Risk Regulation in the Petroleum Industry: 
the Nordic Model revisited

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Introduction

This article examines a particular way of organizing working life, risk regulation and safety in the petroleum sector; namely the Nordic model. The Nordic model of risk regulations has thoroughly been analyzed in Lindøe et al (2014) where it also has been compared with familiar risk regulatory regimes in UK, US and Australia. The main object of the extensive analysis in Lindøe et al (2014) was to ask what factors that characterize a robust regulatory regime and to compare different traits of robustness of the four regimes respectively. This article aims to takes the analysis a step further by asking what kind of weaknesses may be hidden behind a robust regulatory regime such as the Nordic model and how such weaknesses may be reduced or eliminated in order to keep the robustness for the future.

In the 1970s and 1980s, lack of robustness was demonstrated by major accidents and disasters revealing the hazards in certain industries as chemical production (Seveso, 1976; Bophal, 1984), energy based on nuclear power (Three Miles, 1979; Chernobyl, 1986) and maritime transport (Herald of Free Enterprise, 1987; Exxon Valdez, 1989). In the Norwegian Petroleum industry, the Bravo Blow out on Alexander Kielland represents similar significant events.¹ Such accidents mobilize public opinion and bring the debate about safety on the public and political agenda as well creating a process of self-reflection and renewed effort within industries (Lindøe, Engen et al. 2011). In some countries this development represents a paradigm shift from an old reactive regime based on prescriptive and technical requirements towards a risk based, proactive regime with functional legal requirements. The new regimes differ in several respects, particularly with regard to partnership between public regulators and industry, supervising and fostering self-regulation by industry, the involvement of labor force and other stakeholders and the issue of mutual trust among the parties.

The paper has four main sections. First we will briefly introduce the concept “regulatory regime”. Secondly follows a description of the empirical context of the Nordic regulatory regime. Thereafter a theoretical framework of the Nordic model is presented, analyzing state/public and private/industrial partnership by combining safety management system (self-regulation) with public/state regulation with legal binding laws and regulation. Finally the conditions for robustness in the Norwegian petroleum regulatory risk regimes are discussed respectively.

¹ In April 1977, an oil well blowout occurred at the Ekofisk Bravo platform in the south part of the North Sea, due to an incorrectly installed downhole safety valve. Alexander L. Kielland was a Norwegian semi-submersible drilling rig that capsized whilst working in the Ekofisk oil field in March 1980 killing 123 people.
I How to characterize the robustness of a regulatory regime

This section encompasses a short conceptual introduction on how to understand the Nordic regulatory regime and places the Norwegian petroleum industry in a broader regulatory context. A regulatory regime consists not only of rules and enforcement mechanisms, but also includes everything from overall policy to concrete implementation, stakeholders and agencies at various levels, as well as all formal and informal mechanisms that keep the regime together. A certain amount of stability and durability over time will also characterize a regime, although dynamic, changing processes and interactions between elements are important topics in regime studies (Hood et al., 2001). The term robustness is therefore useful as we attempt to capture the totality of the elements included in a regulatory regime.

Different disciplines have different approaches in the study of regulatory regimes. Selection of issues and focus vary from political science interests in institutional structures and the relationship between politics and the sciences, to the sociological approaches concerning rules, social behaviour and their societal impacts. The literature often distinguishes between positive and normative regime theory (Hood et al., 2001). Positive theory aims to understand regime characteristics and explain relationships and changes, for example by looking at the underlying motives and reasons. Normative theory seeks to assess a regime's actual contribution to the realization of the objectives that justify its existence.

Roughly speaking, one can distinguish between four main directions, divided here on where you think the most important driving forces for regime behavior are (positive theory) - or should be (normative theory) (see eg Hood et al., 2001):

- (Public Interest theory)
- (Opinion Responsive theory)
- (Organized Interest theory)
- (Institutional Theory)

These are theories with roots in political science (and political economy) and are also generally used to study political and bureaucratic behavior. Public Interest Theories is based on how the regime maintains the public interest, often based on the hypothesis that interventions are designed to correct market failures such as monopolies, information asymmetry, externalities or because interest issues. In our context, the public interest will be linked to the regime's ability to protect against adverse (focusing) events and risk management. Opinion responsive theory looks at how regimes respond to changes in public opinion, for example, how this is reflected in the polls or in the extent of media coverage and public debate. Organized interest theories study the influence of organized interests, lobbying and advocacy, for example, from industry associations, consumer organizations or unions. These three theories are often referred to as contextual, since they primarily look at how regimes are influenced by factors outside the political-administrative apparatus. Institutional theory has been of great importance in recent years and is concerned with how regimes evolve and change of the driving forces. Figure 1 illustrates how the three contextual factors in
influencing the design of the regime and the figure also intend to help us understand the conditions for robustness.

