulations
- Activities Regulations

Petroleum Activities Act

The Petroleum Activities Act lays down the general framework for oil exploitation on the Norwegian continental shelf. The Act dates from 1996 and was last amended in 2011. It sets out requirements for safe and environmentally sound oil exploitation. The Act describes the process of licensing and the considerations that will be made in decisions on allocating such licenses. It further requires licensees to ensure they have a competent organisation, submit a development plan for approval and maintain efficient emergency preparedness. The Act

places liability for pollution damage in the hands of the licensee and states it cannot be channelled through to parties down the production chain. Other provisions include the establishment of safety zones around offshore installations and introduction of a sanctioning regime (Petroleum Activities Act, 2011).

Pollution Control Act

The Pollution Control Act contains provisions for the protection of the outdoor environment against pollution. The Act dates from 1981 and was last amended in 2003. It incorporates the precautionary principle, use of best available technologies and the polluter pays principle. The Act gives Klif the authority to require environmental impact assessments to be carried out for potentially polluting activities. Klif may also issue regulation relating to (e.g.) the set up of installations and pollution control equipment that must be installed. The Act further requires the presence of emergency response systems when potentially polluting activities are undertaken and allows Klif to demand a contingency plan in relation thereto to be submitted for approval. The Pollution Control Act also describes how responsibilities in the 'national emergency response system' are allocated: private parties bear total responsibility for pollution as a consequence of their activities, municipalities provide a response system for minor pollution incidents and the state provides a response system for major pollution incidents not covered by private or municipal response systems (Pollution Control Act, 2003).

Framework Regulations

The Framework Regulations serve the purpose of promoting high standards for health, safety and the environment in petroleum activities. It lays down measures to comply with requirements as set out in the Petroleum Activities Act and the Working Environment Act (not described in this thesis). The Regulations date from 2001 and were last amended in 2011. They affirm the operators' responsibility for complying with health, safety and environment legislation – also for those carrying out work on his behalf. The operator must establish a management system for this purpose and coordinate emergency preparedness measures on

the installation(s). Pursuant to the Petroleum Activities Act the Regulations list the required contents of a development plan for drilling activities. The PSA may decide if the operator needs to apply for consent prior to commencing such activities. The Regulations furthermore require installations to be constructed in a manner allowing for prudent operations. Administrative decisions by the PSA can be appealed to at the Ministry of Labour (Framework Regulations, 2011).

Management Regulations

The Management Regulations expand on the provisions about management included in the Framework Regulations. The general criteria of the latter are worked out into more specific rules. The Management Regulations date from 2001 and were last amended in 2011. The Regulations require the establishment of (sufficiently independent) barriers at offshore installations to reduce the probability of hazardous circumstances and to limit possible harm. The management system must unambiguously define and coordinate responsibilities and authority. The Regulations furthermore require risk analyses to be carried out as well as emergency preparedness analyses and describe what such analyses ought to encompass. They also list reporting requirements to the PSA, e.g. about well drilling activities, and Klif, e.g. emergency preparedness analyses (Management Regulations, 2011).

Facilities Regulations

The Facilities Regulations set out requirements for design and outfitting of facilities used for petroleum activities. They date from 2001 and were last amended in 2011. The Regulations first describe the considerations that need to forego the development of a facility (e.g. location, reservoir type and accident risk). Next, they list general demands concerning the facility, including the forces it should be able to withstand and that the failure of just one component may not cause unacceptable consequences. The Regulations describe what kind of equipment must be present, including monitoring systems, communications systems and emergency preparedness equipment. They also contain requirements for drilling and well systems, for instance about barrier design and control systems (Facilities Regulations, 2011).

Activities Regulations

The Activities Regulations describe the plethora of conditions that need to be fulfilled with regard to the actual operations taking place for the purpose of oil exploitation. They date from 2001 and were last amended in 2011. The conditions include adequate training of personnel and management, regular exercises and adequate emergency procedures. Further, the Regulations list what needs to be done for proper maintenance of facilities (classification of systems, setting up a maintenance program, regular recertification of blow-out preventers, etc.). They also give an enumeration of the required contents of emergency preparedness plans and requirements for well activities. The latter includes the possibility to drill relief wells from at least two alternative locations, continuous monitoring of drilling and well data and the possibility to regain control after loss of well control (Activities Regulations, 2011).

8.3 Evaluation of the national regime of Norway for the prevention of accidental oil spills from drilling platforms at the North Sea

Based on the sources that were briefly introduced in section 8.2 and interviews with relevant organizations (section 1.3 shows which were consulted) we evaluate the regime of Norway for the prevention of accidental oil spills in line with the criteria constructed in chapter 5. The result of the evaluation is shown in table 8, below. The table lists the different criteria, the verdict of whether or not the criteria are met, the associated indicator(s) and the source(s) from where the indicators originated.

Table 8 – Results of the evaluation of the regime of Norway for the prevention of accidental oil spills from drilling platforms at the North Sea

Criterion	Met	Indicator(s)	Source(s)
General regime characteristics			
1. The regime encompasses all relevant actors	+	PSA is the regulatory authority; Industry represented through the OLF; Tripartite system including workers unions;	PSA interview; OLF interview; Bellona interview

		NGOs involved in political domain and through public debate; Experts satisfied with actor field	
2. The regime addresses all issues that relate to the problem it was designed for	+	Most important topics are addressed in consulted legislation; Very integrated legislation	Legislation; PSA interview
3. Commitments that follow from the regime are sufficiently stringent and binding	+	Largely goal setting commitments; There is a commitment for continuous improvement; Interviewees happy with legislation;	Legislation; PSA interview; OLF interview; Bellona interview
4. The regime comprises sufficient mechanisms for reviewing implementation and compliance	+	Legislation sets reporting requirements; PSA summarizes reported information and uses it for follow-up actions	Framework Regulations; Management Regulations; PSA interview
5. The regime comprises sufficient mechanisms to enforce implementation and compliance	+	Consent system similar to the UK safety case approach; Tailor-made follow-up by PSA; Sanction 'ladder'; Public disclosure puts pressure on industry	PSA interview; OLF interview; Bellona interview
6. The regime is sufficiently robust to cope with challenges caused by internal affairs	+	Tripartite system fosters cooperation (especially the Regulatory and Safety Forum); Regular bilateral meetings PSA and OLF; There are dispute-settlement opportunities; No cap on damages to be paid; NPD reviews financial situation of oil companies	PSA interview; PSA website; OLF interview; Framework Regultaions
7. The regime is sufficiently robust to cope with challenges caused by external affairs	?	Too little data; Procedure for allocation of licenses unclear	PSA interviews; Petroleum Activities Act
8. The regime is able to adapt to changing requirements when necessary	+	Following Deepwater Horizon PSA established a project team which identified focal areas; OLF set up a project team which issued recommendations based on BP's report and followed up OGP activities	PSA website; OLF website

9. Transparency is ensured	+	License applications published; Legislation allows for a lot of data to be made public; SSM publishes all audit reports; Norway has a transparent society	PSA interview; OLF interview; Bellona interview; Petroleum Activities Act; Framework Regulations
10. Regime bodies have adequate and secure means to perform their tasks	+	PSA financed over national budgets; PSA employees have a wide range of expertise; Many opportunities to expand knowledge base; Knowledge in government through Statoil; Chance of government-industry knowledge gap remains	PSA interview; OLF interview Bellona interview
Actors			
11. Relevant regime bodies have shared goals with regard to system safety	+	PSA and OLF have similar goals regarding safety	PSA website; OLF website
12. The regime encourages management commitment to safety amongst oil companies	+	Supervision of PSA primarily based on management systems (risk identification, mitigation); Trickles down to other layers	PSA interview
13. Responsibilities and tasks of regime bodies are clearly delegated and mapped	+	PSA coordinating agency for government supervision; Major improvement since 1980	PSA interview
14. There are good procedures in place for regulatory agencies to determine their priorities	+	Priorities based on past experiences; Safety statistics show potential for improvements	PSA interview; PSA website; Trends in Risk Level
15. Regulatory agencies are independent	?	Exchange of personnel between government and industry; There are checks to safeguard independence; Interviews did not show issue is completely resolved; Further research needed	PSA interview; OLF interview; Bellona interview
16. Industry cooperates internationally to establish safe practices	+	OLF involved in sharing best practices within industry; International cooperation through NOIA, OGP and OCES	OLF interview; OLF website OCES agreement

Norms, rules and decision making procedures			
17. Environmental considerations are incorporated in decision-making around allowing for oil exploitation activities in a clear, consistent and scientifically prudent manner	+	Elaborate procedure for taking environmental interests into account prior to opening new drilling areas; Potential impact of pollution is taken into account	Petroleum Activities Act; Regulations to the Petroleum Activities Act
18. The regime has proper procedures for establishing that oil companies that want to drill are competent	+	Technical capability of operator part of licensing process	PSA interview; Petroleum Activities Act
19. Safety measures are taken and regularly reviewed based on state-of-the-art expertise and up-to-date hazard identification	+	Three major revisions since 1995; Commitment for continuous improvement	PSA interview
20. Diverging views regarding involved systems and their associated risks are respected and accounted for	+	Trends in Risk Level Report; Regulatory Forum; Formal review rounds for legislation to take all views into account	PSA interview
21. Redundancy is (mandated to be) built into safety systems of the oil industry	+	Requirement for at least two independent barriers; PSA requires holistic approach to barriers	PSA interview; OLF interview
22. Safety measures are duly implemented	?	No data available for a verdict on this criterion	PSA interview
23. Authority for execution of safety measures is delegated to lower levels and there is adequate conceptual slack thereto	?	Goal-setting legislation; Not enough additional data from interviews	Legislation

1. The regime encompasses all relevant actors

Norway has a tripartite system, meaning close cooperation between government, industry and workers unions. The main government actor for oil spill prevention is the PSA, being the regulatory authority for safety and the working environment. Industry is represented through the OLF. The OLF has an HSE (health, safety and environment) department. This

department contributes to safety by e.g. formulation of guidelines, standards, checklists and facilitation of standardisation between companies (OLF, 2012).The consulted experts from Norway, without exception, indicate to be very satisfied about the composition of the actor field (PSA interview, 2011; OLF interview, 2011; Bellona interview, 2011). NGOs, of which Bellona is a prominent one, are primarily involved through discussions in the political domain (e.g. in the national licensing process and in EU public hearings) and through public debate (Bellona interview, 2011). Many OLF members also have individual relations, in different forms, with NGOs (OLF interview, 2011).

2. The regime addresses all issues that relate to the problem it was designed for

Important topics to be addressed are authorization (licensing, permitting and other forms for giving consent for oil exploitation operations), proper risk and environmental assessment, safety measures (including well control) and liability. The licensing procedure is outlined in the Petroleum Activities Act (Petroleum Activities Act, 2011). The Framework Regulations allow the PSA to decide if an oil company must apply for consent before starting a certain activity (Framework Regulations, 2011). Environmental assessment is addressed in the Pollution Control Act (Pollution Control Act, 2003). Risk analyses are required to be performed by the Management Regulations (Management Regulations, 2011). These Regulations, together with the Facilities and Activities Regulations lay down the safety measures that need to be implemented (Facilities Regulations, 2011; Activities Regulations, 2011). The way these safety measures are grouped over 4 different pieces of regulation provides for a very clear picture of how the safety of offshore operations is ensured. Whereas there is one rather goal setting regulation (the Framework Regulations), the others relate to matters of an organizational, technical and operational nature. This coincides with the commonly used categorization of different barriers to encapsulate risks. There was mentioning during the interview with the PSA that Norway may be the only country to have such integrated legislation over these areas (PSA interview, 2011). Lastly, liability is governed by the Petroleum Activities Act (Petroleum Activities Act, 2011).

3. Commitments that follow from the regime are sufficiently stringent and binding

Similar to the Netherlands also Norway has goal setting regulations (the term 'functional' was used to describe this characteristic). The experts were unanimously supportive of how the laws and regulations establish commitments (PSA interview, 2011; OLF interview, 2011; Bellona interview, 2011). None saw a need for regulatory changes. The argument was made that the regulations allow for continuous improvement (OLF interview, 2011). Moreover, when something has gone wrong (e.g. a near miss occurred) it often turns out there were compliance issues; a lack of regulations is seldom the problem (Bellona interview, 2011).

4. The regime comprises sufficient mechanisms for reviewing implementation and compliance

There are a lot of reporting requirements for operators towards the PSA. The Framework Regulations state that whoever is responsible for an activity covered by regulations must retain material and information through which compliance can be confirmed. If the choice is made to deviate from a standard which is commonly used as proof for compliance it must be made explicitly clear through additional documentation how compliance is thought to be achieved (Framework Regulations, 2011). The Management Regulations specify in detail what information ought to be reported to the PSA. When applying for consent an operator needs to provide information about the management system, risk analyses, environmental assessments and the programme for well activities. Other reporting requirements (not related to consent procedures) include hazard and accident situations and information about drilling and well activities (Management Regulations, 2011). On the basis on this kind of information the PSA performs on the spot inspections and audits. Especially the information related to the consent procedure is important. The PSA summarizes all activities leading up to the consent application and uses this for follow up (PSA interview, 2011).

5. The regime comprises sufficient mechanisms to enforce implementation and compliance

First, there is the consent system as touched upon above. Both for exploration and production activities such a consent is required. The PSA may reject a consent if there is a

feeling the company does not satisfy the requirement of having a competent organization (PSA interview, 2011). The consent system is similar, yet not identical, to the 'safety case' system used in the U.K. (discussed in the next chapter). It does not encompass a formal process of approval (OLF interview, 2011). Second, the follow-up activities of the PSA once oil drilling has commenced are tailor made for each individual company (PSA interview, 2011); operators that exhibit weaknesses in a certain area of safety will be subjected to more regular and comprehensive inspections than those that do not (OLF interview, 2011). Lastly, there is a 'ladder' of sanctions that is similar to the sanctioning regime in the Netherlands. In first instance there will be a dialogue to come up with a satisfactory solution to a problem. If that does not work fines may be issued to force rectification of the situation. More strict measures include stopping operations or reporting a company to the police. On a higher political level licenses may be taken away or the renewal thereof may be rejected (PSA interview, 2011). There is some disagreement among the Norwegian interviewees as to the adequacy of the sanctioning regime described above. The industry association considers it to suffice, stating that the fines are set at such a level that they are greater than what would have been the potential savings for an operator (OLF interview, 2011). Bellona, on the other hand, is of the opinion that the consequences for breaking the law are not strong enough. Audit reports are made public and in the view of Bellona the consequences of bad practices are often limited to a lot of fuzz in the media (Bellona interview, 2011). The PSA actually considers this to be an additional enforcement tool. Public disclosure puts pressure on industry. Companies do not want to be exposed like that (PSA interview, 2011). Considering the above I am inclined to stick with the opening statement of this paragraph: there are sufficient enforcement mechanisms. The question is whether or not they are adequately applied. This relates to the functioning of the PSA – an issue covered under other criteria.

6. The regime is sufficiently robust to cope with challenges caused by internal affairs

There is strong cooperation between the actors in the regime. This is reflected in its tripartite system of government, industry and workers unions. There are two forums, led by the PSA, in which actors from these three spheres of society come together to discuss a wide range of issues relevant to the regime. These forums are the Regulatory Forum and the Safety Forum.

The former serves to exchange viewpoints relating to the implementation of regulation and possible improvement thereof. The latter serves to initiate, discuss and follow up relevant safety, emergency preparedness and working environment issues. Apart from the PSA and OLF, participating organizations include the Federation of Norwegian Industries, the Norwegian Union of Energy Workers, the Norwegian Union of Marine Engineers and the Norwegian United Federation of Trade Unions (PSA, 2012). Both the PSA and OLF indicate that these tripartite efforts are very important. There is much common ground between the different actors, allowing for extensive collaboration between them (OLF interview, 2011). The PSA reports that the feedback it receives from all participants is very positive (PSA interview, 2011). Apart from tripartite cooperation, the PSA and OLF also have regular and incidental (whenever needed) bilateral meetings (OLF interview, 2011). The procedures for dispute settlement between oil companies and the Norwegian government are described in the Framework Regulations. Administrative decisions by the Ministries may be appealed to the King in Council (consisting of the King and all ministers), while administrative decisions of the PSA may be appealed to the Ministry of Labour (Framework Regulations, 2011).

There is no cap on damages to be paid in the event of an oil spill. Operating companies have unlimited liability for oil spills (OLF interview, 2011). Moreover, Norwegian regulations require operators to take responsibility for their contractors (PSA interview, 2011). This significantly reduces opportunities for oil companies to point at others for who is to blame. It could not be irrefutably established whether or not the regime encompasses sufficient ways to ensure companies are actually able to pay up when a spill occurs. Reportedly the NPD reviews the financial situation of a company in the licensing procedure (PSA interview, 2011). Other than this no information on the matter was obtained. The overall picture described above, however, provides a sound enough basis to consider this criterion met.

7. It could not be conclusively established if the regime is sufficiently robust to cope with challenges caused by external affairs

No signs of external issues impacting on the regime were identified in the interviews. Such issues have, however, not been actively brought into the discussions. One of the issues of

interest here is whether or not economic considerations could play an illegitimate role in decision-making processes within the regime. The Petroleum Activities Act assigns the responsibility for allocating exploration licenses to the Ministry of Oil and Energy, while production licenses are allocated by the King in Council (Petroleum Activities Act, 2011). All relevant ministries issue advice to support the decisions making. Through the Ministry of Labour evaluations of the PSA regarding the competency of an applicant in the area of safety feed into the process (PSA interview, 2011). However, the licensing procedure could not be looked into in detail and it could therefore not be ascertained whether or not there are sufficient safeguards to prevent economic considerations to supersede the attention that ought to be paid to safety and the environment.

8. The regime is able to adapt to changing requirements when necessary

Shortly after the Deepwater Horizon disaster the PSA established an internal cross-disciplinary project team to learn from it and to identify similarities and differences with other serious incidents. The team is yet to present its final conclusions, but some focal areas were already identified. These are barrier management, risk management, organization and management, regulations and standardisation, capping and containment, and blow-out preventers. The PSA also participated in initiatives within the IRF and NSOAF. Industry efforts were followed up as well (PSA, 2012). The OLF initiated a project team to collect the available information from the Deepwater Horizon disaster and evaluate its relevance to the Norwegian petroleum industry. At time of writing the project team had only issued recommendations based on BP's own research. The recommendations cover the areas of well control, competence (through training of personnel), well capping and containment, oil spill response, unified command (implementation of a new incident command model), and the exposure of personnel to chemicals. The OLF is also following up OGP activities (OLF, 2012).

9. Transparency is ensured

The Petroleum Activities Act describes a very open licensing procedure. Prior to the granting of a production license the area for which applications may be submitted is announced. The

announcement is published in The Norwegian Gazette (the Norwegian version of the Staatscourant) and the Official Journal of the European Communities (Petroleum Activities Act, 2011). The Framework Regulations stipulate that the PSA can require a responsible party to make publicly available any information important to safety (Framework Regulations, 2011). Moreover, the PSA publishes all audit reports on its website (PSA interview, 2011). The OLF adds to this that Norway's Public Information Act is very open. Things that would normally not reach the media in other countries are freely shared. Only strict commercial issues are kept out of the public domain. Norway is considered to have a transparent society, probably more so than the Netherlands and the United Kingdom (OLF interview, 2011). Bellona concurs (Bellona interview, 2011).

10. Regime bodies have adequate and secure means to perform their tasks

The PSA is financed over the national budgets. However, companies can be required to reimburse the costs incurred through supervisory activities. This money goes straight back to the state's coffers (PSA interview, 2011). No claims were made during the conducted interviews that the PSA is ill-financed. Bellona did indicate additional resources for the regulator would always be welcome (Bellona interview, 2011).

The PSA has a good knowledge base. The 160 persons working at the PSA cover a wide range of expertise divided over 6 technical areas. Their backgrounds range from university to consultancy and industry. The PSA has competency plans for each individual employee. Furthermore, PSA employees participate in research projects and are involved in a variety of government-industry forums. The PSA considers maintaining a knowledge level similar to that of the industry to be a challenge (PSA interview, 2011). An interesting additional source of knowledge for the PSA, or rather the Norwegian government as a whole, is through the majority interest in the oil company Statoil. Previously this was a state-owned company; currently the Norwegian government owns 67% of the shares. On top of this, the tripartite cooperation is used by PSA to obtain up-to-date knowledge about how the oil industry operates. Nevertheless, there still remains a potential knowledge gap (OLF interview, 2011).

Despite of the potential knowledge gap the above information provides a sound basis to consider this criterion met.

11. Relevant regime bodies have shared goals with regard to system safety

The PSA's job is to help ensure that petroleum operations are pursued responsibly with an eye on health, safety and the environment (PSA, 2012). The OLF obviously has broader goals that also relate to profitability, but nonetheless its values and principles also include respect for people, safety and the environment and a high ethical standard and awareness of the industry's social responsibility (OLF, 2012).

12. The regime encourages management commitment to safety amongst oil companies

One of the prioritized areas of the PSA is 'management and major accident risk'. This relates to how the management of oil companies identifies the risks associated with their activities and how they follow up on these risks. The PSA requires oil company management to show how they plan and organize their activities. Even though technical details are checked as well, the PSA's supervision is always based on the management systems, which then trickles down into other layers of safety (PSA interview, 2011).

