UNIVERSITY OF NORDLAND

BODØ GRADUATE SCHOOL OF BUSINESS

# MASTER THESIS

## Safety is a State of Mind:

### Comparative analysis of HSE regulation and management in Russia and Norway

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EN310E Master of Science in Energy Management

## Abstract

*Safety is a state of mind,* a master's thesis written by Berg and Malikova during the spring of 2015.

The thesis examines the main differences between the health, safety and environmental regulations of the Norwegian and Russian oil and gas sector and how these differences impacts an oil and gas company that is operating under both regulations. The thesis is using qualitative data analysis to find these differences and to understand the challenges the company experiences.

Therefore, the thesis is structured in two main parts. First, an analysis of institutional differences; second, a case study of the implications these have for the company. Both analyses are examined extensively using both empirical data and existing institutional theory.

The main legislative differences can be found in a divergence of main approach, key measurement, legislative structure and level of bureaucracy. These differences can in turn be explained by the Norwegian regulations being normatively pressured, while the Russian regulations are coercively and mimetically pressured. It can also be explained by legislative friction created by features of formal and informal institutions, with the addition of certain contextual factors. The legislative differences lead to a majority of the company's HSE-related challenges. These challenges are challenged by institutional myths, which the company conforms to ceremonially in order to seek legitimacy, even at the cost of organizational efficiency. Therefore, legitimacy is their ultimate goal with respect to HSE management. The relationship between the origins of legislative differences and legislative challenges is strongly supported by examining them in a common model of formal institutional, informal institutional and contextual dimension, which confirms the assumption that larger legislative differences lead to larger HSE-related challenges for the company to tackle.

## Preface

All social communities have rules in some form or another. They make up a framework of interaction, of sorts, atop the boundaries of the natural laws. It varies whether these rules are formal or informal, or global, national, regional or local. However, they all preach more of less the same message: that of safety. For what is ever a rule, but an effort to influence behavior to protect the safety of the community's participants? An important distinction however is that rules often facilitate safety, but they are not safety in their own right.

The organizations are subjected to the rules; herein we have the oil companies which all constantly profess the importance of compliance in their operations. Their degree of compliance is synonymous with their ability to follow the rules of their society. Perhaps their efforts to convey their appreciation of compliance is on the topic of gaining trust and legitimacy among a collective of companies historically renowned for being responsible for mass destruction of the natural environment and the death of humans and animals alike. An important distinction must also be made here: compliance is promoting safety, but it is not safety in its own right.

The individual is ultimately the responsible for safety. It is the actions of the single individual that in the end will determine whether the operations are safe or not. The individual's state of mind is what determines his ability to work safely; only by having a sincere concern for the safety of himself, his peers and the environment in which he works, the individual will be able to sustain a safe operation. The true challenge is to have *rules,* which lead to *compliance*, which leads to *safety,* because none of these effects are certain. Therefore, the thesis examines the two levels that eventually and hopefully lead to safety – the institutional level and the organizational level.

If the company's efforts in the sphere of HSE are not primarily concerned with safety, the question remains; "what is?" The companies with world-wide operations know best how to ensure safety in what they do; they have their own procedures for managing threats appropriately. Still, in every different jurisdiction they enter, they are submitted to a different regulatory system with a different interpretation of how safety is ensured. And the companies comply, for they seek legitimacy. HSE compliance is not as much about safety, as it is about legitimacy. Therefore, the study is not about how companies strive to operate safety – because that is uniform across jurisdictions. On the contrary, the study is about how companies strive to seek legitimacy through compliance with different interpretations of safety regulations.

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The thesis is written by students native to different universities with different formal requirements to the master theses. This copy is sent to the University of Nordland (UiN) with respect to the requirements of this university. Another copy with significant alterations was addressed to the Moscow State Institute of International Relations (MGIMO), which means that there are two editions of this thesis in circulation.

The University of Nordland has a liberal restriction of the theses' sizes, providing no absolute page limit, but the allowable size is determined by what is considered reasonable for the topic. Considering the two-in-one nature of this study's content, the end product is – and must be – fairly sizeable. Further, in respect of the reader, we do not sacrifice readability with silly measures of saving space, making the thesis appear smaller than it is. Therefore, the paragraphs are comfortably spaced, and the thesis is rich with illustrations and tables wherever it is considered valuable for the content. We hope the thesis will be an enjoyable read, and dream that it will make valuable contributions to academia and the world of business – especially to the company that made it all possible.