![Diagram of Robustness](image)

**Figure 1: Conditions for robustness**

Figure 1 also illustrates how balance of power between public opinion (media, the public), stakeholders (companies, vested interests etc.) and objectives for risk management are necessary conditions for understanding the dynamics of the Nordic model.

**II The empirical context of the Nordic model**

In this section we will walk through the phases of the development of the Nordic model and highlight certain focusing events (Birkland 2014) that contributed to the forming and shaping of this particular risk regulating regime.

The global oil and gas industry has many common features. Major operators, entrepreneurs and sub-contractors are operating with similar exploration-, drilling- and production-equipment and procedures. They are subject to similar industrial standards created by a network of experts within an international scientific and technical community. These activities involve sophisticated analytic methods, advanced engineering, large scale investment and complex projects. They must be managed appropriately to ensure that benefits are gained without incurring major accidents and other unacceptable harms to the public, the workers involved, and the human and natural environments. However, major accidents such as the Macondo blowout and oil spill in the Gulf of Mexico in 2010, and near accidents in the North Sea the last years have demonstrated that combining productivity and safety is a major challenge, particularly in deep-water regions and other difficult areas.
As mentioned above, the 1970’s and 1980’s major accidents took place in the developing oil and gas industry in the North Sea. On the UK side, the sinking of the Sea Gem platform (1965) and the Piper Alpha disaster (1988) triggered regulatory reforms. On the Norwegian Continental Shelf the blow-out on Bravo (1977) and capsize of Alexander Kielland (1980) had the same effect. The Sea Gem-accident revealed a lack of legal framework for the offshore activities in UK, and the blowout on the Bravo platform (1977) on the NCS initiated the Burgoyne Committee leading to new offshore regulation. The catastrophe with the Alexander Kielland flotel three years later turned the Norwegian regime away from prescriptive rules inherited from maritime regulation. In turn, the UK regulator draw on the Norwegian experience in the redesign of their regime in the early 1990s after the Piper Alpha disaster.

While the US offshore regime can be characterized as “Command and Control” with a top-down approach where regulators demand that the industry comply with the rules that they set down, the UK and Norway follow principles of enforced self-regulation thereby relying on the capability of the industry to manage their own risks according to accepted norms and standards. The Norwegian regime goes even further in developing a tripartite system based on egalitarian values and mutual trust among involved actors. In its welfare state model, Norway, promotes a symmetrical partnership between public agencies and industrial actors, which involves labor unions in parallel with the asymmetric role of sanctioning industry for violation of law. This differs from a command and control regime with regulators requiring that industry must comply with the regulators’ rules or be punished.

The North Sea Risk Regulatory Regime has been developed through different phases over a period of 40 years. These phases reveal a pattern of reflexive regulation within the Nordic countries in interaction with UK regulation, ending up with the recent intervention from the EU parliament on offshore regulation (Karlsen and Lindøe 2006, Lindøe, Baram et al. 2012). The development can be presented as follows:

**Phase I:** Robens Committee on Health and Safety at Work (1972) came up with recommendations which were in stark contrast to the regime that had just been set up for the UK offshore industry under the Mineral Workings (Offshore Installations) Act 1971. Robens concluded that there existed too much detailed prescription of every aspect of work as purely a matter of government regulation and not of individual responsibility; too much of the existing law was irrelevant to real problems; and there was a major disadvantage in attempting to address the problems with a wide array of administrative agencies that were then engaged in the field. This recommendation became embedded in the new Health and Safety at Work Act from 1974 and led to the establishment of the HSE. It nevertheless took fully twenty years until these recommendations were implemented on the UKCS in the aftermath of the Piper Alpha disaster. By contrast, the Robens report and subsequent Health and Safety at Work Act influenced the Norwegian regime both onshore and offshore in the direction of enforced self-regulation or internal control (Karlsen and Lindøe 2006).
Phase II: While the sinking of the Sea Gem in 1965 awoke the public and political attention in UK, two major accidents on the NCS gave the momentum to a regulatory reform in Norway. The blow-out on the Bravo platform in 1977 was a wake up regarding the environmental risk, while the capsizing of the Alexander Kielland platform with 123 lives lost became a shocking reminder of the human risk. The newly established Norwegian Petroleum Directorate (NPD) started a process of developing new regulations, and in 1981 new rules concerning licences’ internal control were established, followed in 1985 by the Regulation of Internal Control.