13. Responsibilities and tasks of regime bodies are clearly delegated and mapped

Even though there is not one front office for matters relating to oil exploitation in Norway (like the SSM in the Netherlands), responsibilities are clearly defined. The PSA is the coordinating authority among the three main government agencies involved in the supervision of the oil industry. Besides the PSA these are the Norwegian Directorate of Health and the Climate and Pollution Agency (Klif). The PSA being the coordinator entails that it will make sure that all three authorities are involved in the right processes. The current system is a major improvement to the situation before 1980. That year, a major accident occurred with a floating, semi-submersible installation. The lives of 123 workers were lost. At that stage there were roughly 10 different authorities bearing responsibility for

different parts of the activity. Investigations concluded this had to change. In response the new configuration was devised. There had been "too many cooks, too much mess" (PSA interview, 2011).

14. There are good procedures in place for regulatory agencies to determine their priorities

The PSA determines its priorities on the basis of experience with the scrutinized oil companies and the inherent challenge of the activities they undertake (PSA interview, 2011). Another tool is the compilation of a number of parameters that relate to issues of safety. This yields relevant safety statistics which are published in a yearly report called 'Trends in Risk Level'. Rather than defining the actual risk level, which is hardly possible, the report shows how this level changes over time. It provides information on such issues as hydrocarbon leaks, structural damage to platforms and loss of well control (PSA, 2011). Based on changing trends in the level of certain risks, focus areas can be set (PSA interview, 2011). Current priorities are management and major accident risk (identification and follow up), barriers (organizational, technical and operational), natural environment (e.g. spill response) and risks to which particular groups of employees are exposed (PSA, 2012). Priorities are re-evaluated once every year (PSA interview, 2011).

15. It could not be conclusively established if regulatory agencies are independent

Similar to the situation in the Netherlands – this is a universal phenomenon – there is a lot of exchange of personnel between the oil industry and the government, i.e. the PSA. After reorganization of Statoil, following the merger that caused Statoil to be no longer a state-owned enterprise, a number of employees took on jobs at the PSA. At the time this spurred a lot of debate in the newspapers. The PSA entered into dialogue with the Ministry on the issue. As the PSA had a satisfactory case this state of affairs was accepted. The PSA has a number of checks and balances to deal with potentially conflicting interests. When someone joins the PSA from an oil company there is a moratorium, i.e. for a period of time this person is not allowed to deal with that particular company (PSA interview, 2011). Despite of the mechanisms in place to prevent unwanted situations, the issue does not appear to be

conclusively resolved. There was some considerable unease in discussing the matter with the OLF (OLF interview, 2011). Moreover, Bellona indicated the close relationships between industry and government agencies – the NPD in particular – may have caused government interests to shift towards that of the industry (Bellona interview, 2011). More thorough research on the independence issue is warranted to establish whether or not current practices are satisfactory.

16. Industry cooperates internationally to establish safe practices

The OLF has an HSE (health, safety and environment) department which contributes to safety by formulation of guidelines, standards, checklists and facilitation of standardisation between companies (OLF, 2012). The OLF also participates in national tripartite forums: the Regulatory Forum and the Safety Forum. On the international stage the OLF works with the OGP and is a member of NOIA (OLF interview, 2011). Additionally, the OLF is the Norwegian representative of the oil and gas industry in international cooperation between companies on oil spill response. Such cooperation takes place through the OCES agreement (OCES, 2011).

17. Environmental considerations are incorporated in decision-making around allowing for oil exploitation activities in a clear, consistent and scientifically prudent manner

The Petroleum Activities Act states that prior to the opening of new areas for licensing an evaluation shall be undertaken of the various interests involved in the concerned area. Such an evaluation includes an assessment of potential impact on trade, industry and the environment. It takes into account possible risks of pollution, as well as the economic and social effects that may result from the activity. All organisations which may be presumed to have a particular interest in the matter are consulted (Petroleum Activities Act, 2011). The impact assessment mentioned in the Petroleum Activities Act includes a wide range of issues, e.g. a description of important environmental characteristics and natural resources, and a description of the impact of opening the area in relation to: living conditions for animals and plants, the sea bed, water, air, climate, landscape, emergency preparedness and

risk, and the joint impact of these (Regulations to the Petroleum Activities Act, 2011). During the interviews no opinions on the adequacy of the impact assessment procedure were gathered. As a relative outsider it is therefore tricky to place a verdict on this criterion. Nevertheless, given that the possibility of pollution is explicitly addressed in the decision-making process the criterion is determined to be met.

18. The regime has proper procedures for establishing that oil companies that want to drill are competent

The technical capability of the operator is part of the licensing process as laid down in the Petroleum Activities Act. The PSA advises the Ministry of Oil and Energy on this aspect (Petroleum Activities Act, 2011). Licenses are awarded on the basis of *inter alia* the competency of the company and (documented) skills. They must show they are prudent operators with proven track records (PSA interview, 2011).

19. Safety measures are taken and regularly reviewed based on state-of-the-art expertise and up-to-date hazard identification

Since 1995 there have been 3 major revisions of the regulations. There are yearly reviews as well for some minor adjustments. Because the regulations contain the requirement for continuous improvement the PSA follows up all events (e.g. incidents) throughout the year to see if the companies live up to that promise. The PSA states that you have to be on your toes at all times to prevent complacency, especially at times when relatively few incidents happen (PSA interview, 2011).

20. Diverging views regarding involved systems and their associated risks are respected and accounted for

One way to align government's and industry's perspectives on risks is by means of the 'trends in risk level' report as discussed above. These reports paint the picture of how a variety of safety related indicators change over time. This feeds into priority setting of the

PSA. The companies agree with the reports and as a result there is agreement on the focus areas as well. Furthermore, when regulations are changed there are review rounds of about 3 months in which oil companies and unions can give comments on what they agree on or disagree with. The results hereof are taken into account before formally issuing the regulations. The Regulatory Forum provides yet another venue where all stakeholders can discuss and exchange different viewpoints on the development of new regulation (PSA interview, 2011).

21. Redundancy is (mandated to be) built into safety systems of the oil industry

The PSA requires a holistic approach to the use of barriers. There is, however, no one-size-fit-all solution to incorporate the concept into oil drilling operations. Barriers – organisational, technical and operational – are tailor made for each situation (PSA interview, 2011). One of the key principles in Norwegian regulation is that you must have at least two independent barriers in the drilling process. This relates for example to the way the blow-out preventer can be activated (OLF interview, 2011).

22. It could not be established if safety measures are duly implemented

This criterion aims to establish whether or not there are any time-lags in the performance of the regime. The speed with which changes in regulations are carried out varies. Extensive changes may take up to 5 years to be implemented, while minor adjustments may take only half a year (PSA interview, 2011). Whether or not this is sufficient is difficult to determine. Other relevant indicators, time-lag-wise, relate for instance to the exchange of information between different actors. The available data simply does not allow for a verdict on this issue.

23. It could not be established if authority for execution of safety measures is delegated to lower levels, while there probably is adequate conceptual slack thereto

The goal-setting nature of legislation is an indication that it is likely that at least to some degree authority is delegated to lower levels and that there is adequate conceptual slack.

Given the many similarities in working procedures between the three countries discussed in this thesis one may assume that if this criterion is met in the Netherlands – which it is – this will be the case in Norway as well. However, the issue was not covered in the interviews. Therefore, no final verdict is issued on this criterion.

8.4 Evaluation of national regime of Norway for the response to oil spills at the North Sea

Based on the sources that were briefly introduced in section 8.2 and interviews with relevant organizations (section 1.3 shows which were consulted) we evaluate the national regime of Norway for the response to accidental oil spills at the North Sea in line with the criteria constructed in chapter 5. The result of the evaluation is shown in table 9, below. The table lists the different criteria, the verdict of whether or not the criteria are met, the associated indicator(s) and the source(s) from where the indicators originated.

Table 9 – Results of the evaluation of the national regime of Norway for the response to oil spills from drilling platforms at the North Sea

Criterion	Met?	Indicator(s)	Source(s)
General regime characteristics			
1. The regime encompasses all relevant actors	+	Operators are responsible for response; NOFO coordinates on behalf of the operators; NCA can assist or take over; Actor field is considered to be satisfactory	Klif interview; NOFO interview
2. The regime addresses all issues that relate to the problem it was designed for	+	Legislation describes industry's responsibilities; Pollution Control Act outlines government response	Legislation
3. Commitments that follow from the regime are sufficiently stringent and binding	+	Goal setting regulation is considered to be good; Commitment for continuous improvement; Klif can set demands beyond what is said in the regulations	Klif interview; NOFO interview
4. The regime comprises sufficient mechanisms for	+	Klif reviews environmental risk assessments, emergency	Klif interview; See table 8

reviewing implementation and compliance		preparedness analyses and does inspections; The NCA monitors during oil spill response efforts	
5. The regime comprises sufficient mechanisms to enforce implementation and compliance	+	Contents of emergency response plans outlined in legislation; Enforcement regime outlined in criterion 5 of previous section	Klif interview; See table 8
6. The regime is sufficiently robust to cope with challenges caused by internal affairs	+	Good relationships Klif, NOFO and NCA; For dispute settlement see previous section	NOFO interview; See table 8
7. The regime is sufficiently robust to cope with challenges caused by external affairs	+	Oil spill response plans reviewed by Klif which has no resource development tasks	Interviews
8. The regime is able to adapt to changing requirements, when necessary	+	Klif participated in OSPAR and EU work; NOFO conducted a capacity and sustainability analysis;	Klif interview; NOFO interview
9. Transparency is ensured	+	PSA open in publishing results from accidents; Environmental impact statement of industry is made public; Trends in Risk Level	OLF interview; Pollution Control Act; Trends in Risk Level
10. Regime bodies have sufficient means to perform their tasks	+/–	No financial concerns; Manpower, however, is an issue	Klif interview; NOFO interview
National oil spill response system			
11. The national oil spill response system is properly compatible with relevant legislation and internally congruent	+	Norwegian emergency preparedness model based on Pollution Control Act; NOFO, with an overarching contingency plan, ensures congruency	NOFO interview; Pollution Control Act
12. The national oil spill response system is comprehensive and clear	?	Main objective of NOFO is to ensure clear coordination; Operator activates the plan; NOFO has tactical and operational command; Overarching NOFO plan could not be consulted	NOFO interview

13. The national response system is based on adequate knowledge of the nature of potential oil spill situations	+	NOFO conducts threat assessments (similar to the Dutch Capacity Memorandum); NOFO has wide expertise; Knowledge is drawn from the international scene as well	NOFO interview
14. There is a clear understanding of the tasks that need to be performed, and these tasks are fully set out	+	There is a barrier concept, for each barrier tasks are determined	NOFO interview
15. There are adequate human resources, and there is a clear understanding of when and how they are to be deployed	?	Given the clarity of responsibilities, line of command probably outlined; Lines of communication determined by legislation; NOFO has variety of agreements; NOFO plan could not be consulted to confirm the above	NOFO interview; NOFO document; Activities Regulations
16. Mechanisms for maintaining the emergency response arrangements operable and up to date are in place	+	NOFO regularly exercises; Vessels trained at least twice a year; Klif and NCA are kept up-to-date	NOFO interview; NOFO document
17. The regime incorporates a proper strategy for stopping the flow of oil after a well blow-out	?	No provisions for well capping or containment found in legislation; Issue not covered in interviews	Legislation
Oil spill response equipment			
18. There are adequate physical resources, and there is a clear understanding of when and how they are to be deployed	?	NOFO and NCA have a lot of equipment at their disposal; Bellona, however, considers the resources insufficient; NOFO plan could not be consulted to verify either of the above statements	NOFO interview; Bellona interview; NCA website
19. The regime encourages significant efforts of research and development to improve oil spill response resources and knowledge of their effectiveness	+	NOFO organizes, evaluates and finances R&D projects; NCA participates as well	NOFO interview; NOFO document

1. The regime encompasses all relevant actors

The Norwegian system is very clear: operators are responsible for oil spill response. These operators established NOFO to coordinate oil spill response operations and to respond to spills. On top of this there are so-called 'inter-municipal committees against acute pollution' (IUAs) and the NCA. The IUAs are responsible for small-scale oil spills up to 4 kilometres offshore, while the NCA responds to oil spills not covered by other arrangements (NOFO interview, 2011). The NCA also monitors the efforts of the other actors and may assist or take over if it feels necessary. Klif reviews the oil spill response plans of operators (Klif interview, 2011). The actor field is considered satisfactory (Klif interview, 2011; NOFO interview, 2011).

2. The regime addresses all issues that relate to the problem it was designed for

The Petroleum Activities Act assigns the responsibility for oil spill response to the operator (Petroleum Activities Act, 2011). The Pollution Control Act requires the operator to have emergency preparedness systems at the oil drilling installation (Pollution Control Act, 2003). The Framework Regulations require the operator to coordinate emergency preparedness on the facilities, congruent to government resources. These Regulations further require the operator to be leading in any response effort (Framework Regulations, 2011). The Facilities Regulations stipulate what sort of response equipment needs to be available on installations (Facilities Regulations, 2011). Finally, the Activities Regulations oblige operators to establish an emergency preparedness plan that describes any response action to be undertaken. They also set minimal requirements of what such a plan needs to encompass, and the obligation to device an action plan which in the event of acute pollution must be sent to the NCA within the hour (Activities Regulations, 2011). Government response (through the NCA and IUAs) is outlined in the Pollution Control Act (Pollution Control Act, 2003).

3. Commitments that follow from the regime are sufficiently stringent and binding

There is considered to be a good balance between goal setting and specificity. If regulations were more specific there would be overkill on some aspects, while regulations could fall

short on other aspects. The latter was the case with the Deepwater Horizon disaster (NOFO interview, 2011). The regulations set a commitment for continuous improvement, which is considered important as well. On top of this, Klif can set more detailed demands than strictly necessary following what is said in the regulations (Klif interview, 2011).

4. The regime comprises sufficient mechanisms for reviewing implementation and compliance

Companies need to send summaries of their environmental risk assessment and emergency preparedness analysis to Klif. In the past these summaries have been too short; work is going on to come up with a checklist of what companies should report to enable better reviews. Klif furthermore performs inspections to check whether or not emergency preparedness requirements are fulfilled. The NCA monitors the efforts of operators during oil spills to check if they are doing what they are supposed to do (Klif interview, 2011).

5. The regime comprises sufficient mechanisms to enforce implementation and compliance

The sanctioning regime is similar to that outlined for the prevention regime in the previous section. Demands on all relevant issues are incorporated in laws and regulations (see above) making them legally enforceable. Klif can instruct companies to take a certain course of action. In first instance a company gets the chance to improve without consequences. If this does not work Klif may issue fines or press charges. This would, however, be a last resort (Klif interview, 2011).

6. The regime is sufficiently robust to cope with challenges caused by internal affairs

There is a good relationship between the different actors. There is an open dialogue between Klif and NOFO. This is illustrated by the fact that NOFO keeps both Klif and the NCA up to date on relevant developments regarding the oil spill response plans of the companies and of the overarching plan of NOFO itself. This happens not because it is mandatory, but because it is convenient (NOFO interview, 2011). No sounds were heard of friction between actors.

7. The regime is sufficiently robust to cope with challenges caused by external affairs

Contrary to the Netherlands oil spill response plans in Norway are evaluated by an environmental agency without any interests apart from safeguarding the integrity of the natural environment – Klif. The matter of external affairs has not been explicitly addressed in the interviews, but given this attribute of the regime – and the fact that no problematic issues have been brought into discussions, not even by the consulted NGO – I consider it unlikely that external affairs may impact the robustness of the response regime.

8. The regime is able to adapt to changing requirements, when necessary

As the discussion of this criterion in the previous section highlighted both within the PSA and OLF efforts have been undertaken in the wake of Deepwater Horizon to improve existing practices. Capping and containment were identified by both as areas to focus on. The OLF also formulated some recommendations regarding oil spill response. Klif has established no internal groups, partly because of a lack of resources. They have taken part in work in OSPAR and the EU (Klif interview, 2011). NOFO conducted a 'capacity and sustainability analysis' to investigate whether or not it would be able to handle a situation similar to the Deepwater Horizon oil spill. The biggest challenge they identified was ensuring sufficient personnel to be available to handle a response effort that lasts for 60 to 90 days. NOFO concluded there is likely to be more than enough equipment, especially considering that the situation in the Gulf of Mexico is rather different (deeper water levels) than that in the North Sea (NOFO interview, 2011).

9. Transparency is ensured

The discussion of this criterion in the previous section mentioned Norway to have an open society with a high regard for transparency. All consulted actors shared this view. According to the OLF the PSA is very open in publishing results from accidents (OLF interview, 2011). The Pollution Control Act allows (parts of) the environmental impact statement which companies need to provide prior to initiating activities to be made public (Pollution Control

Act, 2003). Additionally, the mentioned 'Trends in Risk Level' reports issued by the PSA also provide a view on the workings of the regime (PSA, 2011).

10. Regime bodies have sufficient means to perform their tasks, but manpower may be an issue

Norway does not seem to be as affected by potential budget cuts as is the case in the Netherlands. Klif reports budgets are actually growing (Klif interview, 2011). NOFO is also positive about its financial capacity, noting that because costs are split between 20 or 30 companies there is hardly any resistance to pay up. No company ever hesitated to participate (NOFO interview, 2011). Human resources are another matter. As noted above, sustaining an oil spill response effort for a prolonged period of time can pose difficulties. Furthermore, while Klif is a large organization relatively few people are actually occupied with the oil industry (Klif interview, 2011). More manpower could give them the ability to more heavily scrutinize oil spill policies of the industry and perhaps initiate learning processes which are currently limited to participation in OSPAR and EU initiatives. On top of this, additional beach cleaning manpower would be appreciated (NOFO interview, 2011).

11. The national oil spill response system is properly compatible with relevant legislation and internally congruent

The Norwegian emergency preparedness model is based on the Pollution Control Act which sets the framework of operators being the main responsible parties and the IUAs and NCA providing assisting services (Pollution Control Act, 2003). As touched on above IUAs tackle minor spills up to 4 kilometres offshore, while the NCA will monitor private response efforts and can assist or take over when necessary. The Norwegian situation in which there is complete responsibility for the private sector and an organization like NOFO which coordinates this responsibility ensures internal congruence. Oil companies must adhere to NOFO's way of working. NOFO has an overarching contingency plan which lays the foundation for private oil spill response. Individual oil spill response plans of oil companies must be tailored to the NOFO plan. Information from companies is standardised and NOFO will be involved in the process of crafting these individual oil spill response plans. This

includes making sure that juridical demands are taken care of. NOFO closely monitors any changes to juridical obligations (NOFO interview, 2011).

12. It could not be conclusively established if the national oil spill response system is comprehensive and clear

Unfortunately the overarching NOFO plan which would act as the basis for oil spill response on the Norwegian continental shelf was not available. Consequently, it was not possible to obtain a detailed view on the issue as was possible for the Dutch situation (for which the IBP NZ provided a lot of insight). One can assume, though, that this criterion is probably met. The main objective of the NOFO plan is to ensure a clearly coordinated and robust response to all oil spills that involve offshore installations. The operating company will activate the plan to initiate the response effort. First the PSA will have to be alerted, after which NOFO can be contacted. From then on NOFO will take up tactical and operational command (NOFO interview, 2011). Additional research into the NOFO plan could help to conclusively establish whether or not it encompasses descriptions, in clear language, of the processes that are set in motion for (different kinds of) oil spill events.

13. The national response system is based on adequate knowledge of the nature of potential oil spill situations

NOFO conducts threat assessments which take into consideration the density of activities in a certain area and the risks from different wells. On that basis the vulnerability of the concerned areas is determined. The necessary capability then depends on the worst case scenario that could occur. NOFO has a variety of expertise at its disposal to perform such (and, of course, operational) tasks. People at NOFO have backgrounds in the armed forces, police, marine biology, technology, chemistry and so on. NOFO also participates in international oil spill conferences and is a member of the Global Response Network, a coalition of major oil spill response organizations to maximize knowledge and expertise (NOFO interview, 2011). An analysis of the NOFO plan would provide insight into how the

different types of knowledge described above are incorporated. Based on the assumption that this is probably done in a prudent manner I consider this criterion to be met.

14. There is a clear understanding of the tasks that need to be performed, and these tasks are fully set out

NOFO uses a concept of barriers; each individual barrier referring to different strategies and activities. Barrier 1 is operations on the open sea, barrier 2 is the trajectory between the source and the shoreline, barrier 3 is operations in coastal areas and barrier 4 refers to beach cleaning. The primary strategy for barriers 1 and 2 is mechanical recovery; using booms and skimmers. Barrier 3 involves lighter equipment. For barrier 4 there are agreements with other organizations, e.g. the WWF. On top of the tasks relating to these barriers monitoring is performed by means of satellite images and daily surveillance with helicopters and ships (NOFO interview, 2011). Once again it must be mentioned that it cannot be established how these matters are incorporated in the NOFO plan.