Therefore, before anything, we would like to offer our strongest words of appreciation of the people who helped us. Our warmest thanks go to the informants of the case company – who would like to remain anonymous – and who provided us with the empirical data needed to conduct the case study; offering deep insight into the work of the company and the ideas of their own.

A special gratitude is given to the thesis supervisor, June Borge Doornich, whose unrivalled academic and motivational support was of unequivocal importance in writing the thesis. She was always there to answer any questions we may have had, but more importantly, she gave us a larger direction to follow; illuminating an orderly path out of the chaos the thesis set out to be. Clarity of vision such as that is a rarity; and we are both appreciative and lucky to have her as our supervisor and guide. Thank you.

Lastly, we would like to offer our thanks to the High North Center of the University of Nordland for facilitating and coordinating the study program involving mutual semesters abroad across the borders of universities – without it, this cooperative master's thesis would not have been possible.

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## Abbreviations & definitions

**CIS:** Commonwealth of Independent States

**CPA:** Climate and Pollution Agency (of Norway)

**EIA:** Environmental impact assessment

**ERM:** Enterprise risk management

**HSE:** Health, safety and environment. It is occasionally known as EHS or SHE.

**HSEQ:** Health, safety, environment & quality.

**GOST:** Russian State standard (**go**sudarstvennyy **st**andart – ГОСТ)

**Minergo:** The Ministry of Energetics of the Russian Federation

**Minpromtorg:** The Ministry of Industry and Trade of the Russian Federation

**MNR:** The Ministry of Natural Resources of the Russian Federation

**NEA:** Norwegian Environment Agency

**NLIA:** Norwegian Labor Inspection Authority

**NPD:** Norwegian Petroleum Directorate

**OIS:** On Industrial Safety of Hazardous Production Facilities (116-ФЗ, 1997)

**OSH:** Occupational safety and health

**ISO:** International Organization for Standardization

**PDO:** Plans for development and operation

**PIO:** Plans for installation and operation

**PSA:** Petroleum Safety Authority Norway

**SDO:** Standard developing organization, e.g. ISO.

**Hazard:** Accidents or near-accidents that have or may occur, as well as other factors that can lead to injury or material damage (PSAg, 2014, section 4).

**Operator:** When activities are legislated by the Petroleum Act, the operator is any organization that is operating the day-to-day management on behalf of the licensee. When the activities are not subjected to the Petroleum Act, it is any organization that is operating the day-to-day management on behalf of the owner (PSAa, 2013, section 6)

**Legislation:** Synonym for a law or a set of law, or similar legal manifesto.

**Licensee:** An organization or individual who holds a license under the Petroleum Act (PSAa, 2013, section 6).

**Lost time:** An incident that involves the person involved having to take time off from work following an accident or injury. This is the third degree of incidents, after "recordable incident".

**Near miss:** Incidents that under other circumstances could've been recordable incidents: nothing happened, but it could have with a slightly different chain of events.

**Pollution:** A supply of solids, fluid or gas to air, water or the ground, as well as impact on the temperature with possible negative impact on the local or global environment (PSAf, 2014, section 11).

**Recordable incident:** A recordable incident is an international industry term that means that a person had to stop his work to seek medical assistance. It is the second degree of incident after near-misses.

**Regulator**: A public institution that is tasked with supervisory authority over safety, emergency preparedness and working environments for hydrocarbon activity in a country or legislation.

**Regulation:** A topical legal framework, often supplementary to a higher law.

**Responsible party:** Any organization (including operators) that are conducting or participating in conducting petroleum activity, with the exception of non-operating licensees and owners of onshore facilities (PSAa, 2013, section 6) (PSAf, section 7).

**Standard:** A document published by a standard developing organization (SDO). They are also known as recommended practices, specifications, bulletins, technical reports and publically available specifications (OGP, 2010).