Phase III: The EU Framework Directive 89/391 regarding safety and health of workers was based on the new regulative principles developed in the UK (c.f. Robens Report) and the recent development in the Norwegian offshore sector. The directive imposed new means of onshore regulation in all sectors. In Norway the directive was implemented in practice by the Working Environment Act of 1977 and regulations relating to internal control regulation on Health, Environment and Safety, which came into force on 1 January 1992. In the Norwegian context the onshore reform was inspired by the positive experience from the North Sea (Lindøe 1992).

Phase IV: The second volume of the Cullen Report (1990) on the Piper Alpha disaster of 1988 played a major role, both through its recommendation of a specific HSE regime and by spreading Formal Safety Assessment (FSA) presented as «Safety cases» to other industries. The HSE requires that all operations are covered by detailed safety cases in which potential hazards, their consequences, and the methods of controlling any risks are described and explained. The overall responsibility for safety on an installation falls on the Safety Case Duty Holder who appoints an Offshore Installations Manager (OIM) to discharge this responsibility. In the case of mobile drilling rigs, the duty holder is the drilling contractor.

<table>
<thead>
<tr>
<th>Safety Case</th>
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<tr>
<td>Before an operator brings a drilling rig into the UK or operates a fixed platform, they have to prepare a safety case for the Health and Safety Executive to approve. The Operator, or Licence Holder is subject to separate and additional verification requirements under the Design and Construction Regulations in the form of well-examinations carried out by an independent and competent person. All parties involved have legal duties to cooperate with both the OIM and the well Operator when the well is under construction. The Safety Case Duty Holder and the well Operator must demonstrate how their safety management systems will operate together, who has primacy in an emergency, and who has overall responsibility.</td>
</tr>
<tr>
<td>(Lindøe, Baram et al. 2012)</td>
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Phase V: The Deepwater Horizon accident in the Gulf of Mexico in April 2010 was followed by near accidents on the NCS. This focusing event became part of the argument used by EU in promoting their proposal. Between December 2009 and May 2010, the Gullfaks C field, operated by Statoil was subjected to several critical incidents with leakages of hydrocarbons.
from wells. The initial well trajectory was plugged during the fall 2009, and drilling in a sidetrack well started in December 2009. During the next couple of months, Statoil experienced three serious well-control incidents in the well, the most critical one resulting in a complete loss of well control on May 19, 2010. Only chance prevented the incident from becoming a full-scale disaster. An assessment was made by an independent research institute. The strong environmental group Bellona used the report as an indication that Norway the sooner the better should adapt EU-regulations in order to avoid major oil pollution in the future.

**The Norwegian Regime Revisited**

The Gullfaks C incident was until now the last focusing event on the Norwegian shelf that triggered the Norwegian government to start an evaluation of the character of the robustness of the regulatory regime. Two large investigations were launched: One carried out by the Norwegian Petroleum Safety Agency (PSA) and one independent carried out by a Norwegian research institute. PSA’s report aimed to clarify to what extent Statoil had met the regulatory safety requirements related to the planning and preparation process for the well. The investigation points to deficiencies in connection with risk management and compliance with internal requirements for drill operation planning and execution. In sum, it was identified that Statoil had specific challenges related to the quality of the planning process, quality and precision within execution processes, risk comprehension, compliance and management. Based on the PSA report Statoil was requested to further clarify why such an incident actually happened and identify and carry out improvements concerning quality and resilience in the organization as a whole. Statoil interpreted this request as an instruction to accomplish an independent study and after a procurement procedure the independent Research Institute IRIS was assigned the task. The report was critical towards Statoil and created a public debate after being published, including the Question Hour in the Parliament.