15. It could not be conclusively established if there are adequate human resources, and if there is a clear understanding of when and how they are to be deployed

This issue requires looking into the overarching NOFO plan. There probably is sufficient personnel for the vast majority of oil spill response operations (as touched upon above, this may be different for prolonged Deepwater Horizon type situations). Given that normally oil spill response would be an all-private affair the command structure is likely to be clearly outlined. The operator has strategic command, while NOFO has tactical and operational command (NOFO, 2011). External lines of communication are set by regulation: the PSA needs to be immediately contacted and within one hour after action management has been established an action plan must be sent to the NCA (Activities Regulations, 2011). Further, NOFO has an agreement with the NCA to draw on their equipment and agreements (e.g. the Bonn Agreement and the NORBRIT Agreement). There is an agreement with OSR on the use of their stockpile of chemical dispersants. Lastly, there is an agreement with the WWF involving training provided by the NOFO, giving them in return the opportunity to employ

these volunteers for beach cleaning operations (NOFO interview, 2011). Still, the NOFO plan needs to be consulted to conclusively determine if this criterion is, or is not, met.

16. Mechanisms for maintaining the emergency response arrangements operable and up to date are in place

The entire response organization is trained at least twice and sometimes 4 times a year. These are full-scale exercises which include all actors – government, municipalities and companies. The biggest exercise ever was a 3-day exercise in which 25 vessels and 500 to 600 people were involved. There are smaller exercises as well. These serve to test decision-making procedures and lines of communication. All NOFO vessels are trained at least twice a year (NOFO interview, 2011). A special feature of the Norwegian oil spill response training regime is that it allows for actual discharge of oil in the sea to test response procedures and equipment. These tests have played a big role in the development of NOFO's operational procedures and oil spill response equipment (NOFO, 2011). The NOFO boasts its continuous training. Summing up all efforts that are undertaken is beyond the current scope, more then 100 exercises and verifications are performed each year, but the aforementioned source provides a good overview. As touched upon earlier, Klif and the NCA are continuously kept up-to-date on the oil spill response plans of NOFO and the individual companies.

17. It could not be conclusively established if the regime incorporates a proper strategy for stopping the flow of oil after a well blow-out

The Facilities Regulations set requirements for well barriers, well control equipment, drilling fluid, the cementing unit, a controlled flow rate, and more (Facilities Regulations, 2011). The Activities Regulations require a well programme to be prepared, well parameters to be monitored, well barriers to be tested and to be independent, and an action plan to be prepared describing how control can be regained over a lost well (Activities Regulations, 2011). No provisions for well capping or containment, beyond an action plan for well control, have been found in Norwegian laws and regulations, neither has the issue been discussed in any of the interviews.

18. It could not be conclusively established if there are adequate physical resources, while there seems to be a clear understanding of when and how they are to be deployed

NOFO has a lot of oil spill response equipment at its disposal. There are 25 oil recovery vessels, 25 tug boats, 20 mechanical oil recovery systems, fishing vessels to tow booms and skimmers. It is the opinion of NOFO that they have the best skimmers and booms ever made. This equipment can be deployed from 5 bases along the Norwegian shore. An agreement with OSR enables NOFO to draw on their stockpile of dispersants (NOFO interview, 2011). The NCA has 4 oil recovery vessels, 10 small counter pollution vessels, booms, skimmers and dispersants. The equipment can be deployed from 27 depots along the Norwegian shore. Via the NCA an appeal can be made to the Bonn Agreement and the NORBRIT Agreement. In addition the IUAs also have a number of (lightweight) booms and skimmers at their disposal (NCA, 2012). NOFO seems to have a clear view on when which type of equipment should be used. On the one hand this relates to the barrier(s) that need to be activated, on the other to a number of factors like oil type, vulnerability of the area and the weather. All this is taken along in the overarching NOFO plan (NOFO interview, 2011). No independent expert was consulted to place a verdict on the adequacy of the equipment. Bellona does not believe current oil spill resources are sufficient (Bellona interview, 2011). This, in combination with the lack of detailed background information on the response resources (e.g. the NOFO plan and analyses on which it is based) renders it impossible to make a substantiated judgement of whether or not this criterion is met.

19. The regime encourages significant efforts of research and development to improve oil spill response resources and knowledge of their effectiveness

NOFO is involved in a lot of R&D projects. NOFO organizes, evaluates and finances them (NOFO interview, 2011). In 2009 NOFO and the NCA jointly started the technology development programme 'Oil Spill Preparedness 2010'. This programme reviewed 170 project proposals by private enterprises related to new oil spill response technology. Of those proposals 20 were approved and offered funding from NOFO. Although results are expected to be made in the coming years, a number of results were already presented in 2010. Two of

them are a monitoring system for optimum use of traditional booms and a dispersion system for small vessels (NOFO, 2011).

8.5 Conclusions

Norway has an elaborate regime for accidental oil spills at the North Sea. A number of historical accidents have caused the actor field to develop into a clear network of players. The Petroleum Safety Authority Norway (PSA) is the government's supervisory agency and regulator on aspects of safety. The Climate and Pollution Agency (Klif) supervises the oil spill contingency planning of oil companies. The petroleum industry is represented by the Norwegian Oil Industry Association (OLF). Apart from striving for optimal profitability of the oil industry this organization coordinate activities between oil companies and establishes best practices and guidelines. The responsibility for oil spill response in Norway is laid almost entirely in the hands of the oil industry itself, rather than a government agency. To this end the industry has set up the Norwegian Clean Seas Association for Operating Companies (NOFO). This is a non-profit coordinator of the oil spill preparedness efforts of operating companies. It establishes and maintains oil spill contingency plans and executes oil spill response activities. NOFO is part of the Norwegian emergency preparedness model. Apart from NOFO this model includes the Norwegian Coastal Administration (NCA) which monitors industry response efforts and can assist or take over if necessary, and municipal committees responsible for minor oil spills up to 4 kilometres offshore (IUAs).

Norwegian legislation is very clear as well. The overarching piece of legislation is the Petroleum Activities Act. This act establishes the licensing procedure, sets general goals for the competency of operators in the field of safety and emergency response, and introduces a sanctioning regime. The Petroleum Activities Act is worked out in 4 regulations. These are the Framework Regulations, Management Regulations, Facilities Regulations and Activities Regulations. The Framework Regulations lay down the general measures that ought to be taken in the field of health, safety and the environment to comply with the Petroleum Activities Act. The other three regulations go into how this should be implemented with a view on organizational, technical and operational barriers, respectively. The Management

Regulations require operators to clearly define and coordinate responsibilities and authority. The Facilities Regulations contain provisions on the design and outfitting of facilities. The Activities Regulations stipulate the procedures that need to be in place (e.g. programmes, plans, training). The Pollution Control Act establishes the abovementioned emergency preparedness model.

The Norwegian regime for the prevention of accidental oil spills from drilling platforms at the North Sea meets the vast majority of criteria used to evaluate its effectiveness. Consulted experts from the PSA, OLF, Klif, NOFO and Bellona are unanimously satisfied with how the regime functions. Especially the goal setting nature of the regulatory framework and the requirement for continuous improvement it incorporates is greatly appreciated. The regime is characterized by close cooperation between government, industry and workers unions. This tripartite collaboration is reflected in the Regulatory Forum and the Safety Forum which allow the parties to discuss matters of changing regulations and safety. These forums are believed to contribute greatly to mutual understanding and foster implementation. Another important aspect of the regime is that the responsibility for ensuring safety remains with the operator at all times. An operator cannot pass on responsibility or liability to its contractors. The great level of transparency is another feature of the regime that cannot go unmentioned. A point of concern is that of independence of government agencies. A lot of exchange of personnel between government and industry occurs and the major oil company of Norway, Statoil, used to be state-owned. Further study into this issue is needed.

The Norwegian regime for the response to oil spills at the North Sea meets the vast majority of criteria used to evaluate its effectiveness too. Throughout most of the criteria the role of NOFO really stands out. The Norwegian emergency preparedness model practically places all responsibility in the hands of the industry. NOFO coordinates this responsibility on behalf of the oil companies and this ensures a highly unified approach to oil spill response. Through NOFO private oil spill response plans are harmonized. Unfortunately, because the overarching NOFO plan – the fundament on which oil spill response involving oil drilling platforms on the Norwegian continental shelf is based – could not be consulted no verdict on could be given on a number of important criteria. These include the comprehensiveness of

the oil spill response system and the availability of sufficient physical response resources. Some, minor, issues with were identified with regard to available manpower for review of private oil spill response plans and beach cleaning operations.

9. THE NATIONAL REGIME OF THE UNITED KINGDOM

9.1 Introduction

This chapter will elaborate on the extent to which the national regime of the United Kingdom for accidental oil spills from drilling platforms at the North Sea is effective. It presents two evaluations: one of the regime for the prevention of accidental oil spills, one of the regime for the response to oil spills. Section 9.2 highlights the key regime bodies and arrangements that make up the regime (sub-question c. and d.). Section 9.3 evaluates the national regime of the United Kingdom for the prevention of accidental oil spills (sub-question f.). Section 9.4 evaluates the national regime of the United Kingdom for the response to oil spills (sub-question g.). The two evaluations include, where applicable, the opinions of the consulted experts that were introduced in section 1.3 (sub-question e.). Given the many issues to which the evaluation criteria refer, quite some additional info on top of that of section 9.2 is needed to clarify the choices of why the criteria are, or are not, determined to be met. In other words, whereas section 9.2 provides a short introduction of what the regime comprises, sections 9.3 and 9.4 present a more in depth description of how the regime works. Section 9.5 presents the conclusions drawn from the evaluations of both parts (prevention and response) of the regime.

9.2 Overview of the regime

9.2.1 Key regime bodies

The UK regime is shaped by four principal actors. The Health and Safety Executive's offshore division (HSE) is the supervisory government agency for safety and working environment. Oil & Gas UK represents oil and gas operator companies on the UK continental shelf. The Department of Energy and Climate Change (DECC) is in charge of licensing and the review and approval of oil pollution emergency plans of oil companies. The Maritime and Coastguard Agency (MCA) coordinates oil spill response. The single most important piece of legislation in the UK is the Offshore Installations (Safety Case) Regulations 2005. The

HSE sees to it that the oil and gas industry adheres to this legislation (HSE interview, 2011). The most relevant regime bodies are shown in figure 9, below.

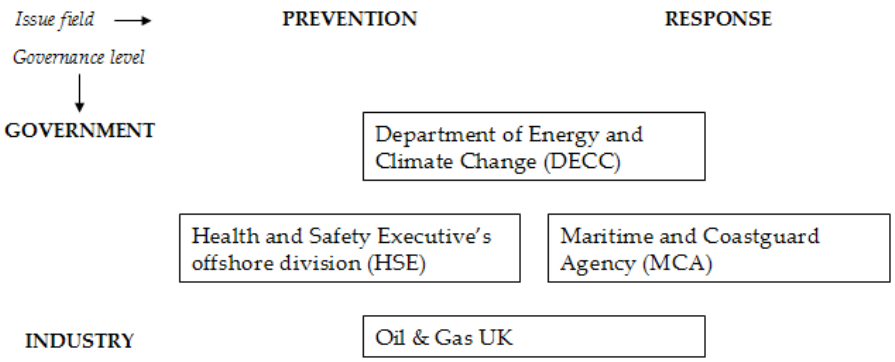

Figure 9 – Key regime bodies in the United Kingdom for oil spill prevention and response at the North Sea

Below, a short introduction into the key regime bodies.

Health and Safety Executive

The Health and Safety Executive (HSE) is the government agency in the U.K. responsible for work-related health, safety and illness. The HSE covers a wide range of industries. Of its 3000 employees 150 are part of the offshore division of the HSE. This division is the safety regulator for the roughly 300 offshore installations on the UK continental shelf. The HSE is tasked with supervisory activities to ensure the safety integrity of offshore platforms and drilling rigs (HSE interview, 2011). The offshore division of the HSE can be compared with the SSM in the Netherlands and the PSA in Norway. Core activities of the HSE are safety case assessment, verification, inspection, investigation and enforcement (HSE, 2012). The 'safety case' regime will be expanded on below.

Department of Energy and Climate Change

The Department of Energy and Climate Change (DECC) is a relatively new UK government department (a department in the UK is the equivalent of a ministry in the Netherlands and Norway). Created in 2008, it brings together two government groups which theretofore addressed the challenges of energy supply and climate change separately. The DECC has a

broad mandate which encompasses such issues as delivering secure energy, paving the way to a low carbon energy future, driving ambitious action on climate change, and responsibly and cost-effectively managing the UK's energy legacy (DECC, 2012). The DECC has two main roles in the offshore oil and gas regime. First, they are the sponsoring government department for oil and gas exploitation on the UK continental shelf. The DECC grants exploration and production licenses and collects revenues. Second, the DECC is responsible for approving the oil spill response plans of the oil companies (HSE Interview, 2011).

Oil & Gas UK

Oil & Gas UK is the industry association representing oil and gas companies active on the UK continental shelf, from large operators to small and medium enterprises in the supply chain. It was established in 2007, but has a history in other forms of more than 30 years. The aim of Oil & Gas UK is to strengthen the long-term health of the offshore oil and gas industry in the United Kingdom by working closely with companies across the entire sector, governments and other stakeholders. Oil & Gas UK promotes an open dialogue within the industry on e.g. technical, safety, environmental and competency issues. Oil & Gas UK develops industry-wide initiatives and programmes (Oil & Gas UK, 2012). Oil & Gas UK is similar to NOGEPA (the Netherlands) and the OLF (Norway).

Maritime and Coastguard Agency

The Maritime and Coastguard Agency implements the UK government's policy on maritime safety. The MCA is an executive agency for the Department for Transport DfT). It works to prevent loss of life at sea and responds to pollution from ships and offshore installations. This includes the mobilisation, organisation, and tasking of adequate resources to respond to incidents. The MCA's tasks in the area of emergency response are search and rescue, response to incidents (involving fire, chemical hazards and industrial accidents at sea) through the Maritime Incident Response Group (MIRG) as coordinated by the Coastguard, counter pollution and response, and the voluntary salvage of wrecks (MCA, 2012).

9.2.2 Key arrangements

The key arrangements that describe the regime of the United Kingdom are reflected in a number of Acts, Regulations and the National contingency Plan. The arrangements listed below will be taken along in the evaluation of the regime.

- Petroleum Act 1998
- Offshore Installations (Safety Case) Regulations 2005
- Offshore Installations and Wells (Design and Construction, etc.) Regulations 1996
- Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995
- Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995
- Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999
- Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001
- Offshore Installations (Emergency Pollution Control) Regulations 2002
- Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005
- Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation convention) Regulations 1998
- National Contingency Plan for Marine Pollution from Shipping and Offshore Installations

Petroleum Act 1998

The Petroleum Act sets a general framework for petroleum exploitation activities in the United Kingdom. It sets provisions with regard to where the rights to petroleum are vested, the need to obtain a license for commencing any exploitation activity, and the application of criminal and civil law. It also contains sections, irrelevant to the current discussion, about submarine pipelines and the abandonment of offshore installations. The Act enables the

Secretary of State to lay down regulations prescribing the process and required contents of an application for a license. Additionally, it assigns power to appointed inspectors to inspect plans or mines (Petroleum Act 1998).

Offshore Installations (Safety Case) Regulations 2005

The Offshore Installations (Safety Case) Regulations require an operator to send a design notification for a production installation to the HSE and prepare a 'safety case' at least six months before commencing an operation. The safety case must be accepted by the HSE. It must demonstrate an adequate management system, adequate arrangements for auditing, identification of all hazards potentially leading to a major accident, identification of all major risks and measures to control those risks. The safety case must be reviewed as appropriate, or at least once every five years. A summary hereof must be sent to the HSE. The Regulations furthermore require a well operator to send a notification of well operations to the HSE at least 21 days before the operation commences. Appeal to a decision of the HSE can be made to the Secretary of State. The appendices to the Regulations contain the required contents of the design notification, safety case, and notification of well operations (Offshore Installations (Safety Case) Regulations 2005).

Offshore Installations and Wells (Design and Construction, etc.) Regulations 1996

The Offshore Installations and Wells (Design and Construction, etc.) Regulations lay down provisions that are to ensure the integrity of installations and wells. Requirements for the design of an installation include e.g. that it must be able to withstand certain forces. The Regulations also prescribe that proper maintenance arrangements should be in place to unsure continued integrity. Threats to the integrity of an installation must be reported to the HSE within 10 days. Other provisions are about the escape of fluids, use of proper materials, arrangements for well examination and training of those carrying out a well operation (Offshore Installations and Wells (Design and Construction, etc.) Regulations 1996).

Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995

The Offshore Installations and Pipeline Works (Management and Administration) Regulations contain provisions about required procedures on an offshore installation and the administration of important information. There must be a competent manager on the installation, comprehensible instructions on procedures taking place on the installation and arrangements must be in place for proper communication between the installation and e.g. the shore, vessels and other installations. The regulations furthermore include a detailed section on liability (Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995).

Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995

The Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations require measures to be taken to protect people on the installation from fire and explosion, and to ensure effective emergency response. Regular assessments must be undertaken of the risks for fire and explosion, the likelihood thereof, potential consequences, and measures must be identified to mitigate the risks. Sufficient preparation for emergencies must be ensured through arrangements such as ensuring adequate command, sufficient number of persons to undertake emergency duties, and adequate instruction and training. An emergency response plan must be prepared that contains information about the procedures to be followed and the arrangements which are in place. The plan must be tested as often as appropriate (Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995).

Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999

The Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations require an application for consent, accompanied by an environmental statement, to be made to the Secretary of State prior to any extraction of petroleum. This application

must be made available to relevant environmental authorities as well as the general public. The Secretary of State will approve an application if he is satisfied with the procedures that have been followed, the information that has been made available, the environmental statement itself, and he will take into account opinions expressed by the public. An approval, or decision that an environmental statement is not required, is made publicly available. Any person can request to court that the consent is quashed (e.g. in case of suspected violation of the Regulations). The appendices to the Regulations contain the matters to be taken into account in a decision about the necessity for an environmental statement, and the required contents of environmental statements (Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999).

Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001

The Offshore Petroleum Activities (Conservation of Habitats) Regulations implement the EU Habitats Directive and Wild Birds Directive. The Regulations establish that the Secretary of State will make an assessment of the implications for a relevant site (including areas defined under any of the two EU Directives) for which a license (or consent, or approval, etc.) may be granted in view of conservation objectives. The Joint Nature Conservation Committee will be consulted for this purpose. If from the assessment follows that there would be detrimental effects, a license (etc.) will be granted only when there are imperative reasons of overriding public interest (of social or economic nature), when no satisfactory alternative exists, and when the site does not host a priority natural habitat type or priority species. Subject to overriding public interest and lack of alternatives no oil and gas activities may be conducted in a way that could cause deterioration or destruction of nesting places of certain species as listed in the Habitats Directive and the Wild Birds Directive (Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001).

Offshore Installations (Emergency Pollution Control) Regulations 2002

The Offshore Installations (Emergency Pollution Control) Regulations give certain powers of intervention to the Secretary of State, or any person assigned thereto on his behalf, in case of

an accident on offshore installations which may lead to significant pollution. These powers entail giving directions to the operator for the purpose of preventing or reducing pollution. Such directions may be to move (or not move) an installation, to discharge (or not to discharge) substances, or to take certain remedial measures. If all of this does not yield the desired results, the Secretary of State may take over the control of the installation (Offshore Installations (Emergency Pollution Control) Regulations 2002).

Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005

The Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations contain requirements relating to both operational and accidental oil discharges. Regarding the latter there is the obligation to, without delay, provide the Secretary of State with information of incidents resulting in a release of oil. In the case of such a release inspectors may be appointed to monitor the situation. The Secretary of State may issue an 'enforcement notice' when a release has occurred without a permit to specify remedial steps that must be taken, and the period within which this needs to be done. If the operation of an offshore installation involves an imminent risk of serious oil pollution the Secretary of State may also issue a 'prohibition notice'. This entails that a permit for (part of the) operation to which the risk is tied may cease to have effect – in other words that this operation is stopped. Any decision can be appealed to at the relevant court (Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005).

Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998

The Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations serve to implement the OPRC Convention. Every operator of an offshore installation is required to have an oil pollution emergency plan which conforms to the National Contingency Plan. The plan must be submitted to the MCA for approval at least 2 months before activities on an offshore installation are commenced. It should be reviewed and, if necessary, updated at least once every 5 years. If any discharge of oil is observed this

must be reported to the Coastguard without delay. Lastly, any person authorized by the Secretary of State may inspect any offshore installation (Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998).

National Contingency Plan for Marine Pollution from Shipping and Offshore Installations

The National Contingency Plan for Marine Pollution from Shipping and Offshore Installations (NCP) describes when the MCA will deploy national resources to respond to a marine pollution incident and how these resources are managed. The plan flows forth from obligations set out in UNCLOS and the OPRC Convention. Its legal basis is the Merchant Shipping Act 1995. The Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005 provide a lot of the powers which are embedded in the plan. The NCP describes the roles of the various actors involved. On top of the MCA the most notable are the SOSREP (Secretary of State's Representative), oil companies, nature conservation organizations (in particular the Joint Nature Conservation Committee) and local authorities. The NCP outlines a 'tiered' oil spill response concept. Apart from describing the roles of those involved, the plan mainly focuses on the command lines during a response effort, the lines of communication and information dissemination (NCP, 2006). The NCP is currently under review and is expected to be replaced by a new contingency plan later this year (OSR interview, 2011).