**7 conceptual areas of HSE regulations** (chapter 3.3.4 on *legislative comparison)*

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|---|---|
| **Risk-based approach:** | Content that supports, facilitates or specifies a risk-based approach of HSE management. |
| **Standards:** | Content that supports, facilitates or specified a standard-based approach of HSE management |
| **Holistic HSE integration:** | Content that is related to the management of HSE via manifesting its importance as an integral part of the overall project management, or via specifying methods of HSE management. |
| **HSE culture:** | Content that is related to the safety and well-being of human lives through better interpersonal practices, healthcare services and security measures against hazards not necessarily negatively impacting the natural environment. |
| **Security:** | Content that is related to the safety of human lives as well as the environment through implementing specific practices aimed to mitigate risks of hazards and accidents possibly impacting the safety of humans and the environment. |
| **Documentation:** | Content that implores, recommends or suggests efforts to document a situation or a process, as well as to maintain formal relations with an external entity; either a governmental authority or the public. |
| **Sanctions:** | Content that is related to the effects of unsatisfactory compliance and punishment thereof. |

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# 1 Chapter I Introduction

## 1.1 Background conditions

Health, safety and environmental management (HSE) is an important part of the contemporary oil and gas industry. Interestingly, the HSE management varies greatly from company to company – and from country to country. It is a curious case to uncover the reasons why there are such differences between the HSE procedures internationally. HSE is not directly value-creating for the companies or the countries seeking to capture economic rent off their hydrocarbon resources. Rather on the contrary, HSE is mainly exclusively associated with downsides – it is costly, time-consuming, and occasionally challenging to manage. As corporate profit is not the main aim of HSE management, one could argue that it is driven by a need to maximize safety. In that respect, it is curious as to why there are so many different interpretations - why don't lawmakers and companies simply copy the practices of the most successful institutions and organizations? Perchance mimicking these practices is futile – or perchance there is entirely something else driving the HSE regulations. That, in turn, is the ignition of this thesis, as we set out to uncover the forces leading to these differences.

Legal frameworks in the HSE field can be a very complex matter, and the amount of detail in these laws and regulations can be correspondingly very high. The range of these frameworks can last from just a few pages to several thousands (OGP, 2010), so the scope, potentially, is significant. Russia and Norway both contain several hydrocarbon zones with different conditions, which bode for different HSE requirements and guidelines as well. Norway's hydrocarbon zones are divided into three: the North Sea, the Norwegian Sea and the Barents Sea – all offshore. Russia's hydrocarbon zones are less uniform, and are characterized as both onshore and offshore. Its current main oil producing areas are Timan-Pechora, Northern Caucasus, Volga-Ural, Western Siberia, Eastern Siberia and Sakhalin; as well as the Arctic offshore areas of the Barents Sea, the Kara Sea, the Laptev Sea and the Chukchi Sea. The study aims to clarify the principal differences in the legal frameworks, and the mechanisms driving the frameworks.

A dilemma arises. Multinational companies investing in oil and gas projects abroad must manage HSE in an unfamiliar institutional environment; evidently, the formal and informal institutions of these new markets may be widely different, and especially so the legal framework of HSE regulation. Being widely different, it may also result in an emergence of managerial challenges for the company. Still, the companies choose to invest abroad, knowing that the new market is

cluttered with unfamiliar institutions. At such, they must not only know the differences that exist, but also understand why they arose.

HSE as a literary field is quite well-developed. However, HSE as a concept is applicable to many different settings, one of which is the oil and gas industry. Conversely, the literature on HSE in the oil and gas industry is quite well-covered as it is. However, HSE literature is commonly very general, or specific to a single country. In that sense, there is a lack of literature that covers the topic of HSE challenges across borders. This study exists to fill that gap; and at that between two countries who have a tangible cooperation among their petroleum industries. Further, the Norwegian HSE regulations have been put under the scope on some previous occasions (OGP, 2010), and sometimes also as a role-model of regulations (KPMG, 2011). Similarly, the Russian HSE has been reviewed (OGP, 2010), but not in the same setting. Any direct comparison between the two legislations has not yet surfaced the world of publicly available information – even though there are several oil and gas companies operating in both these markets – and therefore, we would like to investigate this area and application of HSE.

## 1.2 Purpose & problem statement

The purpose of this study is to provide a reasonable and comprehensive oversight on the principal differences in HSE practices in Norway and Russia. Ideally, this should prove beneficial both for other researchers, as well as companies opting to establish business in Norway and Russia. At such, the purpose is operationalized by studying a company that is establishing an HSE department in Russia.