After the Macondo disaster, members of the EU Parliament raised the question of how robust the existing risk regulatory approaches for offshore health and safety regulation were among the members states. The authorities and industry in Norway and UK formed groups with the purpose of reviewing and assessing lessons learnt to make necessary recommendations with regard to well control and safe offshore operations. In UK some instances rapidly declared that offshore regulatory standards, as exemplified by the “Safety Case Regime” were superior to that which was found in the Gulf of Mexico at the time of the Deep Water Horizon disaster.

In October 2010 both the Parliament and the Commission indicated that legislative action was necessary at the European level. Initially the suggestion was that intervention towards member states should be restricted to an amendment of the Extractive Industries Directive, while the proposal from the Commission is a new Regulation. Even not being a member state of the EU, Norway would be affected by a new Regulation through its membership of the European Economic Area (Lindøe, Baram et al. 2012). The proposed EU regulation was presented as a decree to be taken word for word in the form of a binding legal text. Critics from UK and Norway addressed a lack of consistency in the regulatory principles. Despite
the support for risk-based regulation by the Commission, the proposed approach is rather prescriptive, and deviates from the approach adopted in Norway (and indeed in the UK) where the ultimate responsibility of assessing and handling the risk is placed on the operator rather than the regulator.  

**III A framework for risk regulation and risk management**  
This section introduces a theoretical approach to the Norwegian risk regulatory regime. The point of departure is the two contradictory principles (Top Down vs Bottom Up) of exercising state governance in modern society. According to the legality principle the state is a protector of law and order where the primary task is, by the use of legitimate authority, to force citizens in fulfilling their obligation towards following laws and regulations within legal binding norms. Anyone violating such laws and orders can be sanctioned and punished. Accordingly a risk regulation regime tends to follow a “Command & Control-approach” with detailed and prescriptive laws and regulations. Due to the power of sanctioning and punishment, the role of the state and regulating agencies implies an asymmetrical relationship between the state and the citizen or the regulator and the regulated. Over time new and multiple roles of the state have developed. Within the modern industrial societies, developing and funding programs for industrial innovation as well as promotion and stimulating progress and growth in society are the important goals. In cooperation with industrial actors this new role has to be more like a “service provider” where use of repressive means and “Command & Control” is less effective and sometimes even contra productive. In the effort to create better cooperation between public institutions/agencies and industrial sectors the relationship between the state and the stakeholders has to be more symmetrical.

Modes of risk regulation can also be seen as discussion of the pros and cons of rule-compliance vs. risk management (Hopkins 2011), with a distinction between “hard regulation” based on “Command and Control” with prescriptive rules and “soft regulation” with concepts coined as “self-regulation” (Sinclair 1997, Short and Toffel 2010), «meta-regulation» (Gilad 2010), etc. An important question is whether these modes of regulation represent a dichotomy or whether they are complementary as presented in figure 3. Our argument follows Sinclair (1997), stating that the dichotomy is false. In practice risk regulation regime will combine responsibilities and roles in a public-private partnership with a top-down approach with legal binding norms and a bottom-up approach with industrial standards and “best practice”. The use of legal standards becomes a “linking pin” that brings the two approaches together as indicated in the right part of figure 3.
Function-based regulation needs some form of discretionary criteria that are considered as legal standards and provide some special interpretation challenges. The term "legal standard" refers to words or phrases in a law claim that stipulates a scale or norm beyond the law i.e a particular practice, widespread attitudes in the community or other conditions that change with time. All the while these phenomena change over time, the contents of the law do not. The use of legal standards aims to achieve an appropriate regulation of complex fields in constant development. It can also be seen as an expression of respect for the importance of expert knowledge to ensure the safety and quality in key areas of society. The use of “legal standards” in two laws regulating Norwegian offshore industry is illustrated figure 5.

Legal standards probably safeguard the goal of safety and quality better than if they had been fully formulated in laws and regulations. The underlying measure of the legal standards is based on an understanding of the issues, terminology and solution that are understood in the professional and scientific community. Through stakeholder involvement in the process of developing these norms, the use of legal standards may enjoy greater legitimacy than rules based on legal terminology and legal text.