9.3 Evaluation of the national regime of the United Kingdom for the prevention of accidental oil spills from drilling platforms at the North Sea

Based on the sources that were briefly introduced in section 9.2 and interviews with relevant organizations (section 1.3 shows which were consulted) we evaluate the regime of the United Kingdom for the prevention of accidental oil spills in line with the criteria constructed in chapter 5. The result of the evaluation is shown in table 10, below. The table lists the different criteria, the verdict of whether or not the criteria are met, the associated indicator(s) and the source(s) from where the indicators originated.

Table 10 – Results of the evaluation of the regime of the United Kingdom for the prevention of accidental oil spills from drilling platforms at the North Sea

Criterion	Met	Indicator(s)	Source(s)
General regime characteristics			
1. The regime encompasses all relevant actors	+	Government involved through the HSE and the DECC; Industry represented by Oil & Gas UK; Through Step Change in Safety best practices are shared; NGOs mainly involved in political domain	Interviews
2. The regime addresses all issues that relate to the problem it was designed for	+	Most important topics are addressed in consulted legislation	Legislation; OPOL website
3. Commitments that follow from the regime are sufficiently stringent and binding	+	Largely goal setting commitments; Interviewees happy with nature of legislation; ECC Committee found nature of legislation adequate	Legislation; HSE interview; Greenpeace UK interview; ECC Committee
4. The regime comprises sufficient mechanisms for reviewing implementation and compliance	+	Legislation sets reporting requirements; HSE has intervention plans for each offshore installation	Legislation; HSE interview
5. The regime comprises sufficient mechanisms to enforce implementation and compliance	+	Safety case needs to be accepted by the HSE 4 types of sanctions; Prohibition notice very effective; No indication of desirability of heavier sanctions	HSE interview; Greenpeace UK interview
6. The regime is sufficiently robust to cope with challenges caused by internal affairs	?	Cooperation through Step Change in Safety; HSE and DECC work close together; There are dispute-settlement opportunities; OPOL has a $250 million cap; Opinions on sufficiency thereof differ (especially its clarity); DECC checks financial responsibility of oil companies	HSE interview; Greenpeace UK interview; Legislation; OSPRAG report

7. The regime is sufficiently robust to cope with challenges caused by external affairs	?	Licensing procedure unclear; DECC may be "schizophrenic"; Further research needed	HSE interview; Greenpeace UK interview; Legislation
8. The regime is able to adapt to changing requirements when necessary	+	Step change in safety allows for continuous improvement; Following Deepwater Horizon the HSE worked closely with the European Commission; OSPRAG produced a detailed evaluation of the UK regime and made recommendations	HSE interview; OSR interview; ECC Committee; OSPRAG report
9. Transparency is ensured	+/–	Greenpeace sees transparency as a major concern; The HSE also sees transparency as an area for improvement	HSE interview; Greenpeace UK interview
10. Regime bodies have adequate and secure means to perform their tasks	?	Issue with ageing installations; Greenpeace believes a lack of resources impacts on the HSE's inspection regime; The opinion of the HSE hereon was not obtained, requiring further research; HSE has a lot of knowledge within its organization; A variety of projects serve to expand knowledge	HSE interview; OSR interview; Greenpeace UK interview
Actors			
11. Relevant regime bodies have shared goals with regard to system safety	+	The HSE, the DECC and Oil & Gas UK all have safety as (one of their) goals	HSE website; DECC website; Oil & Gas UK website
12. The regime encourages management commitment to safety amongst oil companies	?	No data	N.a.
13. Responsibilities and tasks of regime bodies are clearly delegated and mapped	+	HSE responsible for left hand side of the 'bow tie', the DECC for the right hand side; MoU between HSE and DECC	HSE interview
14. There are good procedures in place for regulatory agencies to determine their priorities	+	Synthesis of reported data, investigations and inspections determines HSE's priorities; Well control is a priority	HSE interview; HSE website

15. Regulatory agencies are independent	?	HSE has checks to safeguard independence; DECC's objectives may not always coincide; Further research needed	HSE interview; Greenpeace UK interview
16. Industry cooperates internationally to establish safe practices	+	Oil & Gas UK involved in sharing best practices; International cooperation through NOIA, OGP and OCES	Step Change in Safety website; Oil & Gas UK website; OCES agreement
Norms, rules and decision making procedures			
17. Environmental considerations are incorporated in decision-making around allowing for oil exploitation activities in a clear, consistent and scientifically prudent manner	?	Natura 2000 requirements are taken along; The way this (or other vulnerabilities) influences decision-making unclear; Further research needed	Legislation
18. The regime has proper procedures for establishing that oil companies that want to drill are competent	+	Formal acceptance of safety case gives the HSE the opportunity to ensure competence	HSE interview
19. Safety measures are taken and regularly reviewed based on state-of-the-art expertise and up-to-date hazard identification	?	This issue was not covered by the interviews, nor do other sources provide a clear view on the matter	N.a.
20. Diverging views regarding involved systems and their associated risks are respected and accounted for	?	Step Change provides a venue to discuss diverging views; HSE makes sure priorities match with industry; Further research needed	HSE interview
21. Redundancy is (mandated to be) built into safety systems of the oil industry	?	This issue was not covered by the interviews, nor do other sources provide a clear view on the matter	N.a.
22. Safety measures are duly implemented	?	No data available for a verdict on this criterion	N.a.
23. Authority for execution of safety measures is delegated to lower levels and there is adequate conceptual slack thereto	?	Goal-setting legislation; Not enough additional data from interviews	Legislation

1. The regime encompasses all relevant actors

From the side of the government there are the DECC and the HSE. The former grants exploration and production licenses; the latter is the government regulator for issues of safety and working environment. The offshore oil and gas industry is represented by the trade association Oil & Gas UK. There is a tripartite, albeit by industry dominated, partnership called 'Step Change in Safety' through which government (HSE), industry (Oil & Gas UK as well as a host of individual oil companies) and workers unions (e.g. TGWU/Unite and OILC/RMT) cooperate on safety issues (e.g. by sharing and adopting best practices). Environmental NGOs are involved mainly through discussions in the political domain, e.g. in the licensing process (Greenpeace UK interview, 2011) or in the Energy and Climate Change Committee of the House of Commons which discussed the implications of the Deepwater Horizon oil spill for the UK (ECC, 2011).

2. The regime addresses all issues that relate to the problem it was designed for

Important topics to be addressed are authorization (licensing, permitting and other forms for giving consent for oil exploitation operations), proper risk and environmental assessment, safety measures (including well control) and liability. The licensing procedure is outlined in the Petroleum Licensing (Exploration and Production) (Seaward and Landward Areas) Regulations 2004 and the Petroleum Licensing (Production) (Seaward Areas) regulations 2008. Additionally, the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 describe the procedure for assessment of the implications of opening an area for oil exploitation activities which the Secretary of State needs to perform. The environmental assessment to be undertaken by a licensee, needed to get consent for starting an operation, is set out in the Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999. Risk analysis and demonstration of the measures to mitigate risks are prescribed by the Offshore Installations (Safety Case) Regulations 2005. Minimum safety requirements are set through the Offshore Installations and Wells (Design and Construction, etc.) Regulations 1996 and the Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995. Lastly, the issue of liability is addresses in the Petroleum

(Production) (Seaward Areas) Regulations 1988, which states that operators must be properly ensured to be able to pay for any damages that flow forth from the activities. These regulations, however, are not very specific as to how liability is worked out in practice. This is done by means of the OPOL agreement. Initially this was an all industry affair, but as the desired European regime could not be agreed upon the UK government decided membership of OPOL to be sufficient for complying with the 1988 regulations (OPOL, 2012).

3. Commitments that follow from the regime are sufficiently stringent and binding

Similar to the Netherlands and Norway the UK has goal setting laws and regulations. In the view of the HSE the regulatory regime in the UK is robust (HSE interview, 2011). Greenpeace shares the view of the Energy and Climate Change Committee which reviewed the UK's regulatory regime (Greenpeace UK interview, 2011). A number of recommendations were issued, but the nature of the regulations was found to be adequate (ECC, 2011).

4. The regime comprises sufficient mechanisms for reviewing implementation and compliance

The Offshore Installations (Safety Case) Regulations lay down the most important reporting commitments for operators in the UK. Apart from drawing up a safety case there are design notifications for a production installation and well operations notifications which need to be sent to the HSE (Offshore Installations (Safety Case) Regulations 2005). Contrary to the Netherlands and Norway the safety case needs to be formally accepted by the HSE. For every offshore installation the HSE has an intervention plan. Over 5 years key technical areas are inspected. The inspections serve to verify the promises and statements in the safety case. There are a number of safety cases throughout the life cycle of an offshore operation – initial design, production, material changes and decommissioning (HSE interview, 2011).

5. The regime comprises sufficient mechanisms to enforce implementation and compliance

The safety case needs to be accepted by the HSE. If the HSE does not agree with the contents of the case, operations may not be started. On top of this there are 4 key areas of sanctions.

First, there are a number of informal sanctions. These include verbal advice and letters. Second, there are enforcement notices which give companies a certain period to rectify a situation. If this does not happen they are liable for prosecution. Third, there are prohibition notices. These are issued if there is a breach of legislation which is of such gravity the HSE wants to put operations to an immediate halt. Fourth, and last, there is prosecution. There is an unlimited fine in the High Courts. The HSE singles out the prohibition notice to be its most effective enforcement tool. There have been instances in the past where operations were stopped for months. This means an operator looses million of pounds a month (HSE interview, 2011). Greenpeace UK did not indicate to have any problems with these sanctions (Greenpeace UK interview, 2011).

6. It could not be conclusively established if the regime is sufficiently robust to cope with challenges caused by internal affairs

There is cooperation between regime actors through Step Change in Safety. This tripartite partnership includes members from government, industry and workers unions. In addition, HSE and DECC work together in a lot of areas. Following the Deepwater Horizon disaster the relation between the HSE and DECC is closer than ever. There is a Memorandum of Understanding between them (HSE interview, 2011). Concerning dispute settlement, appeal to an HSE decision in relation to the Offshore Installations (Safety Case) Regulations can be made to the Secretary of State (Offshore Installations (Safety Case) Regulations 2005). Other disputes, e.g. about the granting of a consent following an environmental assessment, are settled in court (Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999). The cooperation between regime actors, especially between the HSE and individual companies, seems less profound than in the Netherlands and Norway. The safety case approach has an extensive documentation phase in which there is little deliberation between both parties. This does not necessarily impact on the regime's internal robustness; it may simply be a difference in culture.

It is unclear whether or not the UK's liability regime suffices. Liability is effectively managed by OPOL (OPOL, 2012). The Petroleum (Production) (Seaward Areas) Regulations 1988 only

set the general requirement for companies to have insurance for damage potentially caused by their activities. Based on these regulations the DECC requires all offshore companies to be a member of the OPOL scheme. The scheme has a cap of $250 million on the damages that can be paid. This cap is considered to be adequate for the vast majority of operations on the UK continental shelf. Those operations which might cause more damage are located near the Shetlands, beyond North Sea perimeters (OSPRAG, 2011). This view, however, is not shared by Greenpeace UK. In the light of the damages that flowed forth from the Deepwater Horizon oil spill – which amounted to billions rather than millions of dollars of damage – they want to see a much higher limit. On top of that Greenpeace argues that the definition of environmental damage used by OPOL is at best unclear. An additional lack of clarity resides in pinpointing who is liable – the hierarchy in liability (Greenpeace UK interview, 2011).

In response to Deepwater Horizon the procedures for ensuring financial responsibility have changed. The DECC carries out a check hereon before it grants a license to an oil company. Previously this check was primarily focused on the ability of a company to perform the desired activity. One of the outcomes of the OSPRAG group is that the DECC from now on also checks if a company is financially capable to cap any flow of oil, to drill a relief well and to bear the costs of remedial measures and compensation to third parties. The latter is also covered by OPOL, but if costs are projected to be higher than as provided in OPOL a company must demonstrate an additional level of provision (OSPRAG, 2011).

The above discussion paints a mixed picture. Especially the rules for financial responsibility are difficult to interpret. Given there are two opposing views on the matter (OSPRAG versus Greenpeace UK) and the observation that the OPOL cap is an order of magnitude lower than Deepwater Horizon damages it is safe to say that additional research is warranted.

7. It could not be conclusively established if the regime is sufficiently robust to cope with challenges caused by external affairs

No signs of external issues impacting on the regime were identified in the interviews. Such issues have, however, not been actively brought into the discussions. One of the issues of

interest here is whether or not economic considerations could play an illegitimate role in decision-making processes within the regime. Licensing is in the hands of the DECC. They also collect the revenues. The granting of licenses does not include any safety aspects (HSE interview, 2011). The process does include environmental considerations through the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001. These regulations, however, provide a way to circumvent environmental problems in case of overriding public interest. Environmental interests need to be weighed against economic interests. Ultimately the decision is made by the DECC which has a mandate to look after both environmental and economic interests. Greenpeace UK noted that this comes across as a little schizophrenic (Greenpeace UK interview, 2011). Because the licensing procedure could not be looked into in detail it could not be ascertained whether or not there are sufficient safeguards to prevent economic considerations to supersede the attention that ought to be paid to safety and the environment.

8. The regime is able to adapt to changing requirements when necessary

The Step Change in Safety partnership allows for continuous improvements in the industry. Following the Deepwater Horizon disaster there was a parliamentary select committee (the Energy and Climate Change Committee) which looked at offshore drilling (ECC, 2011). There has also been an independent review of the way HSE, DECC and the MCA work together. On top of that the HSE has worked closely with the European Commission on the proposal for new regulations (HSE interview, 2011). Oil & Gas UK initiated the Oil Spill Prevention and Response Advisory Group (OSPRAG) to evaluate the quality of the UK accidental oil spill regime in the wake of the Deepwater Horizon disaster (OSR interview, 2011). The review reportedly exhibited an unprecedented level of cooperation and collaboration across the UK oil and gas industry, its regulators and trade unions. The OSPRAG group encompassed review groups on technical issues, oil spill emergency response, indemnity and insurance and European and international issues. The final report produced a wide number of (some quite detailed) results and recommendations. Most notable are the OSPRAG cap, designed to cap a well after a blow-out, and the set up of two forums. One on well life cycle practices, the other on oil spill response (OSPRAG, 2011).

9. Transparency is ensured

Greenpeace UK specifically targeted transparency as a major concern in the UK regime. They argue companies try to downplay incidents and the HSE is not open about how any incidents are resolved (Greenpeace UK interview, 2011). The HSE seems to be self-conscious of the need for increased transparency. There is acknowledgement of the fact that they do not have it 100% right at the moment. The HSE reports to be developing their system on this issue. The aim is to come up with ways in which the emerging findings from investigations of industry can be shared (HSE interview, 2011).

10. It could not be conclusively established if regime bodies have adequate and secure means to perform their tasks

The ageing of installations and infrastructure on the UK continental shelf is identified as a serious issue. This increases proneness to accidents and oil spills (OSR interview, 2011). On top of that Greenpeace UK argues that the quality of industry risk assessments is insufficient, as reflected in a recent oil spill off the coast of Aberdeen. These two issues place certain requirements on the inspection regime of the HSE. Greenpeace UK is of the opinion that this inspection regime is nowhere near comprehensive enough, probably due to lacking resources – Greenpeace UK believes this causes the HSE to be unable to check every single risk assessment and every single drilling rig (Greenpeace UK interview, 2011).

The HSE has a good knowledge base. The HSE's offshore department has roughly 100 inspectors. These are split into a variety of specializations: drilling engineers, reservoir engineers, as well as inspectors with expertise in human factors, fire and explosion, emergency response, maritime engineering and so on. The offshore department can also draw on expertise available elsewhere in the HSE. External consultants may be hired as well. For each of the disciplines there is a discipline head. There are training and development processes to keep people up to date. Reportedly, people working for the HSE are often leading in cooperative projects with other organizations like Oil & Gas UK. Such projects, take for instance Step Change in Safety or the OSPRAG evaluation of the UK regime, help to

spread the knowledge of the HSE and help the HSE to gain knowledge as well (HSE interview, 2011).

The above provides a mixed picture. The issue raised by Greenpeace UK may seriously undermine the regime. However, given that no other sourced could be consulted to confirm or refute their view, further research is desirable before placing a conclusive verdict.

11. Relevant regime bodies have shared goals with regard to system safety

The HSE's mission is to protect people's health and safety by ensuring risks in the changing workplace are properly controlled (HSE, 2012). One of the priorities of the DECC is to 'manage our energy legacy responsibly and cost-effectively' (DECC, 2012). The aim of Oil & Gas UK is to strengthen the long-term health of the offshore oil and gas industry in the UK by promoting an open dialogue on technical, fiscal, safety, environmental and skills, and brokering issues (Oil & Gas UK, 2012). Obviously the emphasis on to be addressed topics differ per organisation, but there is conformity in the fact that safety is identified by all to be important.

12. It could not be established if the regime encourages management commitment to safety amongst oil companies

This issue was not addressed in the interviews, nor is there any other relevant data available.

13. Responsibilities and tasks of regime bodies are clearly delegated and mapped

Simply put, the HSE is responsible for the left hand side of the bow-tie model, whereas DECC is responsible for the right hand side. One exception is the protection of workers after an incident has occurred; this is the terrain of the HSE as well. The HSE is the principal agency dealing with safety issues, in particular in relation to the working environment. The DECC is responsible for licensing and the arrangements of companies' in the area of oil spill response. Unrelated to the regime discussed here, the DECC is the principal agency for all

matters related to the environment. This includes regulating operational oil spills. The separation of tasks between the HSE and DECC is facilitated by a Memorandum of Understanding (HSE interview, 2011).

14. There are good procedures in place for regulatory agencies to determine their priorities

In principle the HSE's priorities are determined on the basis of common sense. The HSE keeps a continuous eye on what may be areas of concern within the industry. Data provided by the industry is analyzed, as well as results from accident investigations and inspections. By synthesizing this information the HSE gets to reach its priorities (HSE interview, 2011). Current priorities are the prevention of major hydrocarbon releases, ageing and life extension, well control, regulatory review, leadership, workforce involvement, occupational health and stakeholder engagement (HSE, 2012).

15. It could not be conclusively established if regulatory agencies are independent

The HSE recognizes the threat of declining independence and takes actions to mitigate the threat. Inspectors are rotated so they are not dealing with the same operator for extended amounts of time. Additionally there are clear processes for taking important decisions. There are occasional peer reviews and managers have the task to keep an eye on the quality of the work. The HSE is of the opinion that there is too much internal scrutiny for the threat to materialize. Another issue regarding independence was already touched upon above and refers to the mandate of the DECC. They are a sponsoring department for the UK's oil and gas industry, meaning that they are to encourage the development of offshore oil and gas exploitation and to increase its profitability (HSE interview, 2011). They are the collector of revenues in relation to the licenses as well. On the other hand the DECC has to make sure the offshore industry operates prudent with regard to the environment. These objectives may not always coincide. As was mentioned, DECC may seem a bit schizophrenic according to Greenpeace UK (Greenpeace UK interview, 2011). Even though elaborate checks exist to prevent any bias towards industry interests, more thorough research on the independence issue is warranted to irrefutably establish whether or not current practices are satisfactory.

16. Industry cooperates internationally to establish safe practices

The primary vehicle for the UK industry to improve its safety is Step Change in Safety. The workgroups of Step Change are the vehicle's engine: they identify opportunities to drive improvements in industry's health and safety performance. There are workgroups, which tackle the issues of asset integrity, competence, human factors and workforce engagement (Step Change, 2012). Oil & Gas UK participates in international cooperation through the NOIA and OGP (Oil & Gas UK, 2012). In addition they are the UK representative in the OCES agreement for cooperation among companies on oil spill response (OCES, 2011).

17. It could not be conclusively established if environmental considerations are incorporated in decision-making around allowing for oil exploitation activities in a clear, consistent and scientifically prudent manner

The Natura 2000 network (following the EU Habitats and Bird Directive) is taken into account through the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001, but the nature of the assessment carried out for that purpose is unclear, i.e. does not follow explicitly from the Regulations. The topic has not come up for discussion during the interviews, so no expert opinion is available on the issue. It is simply stated that an 'appropriate' assessment will be carried out. Furthermore, the Regulations do not make clear if only the effects of placing of the installation are taken into account, or if the assessment also takes into account any impact from pollution as a consequence of a potential oil spill. Without such information no conclusive verdict can be placed on this criterion.

18. The regime has proper procedures for establishing that oil companies that want to drill are competent

The UK regime has a somewhat different way of ensuring the competence of operators than the regimes of the Netherlands and Norway. The latter two have a licensing procedure in which companies must show they have the capability to safely perform the activities they intend to undertake. The UK licensing process does not include any safety aspects. However,

in the UK the safety case has to be formerly accepted. This means that the HSE can impose that significant changes and improvements have to be made before operations can commence (HSE interview, 2011). I assume this formal acceptance provides an opportunity for the HSE to ensure the operator is competent. This has, however, not been explicitly discussed in the interviews. Based on the above assumption the criterion is determined to be met.

19. It could not be established if safety measures are taken and regularly reviewed based on state-of-the-art expertise and up-to-date hazard identification

The issue did not come up in the interview with the HSE and neither consulted legislation nor information on the HSE's website provided a clear picture of established procedures for the review of safety measures.