In order to illuminate this, the thesis is a study of two levels: first, it is a comparative analysis of health, safety and environment regulation in Norway and Russia. Second, it is also a real-life case study on a company operating in both these countries and thus under two different sets of laws and regulatory practices, and which implications this has for their HSE management. For the former, it's necessary to study the governance of petroleum regulation in both countries and the legal frameworks themselves – and how they coincide and differ. Bearing that in mind, the latter part commences an in-depth study of how the company perceives these differences, and therefore adapts to abide the varying requirements. All this considered, the thesis therefore attempts to analyze HSE on an institutional/normative level as well as a company/descriptive level.

The problem is as follows:

*"What are the main differences and the practical implications of these differences in health, safety and environmental regulation and management in the Norwegian and Russian oil industries?"*

In order to fully cover the polarity of this study, the problem statement is quite wide. Although wide, it is still the very core of what we wish to study. To the purpose of making a comparative analysis, we simply need to examine differences (and to some extent also the similarities) between the HSE regulations in Norway and Russia. Similarly, the "practical implications" refer more to the usage of the regulations, i.e. how the company would manage them. The problem's delimiting components are its mentioning of Norway and Russia, as well as the oil industry.

The research question has several aspects that must be answered: What the institutional differences between the HSE regulations of the oil and gas industry in Norway and Russia are; which mechanisms drive these institutional differences; what the main HSE-related challenges FMC Eurasia experiences while establishing business in Russia are; and how these challenges related to the institutional differences between HSE regulations can be explained. Hopefully, covering these aspects will make valuable contributions to the theory and practice of HSE via illuminating the legal differences and challenges, and the relationship between these.

## 1.3 Methodologies and delimitations

The study primarily utilizes qualitative data, either in the form of the normative laws and regulations accountable to the governing bodies of the two nations, or the descriptive data provided by the informants from the case-in-point company, FMC Eurasia. This shapes the overall research design from beginning to end, and the principle of analysis is correspondingly qualitative. Qualitative studies aren't necessarily complex or unstructured: pragmatic simplicity is the aim of breaking down and rebuilding constructs from the qualitative data; rigid assurance of both validity and reliability is critical for the quality of the research.

Even in the framework of the study, ref. chapter 1.2, the possible extent of the materials needed to be covered is massive. To make the study more approachable, we chose a few areas of focus. First, the study will primarily focus on upstream petroleum activity, as well as the management

component of those. Mid- and downstream activities, while occasionally covered by the regulations, are not the subject of investigation for this study. Notably, this includes everything related to onshore facilities, such as refineries and transportation hubs. This is because the case company is exclusively operating in the upstream sphere. Secondly, HSE on Norwegian petroleum facilities is determined by the ordinary working environment act (that applies to the entirety of Norway), as well as the specific HSE regulations for petroleum activity – in which the latter is the one with decisive power in the event of a regulatory conflict. Since we are not studying working environment safety in Norway in general, we also choose to delimit the study of the Norwegian legislations to the HSE regulations, as provided by the Petroleum Safety Authority Norway (PSA). The PSA is the main regulator of these legislations and are on many occasions the direct authority of correspondence with the petroleum companies operating in Norway. In both a legal and practical aspect, the PSA is the appropriate governmental body to examine further with respect to HSE regulations.

## 1.4 Structure

The structure of the study is following the convention of masters' theses in the University of Nordland, and therein sequenced with respect to the two main parts. In the following chapter, we will present some relevant theories that serve as the bases for the research questions and analysis alike. These theories are concerned with the theoretical concept of HSE regulation and management as well as institutional theory. In the third chapter, we will further elaborate on the thesis's research design, as well as a review of our choice of specific methods to understand the data well. Chapter 4 is dedicated to the analysis on an institutional level, and both the findings and analysis thereof is located in this chapter. Chapter 5 covers everything related to the case study, also including both the results and the analytical part. The analyses in chapter 4 and 5 culminate into the conclusion found in chapter 6. Tables, figures, references and other material can be found in the appendices.

## 1.5 Summary

With clarity and brevity in mind, here is a fundamental summary of the study:

*What we study:* The concept, application and implication of health, safety and environmental regulations of the Norwegian and Russian oil and gas industries, in a combined and intertwined comparative study of both the legislative and managerial differences involved.

*Why we study it:* Oil companies are generally highly determined to act compliant to HSE regulations. Even more importantly, proper HSE management will mitigate the amount of accidents; avoiding death, injuries and environmental disasters. However, the academic literature on the field is surprisingly lacking, considering the role of HSE is contemporary oil companies.