A consistent application of a function-based regulation requires a comprehensive and systematic review on how the various provisions are to be understood and how the appropriate standards should be used to meet the requirements. Procedures must provide relationships between laws and regulations and technical/professional standards to comply in accordance with the laws and predictability in relation to supervisors’ evaluations. For the regulatory authorities and inspectors this can be a demanding and comprehensive system to keep up to date, and it requires that the standards keep pace with developments and new knowledge. Comprehensive guidelines may also be an excuse for companies for not taking responsibility in monitoring and implementing new recognized expertise and scientific knowledge.
System I and System II

Based on the discussion above a framework has been developed for analyzing and discussing risk regulation combining a bottom-up perspective of “self-regulation” (System I) with a top-down perspective of state control (System II) as shown in figure 3.10

The figure can be read from the bottom-right. Economic activities within enterprises and industries are developing new technologies with input and support from many different sources; innovative entrepreneurs and suppliers, demanding customers, etc. A basic property for the enterprises is to exercise control over its production-system to minimize cost, following established industrial standards, and hamper loss. Reducing uncertainties and risk are improved by introducing rules and standards, procedures or routines guiding individual and organizational behavior. “Best practices”, being codified by industrial and scientific communities as industrial and technical standards, include safety managing systems ensuring (1) occupational health and safety, (2) protection of the environment and (3) technical integrity and safety. The development of industrial products and services is supported and enhanced by an array of managerial tools and means coined as “quality management” and organizational and technical standards. This process is enforced by global markets and the role of the national and international standardization organization (ISO). If industrial activities and their products and services are within accepted norms from the society at large the production system could operate without intervention and claims from external regulators. We may denote this mode of “self-regulation” as System I. It represents a bottom-up-process (A) where the mechanism of “self-regulation” represents a learning loop of continuous improvement within the industries.
By using this framework, we may raise two important questions; Firstly, what is the mechanism or linking pins connecting System I and System II, and secondly; what are the success criteria for creating a resilient and integrated risk management and regulatory regime combining the two systems? Industrial activities based on System I and the state as external controller following System II are developing different path and logics of standard setting and adaption to safe practice. That implies that adjustment from one system towards the other represents a change in goal setting, use of legal binding norms, industrial standards, professional and legal competence, etc. Responsibilities regarding the safe conduct of activities transferred or delegated from regulators to companies, provide for new cooperative approaches in the implementation of regulatory regimes (Baram 2006, Olsen and Lindøe 2009).

Norms can be divided in two groups; legal binding and non-binding norms where *legal standards* became a “linking pin” between the two. The hierarchy of norms can be enforced as laws, regulations and regulatory guidelines as well as mandatory or voluntary technical standards as presented in figure 5

<table>
<thead>
<tr>
<th>Legal status</th>
<th>Main group</th>
<th>Subgroup</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Legal binding norms</strong></td>
<td><strong>Laws</strong></td>
<td>Petroleum Act, Working Environment Act</td>
</tr>
<tr>
<td><strong>Regulation</strong></td>
<td><strong>The Framework Regulation (Royal Decree)</strong> Regulations regarding (1) Management, Activity, (2) Information and (3) Installation (Passed by PSA)</td>
<td></td>
</tr>
<tr>
<td><strong>Regulatory guidelines</strong></td>
<td><strong>Guidelines to the regulation</strong></td>
<td>Letters of interpretation</td>
</tr>
<tr>
<td><strong>Non-legal norms and standards</strong></td>
<td><strong>Industrial standards</strong></td>
<td><strong>NORSOK-standards</strong>*</td>
</tr>
<tr>
<td></td>
<td><strong>Best practise</strong></td>
<td>Recognised industry standards and guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Company specific requirements and guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Project specific requirements and specifications</td>
</tr>
</tbody>
</table>

*Standards developed on the NCS

*Figure 5 Hierarchy of norms*

The use of legal standards makes a connection between the regulatory framework and the regulated activities by involving the companies and their employees and engaging the professionals in the formulation of statements of what should be regarded as safe practice, not only leading them to comply with legislation. This will open up for more updated regulatory practices than what is possible when relying solely upon written statutes with detailed content.
IV Discussion

Focusing events have formed the Norwegian regulatory regime and strengthened its robustness. In this section we will discuss the character of these robustness-conditions. The analytical framework is the conceptual model (figure 1) presented in section II and the concept of System I and System II presented in section III (figure 3).