20. It could not be established if diverging views regarding involved systems and their associated risks are respected and accounted for

This criterion was not extensively discussed in any of the interviews, neither are there any documents available which outline how the inspection regime of the HSE takes into account multiple perspectives on safety. On a higher level diverging views are discussed in such forums as Step Change in Safety. It was mentioned that the HSE tries to make sure its priorities match with the industry and vice versa (HSE interview, 2011), but this is not a sound enough basis for making a judgement on this criterion.

21. It could not be established if redundancy is (mandated to be) built into safety systems of the oil industry

The topic did not come up for discussion in the interview with the HSE, nor does inspected legislation clearly and explicitly set out requirements for multiple independent barriers to encapsulate risks.

22. It could not be established if safety measures are duly implemented

This criterion aims to establish if there are time-lags in how the regime works. Similar to the Netherlands and Norway the available does not allow for a verdict on this issue.

23. It could not be established if authority for execution of safety measures is delegated to lower levels and if there is adequate conceptual slack thereto

The goal-setting nature of legislation is an indication that it is likely that at least to some degree authority is delegated to lower levels and that there is conceptual slack. Given the similarities in working procedures between the three discussed countries discussed it can be assumed that as this criterion is met in the Netherlands it is likely to be met in the UK as well. However, the issue was not covered in the interviews. Therefore, no final verdict is issued on this criterion.

9.4 Evaluation of national regime of the United Kingdom for the response to oil spills at the North Sea

Based on the sources that were briefly introduced in section 9.2 and interviews with relevant organizations (section 1.3 shows which were consulted) we evaluate the national regime of the United Kingdom regime for the response to oil spills at the North Sea in line with the criteria constructed in chapter 5. The result of the evaluation is shown in table 11, below. The table lists the different criteria, the verdict of whether or not the criteria are met, the associated indicator(s) and the source(s) from where the indicators originated.

Table 11 – Results of the evaluation of the national regime of the United Kingdom for the response to oil spills from drilling platforms at the North Sea

Criterion	Met?	Indicator(s)	Source(s)
General regime characteristics			
1. The regime encompasses all relevant actors	+	Oil companies are first to act; DECC approves oil pollution	HSE interview; NCP

		emergency plans; MCA can decide to deploy national assets; SOSREP has ultimate authority; NGOs involved through the Environment Group	
2. The regime addresses all issues that relate to the problem it was designed for	+	Legislation describes industry's and the state's responsibilities; NCP describes coordination of government response	Legislation; NCP
3. Commitments that follow from the regime are sufficiently stringent and binding	+	Goal setting regulation works	OSR interview
4. The regime comprises sufficient mechanisms for reviewing implementation and compliance	+	DECC reviews private oil pollution emergency plans; SOSREP monitors private response efforts	HSE interview; Legislation; NCP
5. The regime comprises sufficient mechanisms to enforce implementation and compliance	+	Contents of oil pollution emergency plans outlined in legislation; The DECC must approve before oil drilling can commence; During a spill the SOSREP has enforcement authority; Sanctions, see previous section	Legislation; DECC website; NCP; See table 10
6. The regime is sufficiently robust to cope with challenges caused by internal affairs	?	No data	N.a.
7. The regime is sufficiently robust to cope with challenges caused by external affairs	?	Too little data; Procedure for consenting with oil spill response plans unclear	N.a.
8. The regime is able to adapt to changing requirements, when necessary	+	Relevant UK regime bodies reviewed oil spill response after Deepwater Horizon in OSPRAG; Forums and work groups were established; A well-capping device was developed	OSPRAG report
9. Transparency is ensured	?	Greenpeace UK wants oil pollution emergency plans to be published; Laws and regulations unclear;	Greenpeace UK interview; Legislation

		View of the DECC, the MCA and Oil & Gas UK not obtained	
10. Regime bodies have sufficient means to perform their tasks	–	Budget cuts are imminent threat; SOSREP unhappy	RWS NZ interview
National oil spill response system			
11. The national oil spill response system is properly compatible with relevant legislation and internally congruent	–	NCP compatible with relevant legislation; Juridical responsibilities mapped; There is a major problem of congruence between the NCP and industry plans	OSR interview; Legislation; NCP
12. The national oil spill response system is comprehensive and clear	–	Unclear how a national response is triggered; Overly focus on juridical matters renders it ineffective as action document	OSR interview; NCP
13. The national response system is based on adequate knowledge of the nature of potential oil spill situations	–	Industry oil pollution emergency plans incorporate risk and vulnerability analyses; The NCP does not incorporate such knowledge	OSR interview; OSPRAG report
14. There is a clear understanding of the tasks that need to be performed, and these tasks are fully set out	+	NCP describes all potential counter pollution strategies	NCP
15. There are adequate human resources, and there is a clear understanding of when and how they are to be deployed	+	Lines of communication are set out; Clear command structure; International assistance is outlined; Procedure for approval to use dispersants is included	NCP
16. Mechanisms for maintaining the emergency response arrangements operable and up to date are in place	+	Major SOSREP exercise every 5 years; Wide variety of other exercises; Sula exercise showed that exercises make a difference	RWS NZ interview; IBP NZ; Mining Decree; Mining Regulation
17. The regime incorporates a proper strategy for stopping the flow of oil after a well blow-out	+	No specific legislative requirements; OSPRAG capping device ought to stop uncontrolled oil flows	Legislation; OSPRAG report

Oil spill response equipment			
18. There are adequate physical resources, and there is a clear understanding of when and how they are to be deployed	?	NCP does not go into this issue; Not covered in interviews either	N.a.
19. The regime encourages significant efforts of research and development to improve oil spill response resources and knowledge of their effectiveness	?	Legislation does not go into this issue; Not covered in interviews either	N.a.

1. The regime encompasses all relevant actors

Operators of offshore installations bear the primary responsibility for preventing pollution. They are first to act in accordance with their oil spill response plan (NCP, 2006). These plans must be approved of by the DECC, which also performs inspections to verify the response competency in relation thereto (HSE interview, 2011). If the scope of an oil spill extends beyond the capability of the operator, and the private arrangements (like the OCES) he can make use of, the MCA can decide to deploy national response assets. In such a case the Secretary of State's Representative for Salvage and Intervention (SOSREP) of the Department for Transport is informed. The SOSREP can issue directions and as such would be the ultimate authority in the coordination of a major oil spill response effort. NGOs are involved through the Environment Group, which during oil spill response *inter alia* coordinates environmental information, assists in the coordination of NGOs involved in shoreline response and gives advice to the SOSREP, MCA and local authorities. Participating NGOs are English Nature, Countryside Council for Wales, Scottish Natural Heritage and the Joint Nature Conservation Committee (JNCC). The latter is the forum through which the former three deliver their statutory responsibilities for the UK as a whole and internationally (NCP, 2006).

2. The regime addresses all issues that relate to the problem it was designed for

The responsibility for operators to ensure effective emergency response is laid down in the Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations. These regulations require operators to have a tested emergency plan for the installation to be in place, to have appropriate equipment to perform the response and adequate emergency preparedness through clear command structures and sufficient training (Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995). The Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998 more specifically require an emergency plan for oil pollution. The plan must be sent to the MCA, be congruent with the NCP and be regularly reviewed. The intervention powers of the SOSREP are established in the Offshore Installations (Emergency Pollution Control) Regulations 2002. The NCP, based on the Merchant Shipping Act 1995, outlines the coordination of when and how national response resources will complement private resources and illuminates the coordination thereof (NCP, 2006).

3. Commitments that follow from the regime are sufficiently stringent and binding

The OSR states that goal setting regulations works. The regulatory model in the U.S. is more prescriptive, making it easier to get around the rules. Take the theoretical recovery rate of response equipment: if one puts a massive pump on a skimmer this rate would go up. But a skimmer never works at maximum capacity. Prescriptive regulations are more susceptible to fiddling by messing around with the numbers (OSR interview, 2011).

4. The regime comprises sufficient mechanisms for reviewing implementation and compliance

The DECC reviews oil spill response plans and performs inspections to test the response competence of offshore operators (HSE interview, 2011). Furthermore, the Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998 require the oil spill response plan to be submitted for approval to the MCA as well. In

the event of a major spill the SOSREP will monitor the progress of private response efforts (NCP, 2006).

5. The regime comprises sufficient mechanisms to enforce implementation and compliance

The sanctioning regime is similar to that outlined for the prevention regime in the previous section. Demands on all relevant issues are incorporated in laws and regulations (see above), making them legally enforceable. The DECC must approve of the oil spill response plans of oil companies before consents are issues that are needed to start oil exploitation activities (DECC, 2012). During the response to an oil spill the SOSREP has the authority to "exercise intervention powers […] to what ever extent is required in the public interest and may take control of the incident, by issuing directions" (NCP, 2006, p. 23). In other words, in the event of a spill the SOSREP has close to unlimited enforcement powers.

6. It could not be established if the regime is sufficiently robust to cope with challenges caused by internal affairs

Unfortunately the DECC, the MCA and Oil & Gas UK could not be interviewed. Therefore no assessment of their mutual relationships could be performed.

7. It could not be established if the regime is sufficiently robust to cope with challenges caused by external affairs

Similar to what has been discussed in the previous section under the same criterion, the decision-making process of the DECC could not be looked into in detail (in this case pertaining to approval of the emergency response plans).

8. The regime is able to adapt to changing requirements, when necessary

The most notable effort to improve the UK's response regime following the Deepwater Horizon oil spill was the review of the UK oil spill response strategy performed in OSPRAG.

The conclusion was that this strategy is essentially robust. Some gaps in knowledge and uncertainties were identified, especially in regard of the use of dispersants and shoreline response. In reaction hereto the Oil Spill Response Forum was recommended to be established, under the governance of Oil & Gas UK. This forum would serve to review strategies and share good practices among operators, regulators, nature conservation bodies and other organisations relevant to oil spill response. OSPRAG further proposes four work groups to ensure such issues as mentioned above are resolved. A perhaps more important result of OSPRAG is the development of a well capping device. The purpose of this device is simply to stop the flow of oil to by time for engineers to permanently seal the well (OSPRAG, 2011).

9. It could not be conclusively established if transparency is ensured

The main point of critique of Greenpeace on this issue in relation to oil spill response is that companies are not required to proactively publish and consult their oil spill response plans (Greenpeace UK interview, 2011). It could not be derived from the inspected laws and regulations if there are any requirements for making certain information available to the public (e.g. the occurrence of incidents). The previous section already touched upon HSE's recognition of improvements that could be made regarding transparency. As the view of the DECC, the MCA and Oil & Gas UK on this matter could not be obtained, this criterion cannot be judged.

10. Regime bodies do not have secure means to perform their tasks

The MCA, nor the SOSREP could not be consulted to discuss the matter. Greenpeace UK did not make any remarks on the issue. However, the interview with RWS NZ in the Netherlands revealed that budget cuts are an imminent threat to the UK response regime. Reportedly, the SOSREP was very unhappy about the fact that resources are declining while responsibilities remain the same. He was deeply concerned of this state of affairs (RWS NZ interview, 2011).

11. The national oil spill response system is properly compatible with relevant legislation, but its congruence with the individual response plans of oil companies is unsatisfactory

The NCP's legal basis is the Merchant Shipping Act 1995. The powers of the SOSREP are provided by the Offshore Installations (Emergency Pollution Control) Regulations 2002. The NCP devotes one chapter to a description of the juridical responsibilities for involved actors (NCP, 2006). Following an oil spill exercise, called 'Sula', it was found that government and industry were not "talking the same language." The oil spill response plans of individual operators generally use the Incident Command System (ICS) for command and control, while the government does not. The NCP is currently being rewritten, partly for this reason (OSR interview, 2011).

12. The national oil spill response system is not comprehensive and clear

The objective of the NCP is "to ensure that there is a timely, measured and effective response to incidents." It aims to achieve this by setting out "the circumstances in which MCA deploys the UK's national assets to respond to a marine pollution incident to protect the overriding public interest" (NCP, 2006, p. 12). The NCP, however, does not live up to its promise. It describes a tiered response concept in which tier 1 involves local response, tier 2 refers to regional response and tier 3 requires national response. The NCP continues by saying it does not lay down any rigid criteria for when a national response is triggered. In fact, it does not get any more specific than establishing that national responses *may* be triggered if the operator of an offshore installation does not have sufficient capacity to deploy the necessary equipment himself (NCP, 2006). Another problem is that the plan is overly focused on juridical matters. The OSR remarked that by combining a policy with an action document the effectiveness of the NCP as an operational plan is very much diluted. It was said that even though it is useful to have all formal issues sorted out, one simply wants to know what needs to be done when a situation has taken a turn for the worst (OSR interview, 2011).

13. The national response system is not based on adequate knowledge of the nature of potential oil spill situations

There is difference here between oil pollution emergency plans of operators and the NCP. The former do integrate knowledge from risk and vulnerability analyses (OSR interview, 2011). For each operation an operator determines the worst case scenario, models the potential directory of a spill and subsequently selects response options to mitigate potential impacts. This selection takes into account the location, potential to reach the shoreline and the presence of sensitivities (OSPRAG, 2011). For the NCP, however, such things are not very well incorporated. This is yet another reason why it is being rewritten (OSR interview, 2011).

14. There is a clear understanding of the tasks that need to be performed, and these tasks are fully set out

One of the appendices of the NCP describes what counter pollution operations at sea entail. Minor oil spills are allowed to disperse naturally. In case of a major oil spill the MCA can respond in several different ways. The NCP elaborates on the different strategies, clarifying the considerations made to decide on which strategy to follow. The NCP describes the monitoring of oil movement, satellite surveillance, dispersant spraying operations, mechanical oil recovery operations and in situ burning (NCP, 2006). All strategies are not outlined in very much detail. A general description is given, but how they are put in practice does not jump out of it. This ties in to the abovementioned shortcomings of the plan as an action document. Given that the tasks are set out – albeit not that detailed – and the issue of concern already has been incorporated in the judgement of another criterion, the current criterion is determined to be met.

15. There are adequate human resources, and there is a clear understanding of when and how they are to be deployed

The NCP clearly sets out the lines of communication and how the response will be coordinated. In case of a pollution incident on an offshore platform the operator must contact

an MCA Coastguard Rescue Coordination Centre (RCC). The RCC will initiate any search and rescue operation, if necessary, and report to the duty Counter Pollution and Salvage Officer (CPSO) of the MCA. If the CPSO decides activation of tier 3 response (i.e. response of a national scope) the SOSREP is informed. The MCA can set up a Marine Response Centre (MRC) for marine operations and a Shoreline Response Centre (SRC) for action on shore. When the SOSREP issues a direction an Operations Control Unit (OCU) is established to monitor operations and contain any potential pollution within the installation and its reservoir. It is the MRC who coordinates the response efforts at sea by deciding on the actions to be undertaken. As for the SRC the NCP refers to the contingency plans of local authorities in which is outlined how the response to shoreline pollution is coordinated. Appendices of the NCP indicate how international assistance (e.g. Bonn Agreement and NORBRIT agreement) can be called upon, what (human) resources are available and the procedure for approval of using dispersants (NCP, 2006).

16. Mechanisms for maintaining the emergency response arrangements operable and up to date are in place

There is a requirement for a major SOSREP exercise every 5 years. In the future this will be once every 3 year. Communication between industry and government is also tested a number of times a year. There are tests of communication lines, table top exercises and full out exercises (OSR interview, 2011). An interview with the MCA would have made a verdict on this criterion more robust. However, the Sula exercise (see criterion 11) caused the current NCP to be rewritten – an indication that reviews take place which may actually spur improvement when necessary. Consequently, this criterion is determined to be met.

17. The regime incorporates a proper strategy for stopping the flow of oil after a well blow-out

There are no specific requirements for well capping and/or containment in UK laws or regulations. However, part of the OSPRAG review carried out in the wake of the Deepwater Horizon oil spill was to develop improvements in this area. One of the results was the development of the OSPRAG capping device. It is designed to shut-in and hold pressure on

an uncontrolled subsea oil well. This capping device is now part of the oil pollution emergency plans of operators on the UK continental shelf. An exercise has been performed to test the UK industry's capability to deploy the OSPRAG capping device (OSPRAG, 2011).

18. It could not be established of there are adequate physical resources, and if there is a clear understanding of when and how they are to be deployed

The NCP does not elaborate on this issue.

19. It could not be established if the regime encourages significant efforts of research and development to improve oil spill response resources and knowledge of their effectiveness

The topic is not addressed as such in laws and regulations, and because the MCA was not consulted it has not come up in the interviews either.

9.5 Conclusions

The United Kingdom has a robust regime for accidental oil spills at the North Sea. The Piper Alpha disaster shaped the regime as it is today. The Health and Safety Executive's (HSE) offshore division is the government's supervisory agency on aspects of safety and working environment. The Department for Energy and Climate Change (DECC) is in charge of licensing and ensuring adequate oil spill response plans and competency of offshore operating companies. The petroleum industry is represented by Oil & Gas UK. Government, industry and workers unions participate in Step Change in Safety, an industry-led forum to spur improvements in the safety of the offshore sector. NGOs are mainly involved in the regime through public debate and participating in relevant procedures for the granting of licenses. The leading UK agency on oil spill response is the Maritime and Coastguard Agency (MCA). Whereas primary responsibility for oil spill response is placed with the oil companies themselves, the MCA becomes involved if an oil spill occurs which exceeds the capacity of the concerned operator(s). In case of a major oil spill the Secretary of State's Representative for Salvage and Intervention (SOSREP) of the Department for Transport will

take control. Complementing the industry and MCA local authorities are involved in oil spill response on the shores. A number of NGOs participate in the Environment Group, which coordinates environmental information, assists in the coordination of the involvement of NGOs in shoreline response and provides advice to the SOSREP, MCA and local authorities.

Legislation regarding accidental oil spills is comprehensive. The overarching piece of legislation is the Petroleum Act 1998. It establishes that the rights to petroleum are vested in the Crown and requires companies to apply for a license for the purpose of oil exploitation. The UK has a 'safety case' regime as laid down in the Offshore (Safety Case) Regulations 2005. This regime also resulted from the Piper Alpha disaster. In a safety case companies must demonstrate they have identified all major risks and that they have taken appropriate measures to control this risk in combination with a proper management system. The licensing procedure is outlined in the Petroleum Licensing (Exploration and Production) (Seaward and Landward Areas) Regulations 2004 and the Petroleum Licensing (Production) (Seaward Areas) regulations 2008. Minimum safety requirements are set through the Offshore Installations and Wells (Design and Construction, etc.) Regulations 1996 and the Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995. In the area of oil spill response the Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998 require operators to have oil pollution emergency plans. The coordination of oil spill response for the UK continental shelf is outlined in the National Contingency Plan for Marine Pollution from Shipping and Offshore Installations (NCP).

The UK regime for the prevention of accidental oil spills from drilling platforms at the North Sea meets the vast majority of criteria that could be used to evaluate its effectiveness. It needs to be mentioned, though, that the knowledge base for the performed evaluation is weaker than for the evaluation of the regime of the Netherlands and Norway. Some key actors – the DECC, Oil & Gas UK and the MCA – could not be consulted. Another consequence hereof is that there are many criteria on which no verdict could be placed. Similar to the Netherlands and Norway also the UK has a regime which is largely goal setting. Those organizations which were consulted appreciated this. The tripartite Step Change in Safety partnership is

valued as well in its contribution to cooperation on safety issues and the improvements it fosters by sharing and adopting best practices. The key to the robustness of the UK regime for the prevention of accidental oil spills is the safety case that needs to be provided by offshore operators. Contrary to the Netherlands and Norway there is a formal process of approval. The HSE has the authority to impose whatever changes and improvements to be made to the safety case as it deems necessary, before an operator may start operations. The safety case regime was seen as a very good example of what an adequate regime looks like in the Deepwater Horizon accident report. An important criterion which was not met relates to the regime's transparency. Greenpeace UK voiced great concerns over the little amount of information provided by the HSE as it comes to incidents and how they are resolved. The HSE recognizes this and reports to be working on improvement on the issue. Other issues of concern require further study before a definitive judgement can be made on the extent to which they hamper the effectiveness of the regime. This includes liability (the current regime may be unclear and the central scheme used for paying damages may have a rather low cap) and HSE resources (which might be insufficient in light of ageing offshore installations).

The evaluation of the UK regime for the response to oil spills is clouded in uncertainty as the MCA was not interviewed and as the current NCP which guides response efforts is currently being revised. The regime outlined the coordination of oil spill response in a clear and elaborate way. The NCP establishes the lines of communication and line of command when the response becomes national. The SOSREP has the ultimate authority and can make what ever directions are necessary to ensure a proper response. In response to the Deepwater Horizon oil spill a unique well capping device was developed (the 'OSPRAG cap') which can seal an oil well after a blow-out has occurred. This puts the UK in a very good spot when a Deepwater Horizon-type accident would occur on the UK continental shelf. The major problem with the UK regime is the insufficiency of the NCP. Its focus on juridical matters has diluted its effectiveness as an action document. It is far from as usable as the IBP NZ is as an operational contingency plan for the Netherlands. Additionally, the NCP and response plans from individual operators are incongruent as regards their command systems. Lastly, there may be a major problem with (upcoming) budget cuts for government oil spill response. This is may be a topic for additional research as well.