*How we study it:* One part of the study is a logical, but deterministic comparison of the very contents of the core HSE legislations of the two countries. Another part of the study is predominantly shaped by in-depth interviews with a case company, with the aim of understanding how the company experiences differences in HSE regulations, and how this affects their HSE management.

*What for:* We can make three general assumptions about HSE regulations: (1) they differ across borders; (2) they are not constant; (3) they are important. First, international oil companies need to ensure compliance in all geographical areas of their operations, which means that they indeed must be aware of the differences in the legislations. Secondly, even oil companies operating in a single geographical area would benefit from awareness that HSE regulations are subject to change, so therefore they must understand the governing mechanisms for how these changes are made to increase the predictability of the law. Finally, HSE is important, not only for the sake of compliance in its own right, but also in respect of the aim that HSE regulations maintains: to reduce workplace accidents and environmental disasters. This study will therefore assume somewhat of the same aim – with belief that the HSE regulations are necessary and inherently good for the workplace of thousands – and that is why the regulations must be fully understood.

# 2 Chapter II Theory

## 2.1 HSE as an emerging theme

### 2.1.1 Definition

Health, safety and environment (HSE) can be regarded from two different perspectives. On one side, HSE is a set of requirements, laws, regulations, recommendations and notices published in one way or another by an authorized institution or a set of governing bodies. We can refer to this as the regulatory HSE perspective. On the other hand, HSE is also a matter of compliance. For a company, HSE could thus refer to a managerial instance or department in the corporation tasked to deal with these regulations; it can also be seen as the managerial framework for dealing with HSE itself. This is the kind of duality that shapes this study; on one hand you have the regulator, and on the other the one who is being regulated. However, HSE also in its own right conceptually dualistic in terms of content. On one side, there is the "health and safety" component, commonly referring to the safety of humans and to ensure a safe working environment. On the other side, there is the "environmental" component, which is more concerned with the environmental implication of a company's operation.

Workplace "health and safety" is sometimes referred to as *occupational safety and health* (OSH). This is a concept that is widely defined:

> *"…is generally defined as the science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment"*
>
> Alli, 2008, p. vii

The definition above is broad enough to form the entire concept of HSE in general terms. After all, HSE management is simply put to predict and reduce the likelihood of accidents or hazards with implications to human and environmental safety. While we appreciate the duality of human and environmental safety and their inclusion to the same concept, there is still ambiguity with respect to the dual application on the institutional and business levels. A universal definition of HSE as a concept is hard to deduce because of this duality.

First, on an institutional level, HSE as we understand it is largely a country-specific issue. This means that there is a lack of a globally accepted standard of HSE regulation. In some countries,

e.g. Russia, the human and environmental components of HSE are split altogether – the safety of humans and the safety of the environment are regulated by different entities via different legislations. In other countries, e.g. Norway, HSE is a combined concept, with singular, overarching governance and a correspondingly uniform legislation to cover everything HSE-related.

Secondly, on a company-level, the concept of HSE is even more diverse, due to the very fact that each company will have its own unique understanding of what HSE is; its relevance to its business; and their intended compliance at such. However, in broad terms, HSE management in companies roughly corresponds with the definition given above. In many circumstances, the concept of HSE is used in the companies to refer to an internal department of the company responsible for dealing with HSE-related issues and overall management of HSE. In terms of functionality, the traditional HSE department is a hybrid. In an overall sense, it is a structural component of the organization similar of any other department, and requires to some extent business management for administrative purposes. Its operations are however more strongly associated with legal aspects, as well as technical challenges. The legal aspects determine in which manner the company must behave to remain compliant – and the technical challenges relate to the implementation of such behavior; as well as technical quality assurance.

HSE, by the definition above, relates to any company in any industry, and is not only applying to the oil and gas industry. HSE is known to make its presence among initiatives and certifications for increased workplace environments, like for instance the Norwegian Eco-Lighthouse certification – explicitly requiring all certified companies to implement a satisfactory HSE system (Eco-Lighthouse, 2015). Notably, these certified companies range from kiosks, through hairdressers, municipalities, hotels and large industrial plants – panoptic (Eco-Lighthouse, 2014). However, the field of HSE holds relevance to a much larger extent in certain industries, like for instance the chemical industry, heavy machinery and manufacturing, and with certainty the hydrocarbon industry. Whereas the universal goals of HSE management remain the same for all industries, the necessary means and potential hazards are very industry-dependent. HSE, as it holds its relevance for the hydrocarbon industry, is the only angle covered in this study.