The major accidents occurring in the North Sea during the 1970s and 1980s brought the issue of technical safety and integrity on the offshore installations on the political agenda. In a dynamic relationship and mutual learning across the North Sea the regulators on both sides developed a regime promoting technical integrity and safety with core elements such as risk assessment and documentation, continuous improvement and learning, involvement and legitimate role of stakeholders and development of technical standards and norms. It follows the logic of System I claiming control over the production-system by minimizing costs, controlling deviation from established norms/standards and hampering loss. In developing an effective control mechanism a dilemma arises. Reducing uncertainties and risk are improved by introducing rules and standards (expressed as procedures or routines) guiding individual and organizational behavior.

By increasing the degree of procedures technical processes as well as human activities and practice became more predictable and safer. However, by increasing the control-regime (e.g. proceduralization) the opportunity set for adapting to unexpected events, experimenting, technological change and innovative solutions are reduced (Bieder and Bourrier 2013). The mechanism of the “cybernetic loop” in System I is designed to promote internal risk assessment proved against the industries’ own technical and professional standards. However, the precondition is a relationship among stakeholders that promotes trust and mutual learning (Tharaldsen 2011). In System II the regulatory agencies are gathering information from the industry, setting detailed standards and imposing sanctions to control industrial behavior in a relationship tending to be antagonistic.

The Norwegian regime is function-based. Compliance with such kind of legislation rests on a number of assumptions, not least that there is trust between the regulators (Ministry, PSA), companies and industry-partners i.e. both employees (unions) and employers (industry associations). “Trust” means that the people/organisations that interact with each other act in expected ways. To rely on another means further that one expects that the person or organizations will for example use the functions-based system and framework of norms in a way that is in accordance with the rules and overall objectives. However displaying trust in others makes oneself also vulnerable in relation to the same “other”. They might act differently than expected, and opposite one's own interests and desires. In a regulatory regime such as the Norwegian the robustness is fundamentally based on trust between the key players, but where trust is a vulnerable concept and may easily turn over to distrust. In a function-based and trust-based system where distrust always is a possibility, there is a vulnerability built in as a potential risk and thus a threat to the robustness of the system.
One way to reduce such vulnerability is through power relations and the exercise of power. “Power” can be defined as a persons’ ability to achieve his/her will, despite resistance from others. Maintaining authority e.g. through governmental actors such as PSA may therefore reduce vulnerability by exercising its legitimate power through legally binding rules and to following up with sanctions. Strong governmental agents can exercise power by binding up companies and suppliers and thereby reducing the scope that occurs in the space of legal standards. In the Norwegian safety regime there has traditionally been established a balance of power and trust (Balance between System I and II). The way this is done in the future has great significance for how risk is managed, robustness is maintained and how development and change may occur.

The function-based regulations give greater leeway than detailed and prescriptive rules would. By “greater leeway” we mean that both companies and the PSA have been given autonomy to decide how they will handle the HSE field compared with the action potential as prescriptive regulations could provide. But the regime rests on the assumption that the involved parties have a common interest in that the system is maintained and that the conflicts of interest that may arise will naturally be solved without threatening the foundation of the trust between the involved parties. How much power each of the involved agents actually will possess will vary depending on the character of the event. Over the last 10-15 years we have seen several examples where the parties have used their power base in a way that has reduced their trust in each other, and in some cases it has turned into distrust and blocking of cooperation. Such situations have often occurred in connection with focusing events such as Gullfaks C.

Figure 5 shows that the hierarchy of norms may develop into a system characterized by complexity. Overlapping legislation, legal standards, standardization and detailed management documentation (for companies) are further challenging aspects of the robustness of the Norwegian regime. To master such complexity requires knowledge and skills, but it also gives power to those who possess knowledge i.e handling and navigating in the system. For those who do not handle complexity, this can easily develop into distrust towards those who possess knowledge. Complexity thus creates an imbalance between power and confidence, as those with competence get increased power, while those who lack knowledge respond with distrust. Such a disparity can be further developed where there is a significant scope to apply industry standards or other "best practices". New studies also show how unions in Norway are experiencing an increasing lack of knowledge, which at the same time reducing their confidence in the function-based system.