10. DISCUSSION

10.1 Comparison of the regimes of the Netherlands, Norway and the United Kingdom for the prevention of accidental oil spills

The descriptions and evaluations of the regimes of the Netherlands (chapter 7), Norway (chapter 8) and the United Kingdom (chapter 9) showed them to exhibit many similarities. The regimes of these nations (especially those of Norway and the UK) were shaped in response to a number of significant accidents. The Piper Alpha disaster in 1988 caused the field of government agencies in the UK to change and the safety case regime to be introduced. Similarly the Bravo blow-out at the Ekofisk oil field in Norway in 1977 spurred government oversight in Norway to change and led to the set up of the NOFO. Table 12, below, provides a comparison of the results of the performed evaluations of the regimes for the prevention of accidental oil spills for the Netherlands (NL), Norway (NO) and the United Kingdom (UK).

Table 12 – Comparison of the scores of the evaluations of the regimes of the Netherlands, Norway and the United Kingdom for the prevention of accidental oil spills from drilling platforms at the North Sea

Criterion	NL	NO	UK
1. The regime encompasses all relevant actors	+	+	+
2. The regime addresses all issues that relate to the problem it was designed for	+	+	+
3. Commitments that follow from the regime are sufficiently stringent and binding	+	+	+
4. The regime comprises sufficient mechanisms for reviewing implementation and compliance	+	+	+
5. The regime comprises sufficient mechanisms to enforce implementation and compliance	+	+	+
6. The regime is sufficiently robust to cope with challenges caused by internal affairs	+	+	?
7. The regime is sufficiently robust to cope with challenges caused by external affairs	?	?	?
8. The regime is able to adapt to changing requirements when necessary	+	+	+
9. Transparency is ensured	+	+	+/–

10. Regime bodies have adequate and secure means to perform their tasks	+/–	+	?
11. Relevant regime bodies have shared goals with regard to system safety	+	+	+
12. The regime encourages management commitment to safety amongst oil companies	+	+	?
13. Responsibilities and tasks of regime bodies are clearly delegated and mapped	+	+	+
14. There are good procedures in place for regulatory agencies to determine their priorities	+	+	+
15. Regulatory agencies are independent	?	?	?
16. Industry cooperates internationally to establish safe practices	+	+	+
17. Environmental considerations are incorporated in decision-making around allowing for oil exploitation activities in a clear, consistent and scientifically prudent manner	?	+	?
18. The regime has proper procedures for establishing that oil companies that want to drill are competent	+	+	+
19. Safety measures are taken and regularly reviewed based on state-of-the-art expertise and up-to-date hazard identification	+	+	?
20. Diverging views regarding involved systems and their associated risks are respected and accounted for	+	+	?
21. Redundancy is (mandated to be) built into safety systems of the oil industry	+	+	?
22. Safety measures are duly implemented	?	?	?
23. Authority for execution of safety measures is delegated to lower levels and there is adequate conceptual slack thereto	+	?	?

10.1.1 Striking similarities

At first glance table 12 shows that similarities in scores abound. If more information were available on the regime of the UK this would perhaps have been even more so. Below some of the most striking similarities are discussed.

Field of actors

The mentioned accidents and years of fine-tuning have led to similar constructions of government oversight among the three nations. In the area of safety and working environment the SSM (the Netherlands), the PSA (Norway) and the HSE's offshore division

(United Kingdom) have very similar tasks. Notably these are all specialized bodies (in stead of some general labour inspection authority), reflecting the inherent complexity of overseeing such a technologically advanced industry. The regime bodies for granting licenses are similar as well. This is done by ministries (or department as it is called in the UK) as opposed to some lower level government agency. This reflects the fact that the rights of petroleum are vested in the State (or Crown). Licensing bodies are the Ministry of Economic Affairs, Agriculture and Innovation (the Netherlands), the Ministry of Petroleum and Energy (Norway) and the Department of Energy and Climate Change (the United Kingdom).

Nature of laws and regulations

The laws and regulations pertaining to oil exploitation in the three nations are characterized by their goal setting nature. In contrast to the situation in the U.S. there are only few specific, prescriptive commitments. This state of affairs is appreciated by virtually all experts, which were consulted on the matter. There is much to say in favour of goal setting regulation: it allows for continuous improvement, puts the burden of proof in the hands of the industry and prevents fiddling with numbers to comply with legal requirements.

Government oversight – inspections and sanctioning

Even though the specific ways may differ, the evaluations show that there are sufficient mechanisms for verifying implementation and compliance, and sufficient mechanisms of enforcement including by means of sanctioning. There are a lot of reporting requirements for companies towards the supervisory agencies of the three governments. Companies must show they have performed appropriate risk analyses and have taken sufficient measures to address any identified risks. Central to this is the management systems of oil companies which are heavily scrutinized by the SSM, PSA and HSE. Contrary to the Netherlands and Norway, the UK has a safety case regime requiring formal approval of the HSE before operations can commence. It could not be irrefutably established whether or not this actually makes much difference as similar consent systems exist in the Netherlands and Norway as well. Nevertheless, the safety case regime has been applauded in investigation reports

following the Deepwater Horizon disaster and the HSE indicates it provides them with a very good position to demand changes and improvements to be made if they feel that this is necessary. In the area of enforcement sanctions play a less pivotal role than one would perhaps expect. The kinds of sanctions between the different nations are very similar. They range from (informal) notices to let companies know they need to rectify a certain situation, to issuing fines, stopping operations and revoking licenses (or other forms of authorization). Among the sanctions the ability to stop an operation is generally considered to be the most effective: this would cost a company millions. However, sanctions are often seen as a last resort. The supervisory practices in the three nations are more cooperation oriented. If normal deliberation does not lead to the desired results sanctions are always there as back-up and the loss of reputation if a sanction is actually imposed is often reason enough for a company to want to comply.

Cooperation among government, industry and workers unions

One of the reflections of the general cooperative nature of the discussed regimes is the existence of tripartite institutions to discuss matters of safety and improvement of the sector's regulatory regime. In Norway this is done through the Safety Forum and the Regulatory Forum. In the UK this is done through the Step Change in Safety partnership. The oil industry in the Netherlands is too small for such institutions to be of any use. There are some minor differences in the tripartite systems of Norway and the UK. In Norway the system is led by the government: the PSA chairs both the Safety Forum and the Regulatory Forum. The tripartite system in the UK is industry dominated. Contrary to Norway the Step Change in Safety partnership has individual oil companies as members in stead of only their representative. The Step Change in Safety's leadership team mainly consists of industry delegates.

Independence of government

Identified as an area for further research, the question of regulatory independence was shown to be a real challenge throughout the regimes of the Netherlands, Norway and the

UK. Because of the technological complexity of the industry it is a small world: there is a lot of exchange of personnel between government and industry. Regulatory agencies have a lot of built in checks and balances to try to mitigate any possible threat of industry interests illegitimately finding their way into supervisory practices. Nevertheless it remains a contentious issue and it would be interesting to see if future research can establish whether or not current safeguards are satisfactory.

10.1.2 Striking differences

Table 12 also shows some notable differences in the outcome of the evaluations. Below some of the most striking differences are discussed.

Transparency

For the Netherlands and Norway no transparency issues were identified. Norway is even considered to have a particularly open society and a public information act which ensures a lot of information is shared with the general public. For the United Kingdom, however, transparency was identified as an issue in need of improvement. Greenpeace UK was greatly unsatisfied with the level of information sharing by the HSE. Whereas the SSM and the PSA publish a lot – the former e.g. the outcome of assessments of industry performance following the Deepwater Horizon disaster, the latter e.g. all audit reports – the HSE is not very open in publishing the outcomes of inspections and the way accidents are resolved.

Financial situation of government agencies

The current economic climate has the potential to cause problems in the Netherlands and the UK. For Norway this appears not to be the case. The SSM may face budget-cuts in the near future. On top of that a changing landscape of government officials (as partly caused by retirements) could actually require additional investment in knowledge. For the UK the picture was less clear, but Greenpeace UK voiced its concern over the ability of the HSE to perform all inspections needed to combat the ageing of offshore structures.

Environmental considerations in the licensing process

Whereas for Norway the general picture is that environmental considerations are taken along in decisions of where to drill in a scientifically prudent manner, this could not be shown for the Netherlands and the UK. The considerations made during the licensing procedure could be clearer, and the extent to which environmental and economic considerations are taken along in an equal manner could not be established. Further research is required.

Liability

The liability regimes of the Netherlands and Norway are clear. There is no cap on damages to be paid in the event of an oil spill. For Norway the issue is very explicitly arranged as the legislation states that no liability can be channelled through by operators to companies further down the chain. In the UK there is a responsibility for oil companies to be insured against any potential costs that flow forth from oil pollution. There may be some issues with the OPOL scheme which is the principal mechanism to fulfil this obligation. OPOL has a cap of $250 million, whereas the damages from the Deepwater Horizon oil spill were an order of magnitude greater. Additionally, Greenpeace UK was unhappy about the vagueness of some of the provisions in OPOL. Additional research is required to see if current liability practices in the UK are satisfactory.

10.2 Comparison of the regimes of the Netherlands, Norway and the United Kingdom for the response to oil spills

The picture for the response to oil spills for the Netherlands, Norway and the United Kingdom is less similar – both for how efforts of industry are regulated (approval of private oil spill response plans) and actual oil spill response operations. It must be noted that the knowledge base for the evaluations was less comprehensive than that for the evaluation of the regimes for the prevention of accidental oil spills. The oil spill response plan of the leading Norwegian organization, NOFO, could not be looked into. Additionally, the MCA

was not consulted to discuss in depth the UK government's involvement in oil spill response. Table 13, below, provides a comparison of the results of the performed evaluations of the regimes for the response to oil spills for the Netherlands (NL), Norway (NO) and the United Kingdom (UK).

Table 13 – Comparison of the scores of the evaluations of the regimes of the Netherlands, Norway and the United Kingdom for the response to oil spills at the North Sea

Criterion	**NL**	**NO**	**UK**
1. The regime encompasses all relevant actors	+	+	+
2. The regime addresses all issues that relate to the problem it was designed for	+	+	+
3. Commitments that follow from the regime are sufficiently stringent and binding	+	+	+
4. The regime comprises sufficient mechanisms for reviewing implementation and compliance	+	+	+
5. The regime comprises sufficient mechanisms to enforce implementation and compliance	+	+	+
6. The regime is sufficiently robust to cope with challenges caused by internal affairs	+	+	?
7. The regime is sufficiently robust to cope with challenges caused by external affairs	?	+	?
8. The regime is able to adapt to changing requirements, when necessary	+	+	+
9. Transparency is ensured	+	+	?
10. Regime bodies have sufficient means to perform their tasks	+/–	+/–	–
11. The national oil spill response system is properly compatible with relevant legislation and internally congruent	–	+	–
12. The national oil spill response system is comprehensive and clear	+	?	–
13. The national response system is based on adequate knowledge of the nature of potential oil spill situations	+	+	–
14. There is a clear understanding of the tasks that need to be performed, and these tasks are fully set out	+	+	+
15. There are adequate human resources, and there is a clear understanding of when and how they are to be deployed	+	?	+
16. Mechanisms for maintaining the emergency response arrangements operable and up to date are in place	+	+	+
17. The regime incorporates a proper strategy for stopping the flow of oil after a well blow-out	+	?	+

18. There are adequate physical resources, and there is a clear understanding of when and how they are to be deployed	+/–	?	?
19. The regime encourages significant efforts of research and development to improve oil spill response resources and knowledge of their effectiveness	?	+	?

10.2.1 Striking similarities

Table 13 shows that a number of criteria are met by all three regimes, but significantly less compared to oil spill prevention. The similarities between the regimes are a resultant of the maturity of the oil exploitation industry on the North Sea and of historical accidents that led mechanisms to be set up across North Sea nations to address pollution events. In all, there is a clear view on the tasks that need to be performed for an effective response. There is also a widespread recognition of the need for extensive training and exercising to be prepared when disaster hits. Lastly, following Deepwater Horizon profound learning processes were set in motion to provide better, and more congruent, government and industry response.

10.2.2 Striking differences

Table 13 also shows significant differences in the outcome of the evaluations. Below some of the most striking differences are discussed.

Field of actors

Government oversight on the oil spill response capacity of the industry is handled in distinctly different ways in the three nations. In the Netherlands this is done by the SSM which is the front office for all matters concerning the oil industry. In Norway this is done by Klif, an environmental agency. In the UK this task is performed by the DECC, a government department (or ministry) rather than an agency. The same can be said of operational oil spill response. In the Netherlands RWS NZ has the overall responsibility to handle oil spills. In conjunction with the Netherlands Coastguard it coordinates the efforts. In Norway this is done in a completely different way. Oil companies are expected to clean up their own mess and for this reason they have established the NOFO. Under normal circumstances this

cooperative takes care of the entire operation. The NCA just monitors, but if the situation so requires may assist or, and this has not happened before, may take over the operation. In the UK national oil spill response is coordinated by the SOSREP and the MCA. This is more similar to the situation in the Netherlands, albeit industry resources remain the primary assets in oil spill response.

Interoperability and congruence

As partly caused by the way the fields of actors are arranged there is a difference in the extent to which industry and government efforts of oil spill response fit together. The situation in Norway has caused a very homogenized system. The NOFO standardises the oil spill response plans of the companies and ensures they are congruent with its own plan. In the Netherlands, however, it was found that companies and government have a completely different view on how oil spill response is supposed to be managed. The companies assumed that RWS NZ would in principle clean up all the mess they made. Obviously, RWS NZ did not concur. In the UK there are a number of problems with the NCP. First, the congruence with the oil pollution emergency plans of the oil companies requires improvement. They use different systems for command and control, which causes both sides to speak another language. Additionally, the NCP is predominantly a document outlining juridical responsibilities which causes its effectiveness as an action plan (which the plan in the Netherlands does provide) to be diluted.

Financial situation of response organizations

The economic climate does not only pose a threat to the regime for the prevention of accidental oil spills, in the area of response the problem may perhaps be even greater. Similarly to the discussion of this issue above, Norway does not experience these threats. RWS NZ has indicated to expect budget-cuts in the near future – maintaining a national shipping company is rather expensive. Reportedly, the SOSREP has also voiced concern over the situation in the UK. He is unhappy with the fact that while resources are declining his responsibilities remain the same.

10.3 Limitations of the research

Broad approach

This thesis intended to provide a picture as complete as possible of current arrangements to prevent a similar catastrophe as that happened in the Gulf of Mexico with the Deepwater Horizon drilling platform. In designing a research one must balance the requirement to encompass the totality of an issue with the level of depth. I believe this thesis is somewhat skewed to the former. Taking along four regimes – international and the three concerning nations – and addressing practically all relevant matters has impacted on the potential for going in depth on many issues. This is reflected in the fact that a significant number of criteria could not de judged.

Lack of a technical or juridical background

A lot of criteria, especially those that were derived from disaster studies, require knowledge of a technical or juridical nature to judge them conclusively. It has been the intention to draw as much as possible on the opinions and knowledge of consulted experts. However, doing semi-structured interviews causes not every topic to be discussed. The discussion of the different criteria has been accompanied by an illumination of what has been the basis for any judgement. I realize, however, that these judgements may sometimes be educated guesses rather than firmly grounded in scientific evidence. Where relevant, calls were made for more specific research into the matter.

Subjectivity

Deciding whether or not a criterion is met ultimately remains a matter of opinion. It cannot be stressed enough that others may have made other judgements. Especially in those areas where little information was available or where the lack of technical or juridical knowledge hampered the knowledge base upon which a verdict was placed this is a significant issue.

Choices that were made have been tried to be explained and it is up to the reader to decide whether or not to agree with them.

Sources of information

There are some significant omissions in the sources used to evaluate the regimes. For Norway a major omission is the overarching NOFO plan on the basis of which oil spill response is coordinated. The interview with an expert from the NOFO was very helpful and did touch upon a lot of the relevant issues related to this plan, but the information could not be verified by looking into the plan itself. For the UK the challenge has been even greater. Financial circumstances and time constraints did not allow for interviews to be conducted with the DECC, Oil & Gas UK and the MCA. This has impacted severely on the quality of the assessment of the regime of the UK. Additionally, the NCP was being rewritten at the time of writing this thesis making it likely that any judgements on the response regime of the UK may be outdated the moment the new plan sees daylight. For the Netherlands the same was true, but fortunately the concept version of the new plan (the IBP NZ) could be looked into.

Skewed field of consulted experts

Given that it has been the aim to base the evaluations as much as possible on the opinions of consulted experts the composition of the group of experts per country is inescapably a variable in the outcome of the evaluations. Not surprisingly, actors actively involved in the regime (both of government and industry) are generally less critical than relative outsiders would be. A lot of critical input came from the two consulted NGOs – Bellona (Norway) and Greenpeace UK. The fact that only two NGOs were consulted provides for a rather skewed field of consulted experts. This has been, however, a conscious choice as one cannot perform a sound evaluation of the regime without having a comprehensive view of how active regime bodies operate within the regime. More resources, in terms of time and money, would have allowed for consulting more people. In the Netherlands not a single NGO was consulted. An initial survey of the Dutch regime did not bring to the fore any NGO with a

particular interest in the matter. It has been mentioned in one of the interviews that this may be due to the relative small size of the Dutch oil exploitation industry.

No experts were consulted from oil companies

The voice of industry is incorporated in this thesis through interviews with experts from industry associations. However, no experts from oil companies themselves were consulted. Two reasons underlie this choice. First, it was expected that oil companies are less willing to share information about their performance and that of competitors. Second, industry associations were thought to have significant knowledge of the activities of their members, providing insight into the industry as a whole rather than into a single company. The case can be made, however, that individual oil companies might have provided more information about how the regime influences the day to day practices of oil exploitation activities.

Regime effectiveness versus adequacy

During the research a change was made in the terminology of the dependent variable: from regime adequacy to regime effectiveness. All conducted interviews involved the question of whether or not the expert at the other end of the table considered the current regime to be adequate. If the term effectiveness had been used other answers might have been given. I do not believe, however, that this change in terminology has impacted significantly on the obtained results – the definition of the dependent variable remained roughly the same during the research. The change from adequacy to effectiveness was made to stay closer to other studies in the field of regime analysis, which generally employ the latter term.

10.4 Reflection on theory

Literature criteria versus expert criteria

This thesis encompasses a rather comprehensive account of theoretical insights shaping the definitive criteria to evaluate the effectiveness of the regimes. This was done to ensure that

whereas subjectivity plays a major role in making judgements, the criteria on the basis of which judgements are made are as exempt of subjectivity as possible. This has had its merits, as during the interviews none of the criteria were questioned. Some minor adjustments were made, mainly in response to local preferences (e.g. for the regime to be goal setting) or to current topics of interest (e.g. focus on loss of well control). The most frequently recurring themes in the interviews were 1) a desire for the regime to be largely goal setting, 2) the importance of learning from incidents and taking actions pursuant thereto, 3) the necessity of clear responsibilities among regulatory agencies, and 4) good coordination and a clear line of command for oil spill response. All of these issues could be easily reconciled with, or were actually already addressed by, the evaluation criteria obtained through literature review.

Regime theory criteria

There is no ready-made list of evaluation criteria for the purpose of evaluating regimes in the way this thesis has tried to do. The prevailing strategies for evaluating regimes involve the construction of a counterfactual or some kind of collective optimum. However, because of several reasons (the nature of the regime, involvement of other types of knowledge) these strategies were not adopted. The evaluation criteria used are loosely based on a gathering of eminent regime scholars. There has been an elaboration on why the current criteria were chosen, but to say that the chosen method is truly scientific would be a rather blunt statement. It may be worth mentioning, though, that the list of criteria from regime theory in the end provided a very comprehensive evaluation tool. They did seem to grab the essence of the three regimes. I believe that if some day a more substantiated list of criteria were to be devised there would certainly be some similarities with the list employed in this thesis.

Reconciliation of regime theory with disaster studies

The criteria from regime theory are general in nature. The criteria from disaster studies are a lot more specific. Two major problems arose because of this. First, the criteria from disaster studies had to be tailored for application to a regime. In principle they target socio-technical systems and therefore incorporate a lot of information which (in terms of the current subject)

relates to the operation of oil companies rather than the regime and involved regime bodies. This matter has been tried to address, but still some loose ends remain (e.g. relating to the above discussed technical nature of some of the criteria). Second, bringing together two distinctly different types of theory has proven to be a major challenge. There has been a sincere attempt to merge as much criteria as possible, but still the resultant is a quite lengthy list of criteria. Further integration, or operationalization of regime theory criteria by means of disaster studies criteria, is likely to be both possible and sensible.

Disaster studies criteria and semi-structured interviews

Related to the above, the level of detail provided by the criteria from disaster studies poses challenges in relation to the strategy of doing semi-structured interviews. One cannot expect interviewees to allow an interview to last all day or to have them answer tons of additional questions through other types of contact. So, on top of there being an issue with the technical nature of some of the criteria, their number and specificity have caused a lot of them not to be addressed in the interviews. As table 12 and 13 show the vast majority of question marks refer to some rather specific disaster studies criteria that could not be integrated with those from regime theory.

11. CONCLUSIONS AND RECOMMENDATIONS

11.1 Conclusions

This thesis aimed to establish to what extent the regime for the prevention of and response to accidental oil spills from drilling platforms at the North Sea is effective. Effectiveness was defined as the extent to which the regime encompasses arrangements that can be expected to bring down the risk of major environmental damage as result of an oil spill to a level as low as reasonably attainable. Criteria were obtained from regime theory, disaster studies and the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. The study focused on international arrangements and national arrangements of the Netherlands, Norway and the United Kingdom. Experts were consulted both to strengthen the criteria obtained from theory and to provide insight in, and opinions about, the functioning of the regime. The overall conclusion is that there is a reasonably effective regime, but a number of significant issues need to be resolved before we can speak of true effectiveness.

The international regime for accidental oil spills from drilling platforms at the North Sea is fragmented. There are no overarching regime bodies on either the prevention or the response side of the regime. Neither is there any piece of overarching legislation. There is a plethora of EU directives which address relevant issues in relative confinement and there are a number of cooperative arrangements like the OSPAR Convention, Bonn Agreement, the IRF and the NSOAF. All this seems to be a reflection of North Sea states keen to retain their sovereignty in the field of offshore oil drilling while acknowledging the added value of cooperation. The regime meets the vast majority of criteria used to evaluate its effectiveness. Strong points are its combination of hard and soft law, its consensus fostering atmosphere and its provision of venues at which learning takes place. Following the Deepwater Horizon disaster all relevant regime bodies, each in their own way, worked to reconsider current practices and propose improvements. These efforts are reflected in a European Commission proposal for a new EU Regulation. This proposal addresses a great number of topics that were identified as areas for improvement. At the moment, the regime fails to address safety and environmental issues in licensing procedures, does not incorporate significant provisions for well control, there is no

adequate liability beyond the territorial seas and it does not encompass requirements for oil spill response plans of operators. Whereas the international regime can be considered to be reasonably effective, the omissions impact on the level of harmonization one would expect a truly effective regime to exhibit.

The national regime of the Netherlands for accidental oil spills from drilling platforms at the North Sea is clearly organized. The Netherlands has limited oil exploitation opportunities, but harbours significant amounts of gas. There is one supervisory agency which oversees all aspects of offshore drilling: the State Supervision of Mines (SSM). The SSM is the front office for all regulatory matters. The central piece of legislation it administers is the Mining Act. Operational oil spill response is the responsibility of Rijkswaterstaat Noordzee (RWS NZ) and guided by the Incident Control Plan North Sea (IBP NZ). The regime meets the vast majority of criteria used to evaluate its effectiveness. Consulted experts were unanimously satisfied with how the regime functions. The goal setting nature of the regulatory framework is greatly appreciated as well as the cooperative rather than coercive way in which the SSM enacts its supervision. Some points of concern are potential future budget-cuts which might impact on the quality of the supervisory regime and oil spill response, an unclear licensing process regarding the extent to which environmental considerations are properly taken into account, deficient interoperability of the national oil spill response strategy and that of the individual oil companies, and the exchange of personnel between government and industry which provides challenges for independence. The national regime of the Netherlands can be considered to be reasonably effective, while there is still considerable room for improvement.

The national regime of Norway for accidental oil spills from drilling platforms at the North Sea is rigorous. A number of serious historical accidents triggered the development of a clear network of players and an ambitious regulatory framework. The Petroleum Safety Authority Norway (PSA) is the government's supervisory agency and regulator on aspects of safety. The Climate and Pollution Agency (Klif) supervises the oil spill contingency planning of oil companies. The responsibility for oil spill response, contrary to in the Netherlands and the UK, resides virtually completely with the industry itself. To this end, the Norwegian Clean Seas Association for Operating Companies (NOFO) establishes and maintains oil spill

contingency plans and executes oil spill response activities. The regulatory framework consists of a number of goal setting regulations accompanied by more detailed regulations that outline how these goals ought to be achieved with a view on organizational, technical and operational barriers. The regime meets the vast majority of criteria used to evaluate its effectiveness. Consulted experts are unanimously satisfied with how the regime functions. The goal setting nature of the regulatory framework, its requirement for continuous improvement, the close cooperation between government, industry and workers unions (tripartite collaboration), the fact that responsibility for ensuring safe and environmentally sound operations remains with the operator at all times and the high level of transparency are all greatly appreciated. A point of concern is the availability of manpower to supervise emergency response planning of the industry and to sustain a prolonged oil spill response effort. Unresolved issues include the exchange of personnel between government and industry which may have an impact on the independence of government agencies, the comprehensiveness of the oil spill response system and the availability of sufficient physical response resources (the latter two are a resultant of the omission of the overarching NOFO plan into the evaluation). The evaluation has shown the national regime of Norway to be sufficiently effective, arguably the most effective one among its peers.

The national regime of the United Kingdom for accidental oil spills from drilling platforms at the North Sea seems to be robust on the preventive side while significant improvements are warranted for oil spill response. Given that fewer sources could be used for the evaluation of this regime, this conclusion is less substantiated than would be desirable. The Piper Alpha disaster to a great extent shaped the regime as it is today. The Health and Safety Executive's (HSE) offshore division is the government's supervisory agency on aspects of safety and working environment. They administer the central piece of safety legislation, which outlines the UK's safety case regime. By means of a safety case companies must demonstrate they have identified all major risks and that they have taken appropriate measures to control this risk in combination with a proper management system. The Department for Energy and Climate Change (DECC) is in charge of licensing and ensuring adequate oil spill response plans and competency of offshore operators. Guided by the National Contingency Plan for Marine Pollution from Shipping and Offshore Installations (NCP), the Maritime and

Coastguard Agency (MCA) is the leading agency for oil spill response. In case of a major oil spill the Secretary of State's Representative for Salvage and Intervention (SOSREP) of the Department for Transport will have ultimate authority. The regime for the prevention of accidental oil spills meets the vast majority of criteria used to evaluate its effectiveness, while the regime for the response to oil spills, albeit there is considerable uncertainty, fails to meet a number of important criteria. Strong points are the goal setting nature of the regulatory regime, the cooperation between government, industry and workers unions in the tripartite partnership Step Change in Safety and the formal process of approval in relation to safety cases. The latter is seen as a particular good practice according to the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. In the area of oil spill response there is clear coordination and the OSPRAG well capping devise, developed in response to the Deepwater Horizon oil spill, is a one of a kind apparatus for stopping the uncontrolled flow of oil after a blow-out. The two main issues of concern for the regime's effectiveness are suboptimal transparency of the HSE and a greatly insufficient NCP. The HSE is substantially less transparent with regard to providing information that could allow external scrutiny than its Dutch and Norwegian counterparts. The NCP's focus on juridical matters has diluted its effectiveness as an action document and it is not congruent with the oil pollution emergency plans from individual operators (in terms of command systems). Unresolved issues include the potential insufficiency of the UK's liability scheme and a purported lack of resources for both the HSE (to enact sufficient oversight in light of ageing offshore installations) and government oil spill response (there may be some upcoming budget-cuts). The evaluation has shown, under strong proviso, that the national regime of the UK is reasonably effective, but there is still considerable room for improvement.

Preventing a next Deepwater Horizon? The regime at the North Sea certainly seems better equipped to prevent and respond to oil spills than its U.S. counterpart. Moreover, conditions at the North Sea are less conducive for a major blow-out than those in the Gulf of Mexico. Of course only time can tell if the current regime is able to effectively manage all unforeseen events that fate has in store. It would be a big mistake to think that there will ever be a time to rest on ones laurels. North Sea nations should foster their goal setting regimes and strive for continuous improvement. The road to safety is paved by unwavering vigilance.

11.2 Recommendations for improving regime weaknesses

The evaluations of the international regime and the national regimes of the Netherlands, Norway and the United Kingdom for accidental oil spills from drilling platforms at the North Sea showed a number of weaknesses (see the tables in chapters 6, 7, 8 and 9). Based on these weaknesses recommendations can be made to enhance the North Sea regime's overall effectiveness. They can, however, not thoroughly take into account such issues as (cost-) efficiency or political feasibility. This is beyond the current scope.

Recommendations to enhance the effectiveness of the international regime are:

- Adoption of the "Proposal for a Regulation of the European Parliament and of the Council on safety of offshore oil and gas prospection, exploration and production activities" (COM(2011) 688 final) without it being watered down;
- Establishment of an EU agency to harmonize supervisory practices across the North Sea, and;
- Using the Bonn Agreement as a vehicle to enhance harmonization of oil spill response practices across the North Sea in the field of government-industry relations.

Recommendations to enhance the effectiveness of the regime of the Netherlands are:

- Extensive consultation with industry to align oil spill response expectations, and;
- If budget-cuts are inescapable, requiring industry to take on more responsibility, e.g. through mandatory membership of OSR.

Recommendations to enhance the effectiveness of the regime of Norway are:

- Ensuring more manpower for assessing the adequacy of the oil spill response plans of operators, and;
- Taking into consideration whether the above could be realized through involvement of the PSA.

Recommendations to enhance the effectiveness of the regime of the United Kingdom are:

- Enhancing HSE transparency, for instance through yearly publication of a report similar to the 'trends in risk level' report issued by the PSA;
- Include in the new NCP oil spill scenarios in a similar vein as does its Dutch counter-part, the IBP NZ;
- In constructing the new NCP ensuring better interoperability with the oil pollution emergency plans of the companies, and;
- If budget-cuts are inescapable, considering whether or not closer relations with the OSR may provide a way out.

11.3 Recommendations for future research

Throughout this thesis issues came up that require further study. Most interestingly, though, would be to contrast the findings of the current research with studies into other regions. North Sea oil production has peaked and the corresponding regime is mature. Those regions where oil exploitation is only in its early stages, or where government institutions are not as nested as in the North Sea area, might benefit from taking along some of the strong points of the regime evaluated here. In this respect one may think of for instance African regions (e.g. Nigeria) or the Arabian Peninsula. Some other opportunities for future research are:

- A study into the desirability and feasibility of a formal cross North Sea system of assistance for prolonged oil spill response efforts, perhaps through the Bonn Agreement;
- Further examination of licensing procedures, with regard to both the opening of new areas and the criteria used for granting the license, of the Netherlands, Norway and the UK;
- Research into the independence issue of government agencies, with an eye on the exchange of personnel with the industry;

- Establishing whether or not the statement in the Capacity Memorandum 2006-2010 of there being insufficient response equipment in the Netherlands for oil spill response farther than 60 kilometres offshore still holds;
- A more elaborate investigation of the effectiveness of the UK regime for accidental oil spills involving, on top of those organizations included in the current study, the DECC, Oil & Gas UK and the MCA;
- A (perhaps juridical) study into the adequacy of the current liability regime of the UK with special reference to the OPOL scheme, and;
- Research into the extent to which the resources of the HSE are sufficient to perform sufficient inspections in light of ageing offshore installations.

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13. ANNEXES

13.1 Interview questions per consulted expert

Vincent Claessens 23-06-2011 (Staatstoezicht op de Mijnen, Den Haag)

- Kunt u een korte introductie geven van uzelf en uw rol binnen het SodM? Waar bestaan uw werkzaamheden uit?
- Hoe zorg je er voor dat in tijden van economische crisis bedrijven de veiligheid in het oog blijven houden?
- Hoe kun je hier als SodM iets mee?
- Zullen we dan nu wat vragen doornemen die nog niet ter sprake zijn gekomen?
- In hoeverre zijn er positieve prikkels of negatieve prikkels – sancties – verbonden aan het al dan niet schenden van deze wet- en regelgeving (carrot and stick)?
- Is er dan een verschil in benadering tussen Europa en de VS? Aangezien ik, als buitenstaander, het idee heb gekregen dat er op dit vlak in de VS juist veel fout ging, bijvoorbeeld bij de MMS.
- Welke verplichtingen gelden er voor bedrijven als het gaat om het rapporteren van zaken verwant aan de veiligheid van hun activiteiten?
- Veel mensen die werkzaam zijn bij het SodM komen uit de industrie. In hoeverre is het als gevolg daarvan moeilijk om onafhankelijk te blijven?
- Gebeurt het ook andersom, dat mensen vanuit staatstoezicht naar het bedrijfsleven gaan?
- Je zou je kunnen voorstellen, dat ook dit lastig is waar het gaat over onafhankelijkheid: dat het vooruitzicht van een baan in de industrie een impact heeft op de onafhankelijkheid van een inspecteur. Hoe kan je hiermee omgaan?
- Hoe verschilt de werkwijze in Nederland, van het SodM, van andere landen, bijvoorbeeld het Verenigd Koninkrijk en Noorwegen?
- Vanuit de visie en aard van de werkzaamheden van het SodM, aan welke criteria zou een goed regime moeten voldoen?
- In hoeverre beschouwt u het huidige regime (in zijn geheel, dus niet sec de wetgeving) als zijnde adequaat?
- Is dit alles te doen met 50 mensen, en qua budget?

Cees van Oosterom en Gert Jan Windhorst 05-07-2011 (NOGEPA, Den Haag)

- Kunt u een korte introductie geven van uzelf en uw rol binnen NOGEPA? Waar bestaan/bestonden uw werkzaamheden uit?
- Wat moet ik me voorstellen bij deze doelstellendheid?
- Wat is jullie achtergrond?
- Vindt het werk binnen de NSOAF ook zijn weg naar de regelgeving of gaat het daar buitenom?
- In hoeverre is concurrentie een beperkende factor in de samenwerking van bedrijven op het gebied van veiligheid?
- Welke doelstellingen liggen aan de veiligheidsactiviteiten ten grondslag?

- Welke wet- en regelgeving is van belang voor NOGEPA en haar leden, daar waar het om de veiligheid van oliewinning gaat?
- In het kader van verplichtingen vanuit wet- en regelgeving, wat moet er zoal gerapporteerd worden?
- Welke sancties bestaan er bij het niet naleven van wet- en regelgeving (of andere pos./neg. prikkels)? Wat is uw mening over de adequaatheid van deze sancties?
- Bestaan er compensatiefondsen zodat, mochten er ongevallen of olierampen plaatsvinden, getroffenen gecompenseerd kunnen worden? Zo ja, draagt de olie-exploitatie industrie hier aan bij?
- In het onderzoeksrapport n.a.v. Macondo werd onder andere geadviseerd om de cap die er op aansprakelijkheid staat hoger te zetten of los te laten. Wat vindt u hier van?
- In hoeverre beschouwt uw organisatie de bestaande wet- en regelgeving als adequaat? Hoe wordt tegen de mate van striktheid aangekeken? Wordt er teveel gereguleerd, of te weinig?
- Wat zouden, als het aan NOGEPA ligt, verbeterpunten kunnen zijn?
- Wat zijn in de ogen van NOGEPA de belangrijkste spelers als het gaat om de veiligheid van oliewinning op de Noordzee? Nationaal/internationaal?
- En NGO's?
- Hoe kijkt u aan tegen de samenstelling van deze groep actoren, ontbreken er belangrijke spelers of is de groep juist te groot?
- Om nog even in te gaan op de veiligheidszorgsystemen, welke rol speelt het concept 'redundancy' daarin?
- Hoe wordt dit up-to-date gehouden?
- Hoe zijn de verantwoordelijkheden behorend bij de bovenbedoelde systemen vastgelegd?
- Met welke partijen vindt overleg plaats, of wordt gecommuniceerd, in het kader van veiligheidssystemen en daaruit voortvloeiende taken en verantwoordelijkheden?
- En onder b.v. tijdsdruk beginnen aan een operatie terwijl er nog losse eindjes zijn, waarvan je zou kunnen denken dat lossen we gedurende het project wel op?
- Herkent u het beeld dat in tijden van economische neergang men huiveriger is om iets te rapporteren uit angst de baan te verliezen?
- In hoeverre zijn procedures rigide of bestaat er ruimte voor improvisatie?
- Vanuit de visie en aard van de werkzaamheden van NOGEPA, aan welke criteria zou een goed regime moeten voldoen?
- In hoeverre beschouwt u het huidige regime (in zijn geheel, dus niet sec de wet- en regelgeving) als zijnde adequaat?

Geerd Drost 06-07-2011 (Rijkswaterstaat Dienst Noordzee, Rijswijk)

- Kunt u een korte introductie geven van uzelf en uw rol binnen de Dienst Noordzee? Waar bestaan uw werkzaamheden uit?
- Wat zijn de taken/activiteiten van DNZ in relatie tot oliewinning op de Noordzee?
- Heeft DNZ zelf ook de equipment om in te grijpen bij een olielek?
- Heeft DNZ ook een adviesfunctie richting Minister van Infrastructuur & Milieu?
- Moet elke actie van een bedrijf dan eerst langs DNZ voor een definitief fiat?
- Welke wet- en regelgeving vormt de basis waarop de DNZ haar taken uitvoert? Internationaal/nationaal?

- In hoeverre maakt het voor de DNZ uit dat wet- en regelgeving doelstellend van aard is?
- Hoe vergewis je je er dan van dat de benodigde expertise ook bij de overheid aanwezig is?
- Wat voor middelen bestaan er (incentives) om bedrijven te pushen verbeteringen door te voeren als een en ander niet goed is geregeld?
- In hoeverre beschouwt uw organisatie de bestaande wet- en regelgeving als adequaat? Mate van striktheid? Te veel/te weinig gereguleerd?
- Wat moet er binnen DNZ gebeuren als wet- of regelgeving wordt aangepast alvorens men er mee aan de slag kan?
- Wat zijn in de ogen van de DNZ de belangrijkste spelers als het gaat om de veiligheid van oliewinning op de Noordzee? Nationaal/internationaal?
- Hoe kijkt u aan tegen de samenstelling van deze groep actoren, ontbreken er belangrijke spelers of is de groep juist te groot?
- En spelers bezijden overheid en bedrijfsleven?
- Over welke middelen en kennis – materieel, mankracht, kunde & financiën – beschikt de DNZ om haar activiteiten uit te voeren?
- Hoe beoordeelt u deze als crisismanager?
- Draagt 'de industrie' hier ook een steentje aan bij? Zo ja, gebeurt dit direct of indirect?
- Door wie wordt het budget van het DNZ vastgesteld? Op welke tijdstippen gebeurt dit, en voor welke termijn?
- Opereert de DNZ op basis van een of meerdere rampenplan(nen)?
- Hoe is dit plan tot stand gekomen?
- Kunt u uitleg geven over in hoeverre a) in geval van het bestaan van meerdere rampenplannen (bv. ook die van bedrijven) deze congruent aan elkaar zijn, b) (wettelijke) verantwoordelijkheden/taken in kaart gebracht zijn, c) stakeholders betrokken zijn (geweest) bij de inhoud ervan?
- Op basis van welke kennis is het rampenplan gesmeed, aangaande a) incidenten uit het verleden, b) risico- en kwetsbaarheidanalyses/scenario's, c) de betreffende systemen (het geheel van platformen, schepen en betrokken personen)?
- Hoe vindt coördinatie plaats als het gaat om a) het in werking treden van rampenplannen, b) communicatie tussen verschillende partijen, c) betrokkenheid van vrijwilligers of buitenlandse assistentie?
- Hoe wordt er voor gezorgd dat een rampenplan operationeel en up-to-date blijft (tests, oefeningen, trainingen, verspreiden van inhoud van rampenplan, etc.)?
- Hoe ga je om met de spanning tussen theorie en praktijk, d.w.z. het gevaar dat een rampenplan uiteindelijk niet meer voorstelt dan 'symbolic readiness'?
- Vanuit de visie en aard van de werkzaamheden van de DNZ, aan welke criteria zou een goed regime moeten voldoen?
- In hoeverre beschouwt u het huidige regime (in zijn geheel, dus niet sec de wetgeving) als zijnde adequaat?

Olaf Thuestad 19-07-2011 (Petroleum Safety Authority, Stavanger, Norway)

- Could you give a short introduction of yourself and your role within the PSA? What kind of activities are you personally involved in?

- Which activities related to oil exploitation at the North Sea does the PSA oversee – which phases of oil exploitation?
- How does monitoring take place – visits to the platforms or desk research?
- How are these priorities established (for follow up actions after a consent has been issued)?
- Are these barriers related to the concept of redundancy?
- What (overarching) goals form the basis for the PSA's activities?
- Is there a way to make sure that the data you get from the companies are reliable?
- At what time intervals are priorities reassessed?
- Which laws and regulations form the basis upon which the PSA conducts its activities?
- Would it not be more convenient if there was one authority overseeing all aspects related to the oil industry?
- And what about international regulations?
- To turn back to the national regulations, what commitments for companies exist, other than the ones we already discussed?
- Could you go into a little more detail with regard to the competency companies have to show to the PSA?
- To which extent are there positive or negative incentives – sanctions – involved in case of non-compliance (carrot and stick)?
- Seen as the Netherlands also has a goal based regime, how would you see the two regimes differ or look alike?
- Are there oil spill compensation funds so that in the event of a spill those affected can be compensated?
- To what extent does your organisation consider the current set of laws and regulations to be adequate? Strictness? Too much, or too little regulated?
- But there are a lot of differences with that situation, right? For instance what are the water depths at the North Sea?
- Would there be any room for improvement?
- If new laws or regulations were to arise, what would it take for the PSA to incorporate such changes into its workings?
- How long would it take after a regulatory issue has been taken up, before a change is actually implemented and the new regulation is in place?
- Which are, in the eyes of the PSA, the most important players with respect to the safety of oil exploitation at the North Sea?
- Is the PSA happy with the composition of this group of actors, are there any important actors missing, or is the group too large?
- Could you elaborate on how the PSA cooperates with other organisations for improving the safety of oil exploitation (e.g. within NSOAF and IRF, or with unions, Bellona, etc.)?
- What would be the added value of such forums in the maintenance and development of the regime?
- How does the PSA obtain knowledge, from within the organisation or from the outside? What are the backgrounds from the people working at the PSA?
- How can you keep acting independent in an arena with so many interlinked actors, in which practically everyone knows one another?
- How is the PSA financed? Who determines its budget?