The function-based character of the Norwegian regulatory regime also opens up for processes where focusing events may result in that the HSE field are being politicized. "Politicization" refers to how a field like health, environment and safety, where the agents basically seek neutrality and academic reasoned decision making, instead is becoming a political “battlefield”. This happens because different groups have different interests in the field, and where the groups who have the formal power to protect their interests also use this power directly in the decision making processes. Politicization is not a problem in itself, but may affect the robustness of the regime, for example where such processes end up in questioning
the legitimacy of governmental agents such as PSA. Politicization of the Nordic regulatory model is thus problematic because decisions may be made on the basis of "random" policy and encourage intervention without clear theoretical or normative grounds such as risk analysis, Alarp principles and cost benefit analysis.

The function-based character of the regulatory regime creates a large degree of autonomy for how employers and companies can design the safety practices they think are appropriate. Such autonomy can be advantageous for employers in several ways, also financially. It has not least an intrinsic value for the employer side because they can decide the choice of means by themselves instead of being overruled by the authorities. Similarly, the employees have a vested interest in the regime because it gives them relatively large influence - at least formally. This is provided through the formal arenas for collaboration. The regime has thus given unions more power than other regulatory regimes would provide. The various groups' use of power to protect their (special) interests in the HSE field represents a type of politics that can be a challenge for the regime, including its robustness. This is especially true in cases where special interest groups have such large impact, ending up in a situation where more reason based solutions are excluded.

Accordingly defining the balance of a System I (bottom-up) and System II (top-down) is one of the most complex questions concerning the robustness of the Norwegian regulatory regime. The issue depends on a multitude of factors and on defining how the different roles and responsibilities should be distributed between the state, the industry and the scientific and professional stakeholders. Factors influencing are how the actual risk is perceived and interpreted among the stakeholders, the capability of the regulator and regulated, the power relation among stakeholder and interest groups, regulatory and legislative culture, etc. (Baram, Lindøe et al. 2013).

Detailed and prescriptive rules provide no incentives for enterprises to engage in innovative practise, and bind them to the established technology and organizational solutions. The more prescriptive rules and technical standards the regulator takes as legally binding, the more responsibility and greater "burden of proof" are imposed on themselves. Explicit, detailed requirements certainly are highly predictable and easily interpreted, but they soon may stiffen in technologies from the past. It is difficult to see how safety critical issues related to management, organization and technology can be improved by using additional or more detailed rules by the authorities.

In a system of “enforced self-regulation” based on voluntary technical standards, and linked to legal standards, compliance with requirement the norms and standards become the responsibility of the enterprises. Requirements formulated as legal standards follow developments in technology and societal demands. But their interpretation requires continuous dialogue between the relevant actors in the sector. From legal history we may learn that the development of legislation under the common law principle requires a very active “legislative zone”, in which different parties may claim their interests and independent bodies, typically courts, sort out the disputes.
The roles and tasks of the regulator and the regulated need to be clarified when combing top-down and bottom-up approaches. In reliance upon functional, risk-based requirements formulated as legal standards, the role as rule-maker should be separated from the role as controller. A decision from the “combined” rule-maker and controller should be able to be appealed to a superior, independent body before they are brought to the court. A division between the different aspects of regulatory functions (legislative, executive and judicial) is not only of high value regarding legal protection of individuals and enterprises, but may also stimulate the necessary dialectics to support a regulation based upon continuously developing legal standards to live up to the best practice in safety management at any time.

**Conclusion**

The Nordic model of risk regulation has shown that risk regulation emphasizing legal writings and text may appear without substance without a proactive and strong regulator and empowered industrial actors working in mutual communities of practice. In determining a robust regulatory practice, many elements must be weighed toward a legal framework: the maturity of the industry, its use of standards and “best practices,” and the commitment of external and internal stakeholders to utilise information about unsafe conditions and to make improvements, effective safety management systems, etc.
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3 International Reserch Institute of Stavanger (IRIS).

4 Energy and Climate Change Select Committee Report, p41, para 3.
European Parliament resolution of 7 October 2010 on EU action on oil exploration and extraction in Europe (hereafter “Parliament Resolution”).


Directive 92/91/EEC.

Details of direction.

For details, see Norway: Comments to the European Commission proposal for a Regulation of the European Parliament and of the Council on safety for offshore oil and gas prospection, exploration and production activities, December 2011.)