- To what extent is it difficult, as external to the day to day operations, to keep up with developments in the industry and have the knowledge needed for effective supervision?
- Can you tell me how the Deepwater Horizon/Macondo disaster has impacted on the PSA? What has happened, besides the work in IRF already discussed?
- How does the PSA ensure that vigilance is high not only during or shortly after an incident, but also at times of relative tranquillity?
- Are there mechanisms through which people who work in the industry can anonymously report unsafe practices?
- What criteria would, as far as the PSA is concerned, have to be satisfied in order for the regime to be adequate? To what extent does the PSA consider the current regime (in total, so not solely the regulation) to be adequate?
- What can the different countries – Norway, UK, and Netherlands – learn from each other?

Kåre-Ludwig Jørgensen 20-07-2011 (NOFO, Sandnes, Norway)

- Could you give a short introduction of yourself and your role within NOFO? What kind of activities are you personally involved in?
- What are the tasks of NOFO concerning the safety of oil exploitation at the North Sea?
- Which activities belong to each of these barriers?
- What is the view of NOFO on the issue of using chemical dispersants?
- What (overarching) goals form the basis for the NOFO's activities?
- How is the NOFO financed?
- Is there any relationship between the activities of the NOFO and certain laws and regulations?
- On the international level?
- In difficult economic times, is there no resistance to so many all out training activities?
- What commitments for involved companies (and thus indirectly for NOFO) flow forth from these laws and regulations with regard to oil spill preparedness?
- How detailed are these commitments? Spelled out in minute details, or is there some leeway in how to implement them?
- To what extent does your organisation consider the current set of laws and regulations to be adequate?
- Which are, in the eyes of NOFO, the most important players with respect to the safety of oil exploitation at the North Sea?
- Does NOFO have any ties to Bellona as well, like with the WWF, or knowledge institutes?
- Is NOFO happy with the composition of this group of actors, are there any important actors missing, or is the group too large?
- Are there also forms of international cooperation, e.g. with regard to lending assistance in case of emergency, or with regard to sharing knowledge?
- How do these two organisations, NOFO and OSR, view each other?
- What resources – equipment, financial, manpower, knowledge – does NOFO have at its disposal to perform its tasks?

- Could you elaborate on what kinds of emergency plans form the basis for any action in the case of an oil spill?
- There is no operational role for Klif?
- Could you elaborate a bit on the 'national emergency preparedness model'?
- Could you elaborate a bit on the NOFO contingency plan, how was it developed?
- How does the dialogue between the companies and NOFO work, given that environment is no central goal of the operating companies, whereas this the central concern of NOFO?
- To what extent have (juridical) responsibilities have been mapped?
- Could you elaborate on the extent to which stakeholders are/have been involved in setting up the plan(s)?
- On the basis of what sort of knowledge has the emergency plan been crafted, regarding a) historical incidents, b) risk and vulnerability analyses/scenarios, c) the particular systems involved (platforms, ships, personnel, etc.)?
- How does coordination take place with respect to a) activating the plan(s), b) communication between different actors, c) involvement of volunteers or foreign assistance?
- To what extent is there an understanding of a certain amount of tension between theory and practice, i.e. that satisfaction with merely an emergency plan would amount to nothing but 'symbolic readiness'? And what can you do about it?
- Can you tell me how the Deepwater Horizon/Macondo disaster has impacted on NOFO? How has NOFO reacted?
- What criteria would, as far as NOFO is concerned, have to be satisfied in order for the regime to be adequate?
- To what extent does NOFO consider the current regime (in total, so not solely the regulation) to be adequate?

Gøril Tjetland 20-07-2011 (Bellona, Sandnes, Norway)

- Could you give a short introduction of yourself and your role within Bellona? What kind of activities are you personally involved in?
- How is Bellona financed?
- Which laws and regulations are important, in the eyes of Bellona, regarding the prevention of and response to oil spills?
- How does Bellona value these laws and regulations?
- What is done if it is found out that certain rules are not complied with?
- Are you aware of any oil spill compensation funds?
- How adequate would you say current regulations are, keeping in mind the function based aspect?
- Which are, in the eyes of Bellona, the most important players with respect to the safety of oil exploitation at the North Sea?
- What kind of knowledge is available within Bellona to get involved in such a specialized field?
- Is Bellona happy with the composition of this group of actors, are there any important actors missing, or is the group too large?
- Do you feel like Bellona has an actual influence if there are aspects of the regime that need to be improved?

- Can you tell me how the Deepwater Horizon/Macondo disaster has impacted on Bellona? Has Bellona reacted in any way?
- What criteria would, as far as Bellona is concerned, have to be satisfied in order for the regime to be adequate?
- To what extent does Bellona consider the current regime (in total, so not solely the regulation) to be adequate?

Alfred Nordgård 21-07-2011 (OLF, Sandnes, Norway)

- Could you give a short introduction of yourself and your role within the OLF? What kind of activities are you personally involved in?
- How does the OLF relate to its members?
- How does the OLF, as an individual organisation, occupy itself with ensuring the safety of the activities of its members at the North Sea?
- What does the OLF do in the area of oil spill response?
- What (overarching) goals form the basis for the OLF's activities?
- How is the OLF financed?
- Which laws and regulations are important for the OLF and its members, concerning the safety of oil exploitation?
- What kinds of commitments flow forth from this set of laws and regulations?
- And what about reporting requirements?
- To which extent are there positive or negative incentives – sanctions – involved in case of non-compliance (carrot and stick)?
- To what extent is the industry permitted a certain level of leeway in how laws and regulations are implemented?
- Are there oil spill compensation funds so that in the event of a spill those affected can be compensated?
- To what extent does your organisation consider the current set of laws and regulations to be adequate?
- Which are, in the eyes of the OLF, the most important players with respect to the safety of oil exploitation at the North Sea?
- Is there any link between the OLF and Bellona?
- Is the OLF happy with the composition of this group of actors, are there any important actors missing, or is the group too large?
- Could you elaborate a bit more on the relation ship between OLF and the PSA?
- Does the regulated industry have an advantage in comparison with authorities like the PSA with regard to knowledge?
- Do you see it as an advantage that there are people working for the government, in the PSA for instance, with an industry background so that you have a regulator which knows what it is talking about?
- Given the inevitability of such a situation, what would you make of voices saying that this could potentially impact on the independence of a regulator?
- What kinds of systems (HSE) exist within companies in order to make sure their activities are performed safely?
- Which role does 'redundancy' play within these systems?
- What criteria would, as far as the OLF is concerned, have to be satisfied in order for the regime to be adequate?

- Would an ideal situation then be that there is no need for a regulator; that the industry takes up this continuous improvement itself?
- To what extent does the OLF consider the current regime (in total, so not solely the regulation) to be adequate?

Hilde Knapstad 22-07-2011 (Klif, Oslo, Norway)

- Could you give a short introduction of yourself and your role within Klif? What kind of activities are you personally involved in?
- Which activities is Klif engaged in related to the safety of oil exploitation at the North Sea?
- How is Klif financed?
- What (overarching) goals form the basis for Klif's activities?
- Does Klif also issue advice to the Ministry concerning laws and regulations?
- Which (other) laws and regulations form the basis upon which Klif conducts its activities?
- What commitments for involved companies flow forth from this set of laws and regulations? With respect to emergency preparedness?
- Is Klif involved, anyhow, with sanctioning companies in case of non-compliance? Or with oil spill compensation funds (industrial contribution)?
- Do you have insight into the extent to which the industry permitted a certain level of leeway in how laws and regulations are implemented?
- To what extent does your organisation consider the current set of laws and regulations to be adequate? Strictness? Too much, or too little regulated?
- Which are, in the eyes of Klif, the most important players with respect to the safety of oil exploitation at the North Sea?
- Is Klif happy with the composition of this group of actors, are there any important actors missing, or is the group too large?
- How would you judge the adequacy of the resources available to Klif?
- Can you tell me how the Macondo (or Montara) disaster has impacted on Klif? How has Klif reacted?
- What criteria would, as far as Klif is concerned, have to be satisfied in order for the regime to be adequate?
- Are there any issues or topics you would like to say anything about, which were not yet discussed?

Dave Salt 28-09-2011 (Oil Spill Response ltd., Southampton, United Kingdom)

- Could you give a short introduction of yourself and your role within OSR? What kind of activities are you personally involved in?
- What activities is OSR concerned with regarding the prevention of and response to oil spills at the North Sea?
- What kinds of events do you deal with (e.g. blowouts, ship collisions)?
- What (overarching) goals form the basis for OSR's activities?
- Of what nature is the relationship between OSR and its members? How is OSR founded?

- Is there any relationship between the activities of OSR and certain laws and regulations?
- What commitments for involved companies make them want to join the OSR?
- If a company joins the OSR, what part of response capabilities would be provided by OSR and what part would be taken up by the company itself?
- What do you think of goal-based versus prescriptive types of regulations?
- Are you familiar with incentives/sanctions enshrined in the regulation?
- Are the services delivered by OSR, when called upon, somehow reported to the HSE's OSD or other parties?
- To what extent does your organisation consider the current set of laws and regulations to be adequate? Does the current set of laws and regulations enable your organisation to perform its activities the way it desires?
- Which are, in the eyes of OSR, the most important players with respect to the prevention of and response to oil spills at the North Sea?
- Is OSR happy with the composition of this group of actors, are there any important actors missing, or is the group too large?
- What would be the nature of the cooperation between OSR and the MCA?
- Does OSR participate in certain forums, e.g. to discuss best practices? What would be the practical outcome of such forums?
- Are there any forms of international cooperation, e.g. with regard to lending assistance in case of emergency?
- What resources – equipment, financial, manpower, knowledge – does OSR have at its disposal to perform its tasks?
- How does this coordination take place in practice?
- How would you judge the adequacy of these resources?
- One of my questions ties in with this, regarding the extent to which different contingency plans (private, governmental) are congruent…
- Could you elaborate on the kinds of emergency plans which are the basis for any action in the case of an oil spill?
- How have the different plans, including the NCP, come into being?
- Could you elaborate on the extent to which (juridical) responsibilities have been mapped in these plans?
- To what extent have stakeholders been involved in setting up the plan(s)?
- On the basis of what sort of knowledge has the emergency plan been crafted, regarding a) historical incidents, b) risk and vulnerability analyses/scenarios, c) the particular systems involved?
- What knowledge forms the basis for decisions regarding the deployment of certain response technologies, e.g. the use of chemical dispersants?
- What is the view of OSR on using chemical dispersants?
- How are emergency plans kept operational and up to date (tests, practices, training, dissemination of plan contents, etc.)?
- To what extent is there an understanding of a certain amount of tension between theory and practice, i.e. that satisfaction with merely an emergency plan would amount to nothing but 'symbolic readiness'?
- Does OSR participate in any way in developing (new) response technology?
- criteria would, as far as OSR is concerned, have to be satisfied in order for the regime to be adequate?

- To what extent does OSR consider the current regime (in total, so not solely the regulation) to be adequate?
- You could say that part of a good regime is the ability to recognize if something is wrong and to improve…

David Johnson and Luisa Rodriguez Lucas 29-09-2011 (OSPAR Secretariat, London)

- Could you give a short introduction of yourself and your role within the OSPAR Commission/Secretariat? What kind of activities are you personally involved in?
- You might say that with regard to the focus of my research, accidental oil spills, the Bonn Agreement is more relevant in that sense, and that OSPAR is more about the broad framework of how we want the North East Atlantic to develop, environmentally speaking?
- Why was the OSPAR Convention chosen as a venue for this committee, and not for instance the EU or the Bonn Agreement?
- I had a little trouble with pinpointing where in the OSPAR Convention I could find some of the aspects that would relate to my topic of interest: the prevention and accidental side of the story.
- What about the oil spill off the coast of Aberdeen, recently? Would you characterize this as a small or large spill?
- Does OSPAR have a specific view on the controversial issue of using chemical dispersants to combat oil spills?
- What tools exist for the Commission to verify compliance, i.e. the translation of the Convention into national legislation? Any apart from mandatory periodical reports?
- Does OSPAR keep an eye on the contracting parties, in the sense that if certain problems arise they are encouraged to perform on top of their game?
- Are there then no ways to really enforce compliance whatsoever? Or is this dealt with through international pressure?
- What resources can be drawn upon by both the Commission and the Secretariat to fulfil their duties? Manpower, knowledge, finances?
- Where can you draw the line between what the Commission does and what the Secretariat does?
- Has the Macondo blow-out and subsequent oil spill had any particular consequences for the OSPAR Convention/Commission/Secretariat?
- What criteria would, in your eyes, have to be satisfied in order for the regime to be adequate?
- Are there not, then, any criteria you could level at the procedural part of the regime on the basis of which you can say whether it is working properly, or not?
- Would there be worries, then, that if you would combine the two that the Bonn Agreement would disappear in the entirety of the OSPAR Convention?

Vicky Wyatt 29-09-2011 (Greenpeace, London, United Kingdom)

- Could you give a short introduction of yourself and your role within Greenpeace? What kind of activities are you personally involved in?
- What sort of activities does Greenpeace undertake with regard to oil spills?

- Which goals form the basis for Greenpeace's involvement in the issue?
- What resources does Greenpeace have at its disposal to be active in this particular field?
- Which laws and regulations are important, in the eyes of Greenpeace, regarding the prevention of and response to oil spills?
- What would be your opinion about the fact that the DECC embodies both energy and environmental interests?
- How does Greenpeace value these laws and regulations with respect to a) the commitments they lay down for the oil industry, i.e. stringency, b) positive/negative incentives (sanctions), c) the amount of leeway granted to companies regarding implementation of laws and regulations, d) the level to which the implementation of laws and regulations can be verified?, e) the effectiveness of enforcement measures, f) oil spill compensation funds, g) too little, or too much regulated, h) the transparency with respect to the industry's performance safety-wise, i) other issues?
- Where does the main problem lie then, because I assume for instance the risk assessments are checked by the DECC or HSE?
- Are there any other (formal) procedures which enable Greenpeace to take action if it opposes a certain state of affairs?
- Are there any possibilities to get involved earlier in the process in order to give a voice to the environment e.g. when licenses are handed out?
- Are there any other important actors that deserve mentioning?
- Is Greenpeace happy with the composition of this group of actors, are there any important actors missing, or is the group too large?
- What is the view of Greenpeace on the functioning of important regime bodies like the HSE's OSD, DECC, MCA, or others?
- Do you have a view on the existence of potential knowledge asymmetries between those bodies and the industry?
- What is the opinion of Greenpeace about the efficiency of current provisions for whistleblower protection in this field of industry?
- What criteria would, as far as Greenpeace is concerned, have to be satisfied in order for the regime to be adequate?
- Would it be right to conclude then, that from a Greenpeace point of view the current regime is not adequate?

Steve Walker 10-10-2011 (Health and Safety Executive's Offshore Division, Aberdeen, United Kingdom)

- Could you give a short introduction of yourself and your role within the OSD? What kind of activities are you personally involved in?
- What activities related to oil drilling at the North Sea does the OSD regulate and/or monitor? What are the OSD's tasks regarding prevention on the one, and response on the other hand?
- The OSD will have to set priorities for the sake of efficiency. How are these priorities established?
- Is there a particular procedure by means of which all these priorities are established, or does that happen by common sense?

- Does the OSD perform its own risk analyses or do you work from the risk analyses provided by the industry?
- What would be the main differences between the UK approach and the Norwegian and Dutch approaches?
- Do I understand correctly that the DECC is the agency responsible for granting licenses?
- Is there any role for the OSD in the licensing process, concerning safety?
- Is the OSD the only actor to go about doing inspections or does the DECC do inspections as well?
- Which laws and regulations form the basis upon which the OSD conducts its activities?
- To which extent are there positive or negative incentives – sanctions – involved in case of non-compliance (carrot and stick)?
- Is there a type of financial instrument by means of which damages are paid in the event of an oil spill? E.g. an oil spill compensation fund?
- What would be, from your perspective, your opinion on the adequacy of these sanctions and the size of the compensation fund?
- If the HSE gets involved, to what extent is this made public or kept between the companies and the HSE?
- To what extent does your organisation consider the current set of laws and regulations to be adequate?
- Which are, in the eyes of the OSD, the most important players with respect to the safety of oil exploitation at the North Sea, apart from the ones we already came across?
- Where does the knowledge within the HSE come from? For example, what are the backgrounds of the inspectors?
- Is there some kind of knowledge asymmetry between government agencies such as the OSD and the industry it regulates?
- Sometimes questions are raised about the independence of regulators, given the exchange of employees with the industry. Is this an issue which is recognized within the HSE?
- Are there mechanisms through which people who work in the industry can anonymously report unsafe practices?
- What criteria would, as far as the OSD is concerned, have to be satisfied in order for the regime to be adequate?
- To what extent does the OSD consider the current regime (in total, so not solely the regulation) to be adequate?
- Given the safety/environment distinction being handled by different organizations, is there anything that needs to be changed there?

13.2 List of abbreviations

BAT. Best Available Techniques.

BEP. Best Environmental Practice.

BOEMRE. Bureau of Ocean Management, Regulation and Enforcement: successor of the MMS as the U.S. supervisory agency for oil exploitation.

DECC. Department of Energy and Climate Change: UK government department for energy supply and climate change.

EEC. Energy and Climate Change Committee of the House of Commons (UK).

EEZ. Exclusive Economic Zone: zone established by UNCLOS extending to a maximum of 200 nautical miles offshore.

EMSA. European Maritime Safety Agency.

EU. European Union.

HRO. High reliability organizations.

HSE. Health and Safety Executive' offshore division: the government supervisory agency of the United Kingdom on work-related health, safety and illness in the oil and gas industry.

IADC . International Association of Drilling Contractors.

IBN. Integral Management Plan North Sea.

IBP NZ. Incident Control Plan North Sea.

IMO. International Maritime Organization.

IRF. International Regulators' Forum.

IUA. Inter-municipal Committee against Acute Pollution in Norway.

JNCC. Joint Nature Conservation Committee: environmental NGO in the UK.

Klif. Climate and Pollution Agency of Norway.

KPI. Key performance indicator.

MCA. Maritime and Coastguard Agency: implements the UK government's policy on maritime safety.

MIC. Monitoring and Information Centre: the operational heart of the Community Mechanism for Civil Protection of the EU.

MMD. Man-made disasters model: developed by Barry Turner in 1978.

MMS. Minerals Management Service: former supervisory agency for oil exploitation in the U.S.

MSFD. EU Marine Strategy Framework Directive.

NAT. Normal accident theory: developed by Charles Perrow in 1984.

NCA. Norwegian Coastal Administration: an agency of the Norwegian Ministry of Fisheries and Coastal Affairs.

NCP. National Contingency Plan for Marine Pollution from Shipping and Offshore Installations: UK equivalent of the IBP NZ.

NGO. Non-governmental organization.

NILOS. Netherlands Institute for the Law of the Sea.

NOFO. Norwegian Clean Seas Association for Operating Companies.

NOGEPA. Netherlands Oil and Gas Exploration and Production Association.

NOIA. EU National Oil Industry Associations.

NORBRIT. Agreement between Norway and the United Kingdom on mutual oil spill response assistance at the North Sea.

NPD. Norwegian Petroleum Directorate: an administrative body for the Norwegian Ministry of Petroleum.

NSOAF. North Sea Offshore Authorities Forum.

OCES. Operators Cooperative Emergency Services: agreement of mutual assistance among oil companies operating on the North Sea.

OGP. International Association of Oil and Gas Producers.

OIC. Offshore Industry Committee: committee of the OSPAR Commission.

OLF. Norwegian Oil Industry Association.

OPOL. Offshore Pollution Liability Association Ltd.

OPRC. International Convention on Oil Pollution Preparedness, Response and Cooperation.

OSC. Oil Spill Commission: National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling

OSPAR. OSPAR Commission: Commission for protecting and conserving the North-East Atlantic and its resources.

OSPRAG. Oil Spill Prevention and Response Advisory Group.

OSR. Oil Spill Response ltd.: An internationally operating private company providing resources to respond to oil spills.

PRA. Probalistic risk analysis.

PSA. Petroleum Safety Authority Norway: government supervisory agency of Norway on safety issues in the oil and gas industry.

QRS. Quality Status Report: report on the state of the environment of the North-East Atlantic issued by the OSPAR Commission.

RWS NZ. Rijkswaterstaat Noordzee: government agency charged with ensuring the environmental integrity of the Dutch part of the North Sea.

SAC. Special Area of Conservation.

SOSREP. Secretary of State's Representative for Salvage and Intervention of the Department for Transport of the UK.

SPA. Special Protection Area.

SRGH. Spill Response Group Holland.

SSM. State Supervision of Mines: government supervisory agency of oil and gas activities in the Netherlands.

STAMP. Systems-Theoretic Accident Model and Processes: developed by Leveson (2004).

UN. United Nations.

UNCLOS . United Nations Convention on the Law of the Sea.

WWF. World Wildlife Fund.