### 2.1.2 Literature and theory

As a legal, regulatory field, HSE is dominated by the legal documents themselves, i.e. laws and regulations. Supplementary to these, one would also find academic text books that study the law deeper and explains how it should be applied. These, of course, are tailored to the specific laws, and therefore mostly with shifting relevance from country to country. Arguably, there is a large potential for theorization on the political-legal drivers of the emergence and dynamics of HSE legislations, implicitly implying that this is lacking in the domain of publicly available information.

The literature on HSE management in companies is more widespread and popularized. On one side, there are international organizations housed and supported by the oil companies themselves, e.g. the *International Association of Oil and Gas Producers* (IOGP/OGP), IPIECA ("*the global oil and gas industry association for environmental and social issues*"); as well as national and regional associations, e.g. Russian Murmanshelf ("*Association of suppliers for oil-and-gaz industry")*, *Norwegian Oil and Gas Association,* and the *U.S. Oil and Gas Association.* These organizations typically pursue the issues that are for the common good for the entire industry. IOGP in particular is concerned with matters relating to HSE, having published several thorough and scientifically sound reports on the topic since the 90s. Having a widespread good practice of HSE is allegedly such a common goal for the entire industry, as evident also by the companies' slight tendency for transparency in HSE-related matter. Many oil companies are publicizing their HSE management systems (e.g. ExxonMobil, 2009 & Schlumberger, 2013); or even more in-detail reports of HSE management functionality (e.g. BP, 2012 & Statoil, 2012). Strictly speaking, these reports and publications aren't theorizations of the management field of HSE. More so, they are practically oriented documents that arguably cultivate trust towards the company from their readers.

As an academic field, HSE assumes an awkward position due to its hybrid nature elaborated upon above. It is as much of a legal field as it is a technical/engineering field. Atop of that, one could argue that it would also benefit from being regarded in a business management perspective, whereas implementing an effective management system for HSE is the key challenge. In the academic domain of business management, the literature of HSE lacks benchmark theorization. A wide array of effective HSE management exists, but the majority of which are highly specialized to a single industry; or even a single function within an industry (e.g. an oil refinery deals with vastly different health-related hazards than an oil production platform). Another segment of the literature seems

particularly concerned with (hopefully) one-off incidents; reviewing the mistakes that had happened and attempting to derive a better practice in retrospect: see chapter 2.1.3.1.

### 2.1.3 Contextual factors of HSE

HSE as an academic and professional field seems to be growing. This subchapter aims to describe the purpose of its relevance to the oil and gas industry; its increasing presence as a field; and finally its current role in the oil and gas industry.

#### *2.1.3.1 A history of accidents in the oil and gas industry*

HSE's role in the contemporary oil and gas industry has grown over time. One could argue that an increase in accidents of almost any kind will emphasize the need for an improved HSE mechanism. Had there not been accidents, the need for HSE would be mitigated. However, the threat of accidents is very real, and the consequences can be decisive. Accidents come in different settings; they can be the result of human and non-human error, and the scope of the accidents is varying. There are unfortunately many dreaded examples of accidents in the oil and gas industry. The 1967 Torrey Canyon shipwreck marked the debut of the on-sea oil spill. The shipwreck happened right off the coast of the United Kingdom, and the damage control measures were attempts to bomb the ship and igniting the oil. Eventually the ship sank, but the oil didn't ignite, and was spilled into the sea. It all happened in broad daylight under calm conditions, and is largely accountable to human error, especially poor decision-making from the ship's captain, and at that, both lacking sensible prevention and preparedness procedures (Rothblum, 2002).

Exactly to the day 11 years later, in 1978, a similar accident happened when another large crude oil tanker shipwrecked – this time, off the coast of France. The Amoco-Cadiz left an oil spill that remains unmatched to this day, and the consequences for proximate natural environments and even local populations were severe. This accident was accountable to both weather conditions as well as human error: 10-meter tall waves and strong winds laid the foundation of the situation, but it was largely amplified by worrying technical conditions of the ship; lacking communication between the captains of Amoco-Cadiz and its tugboat; negligence of requesting assistance; and insufficient

onshore initiative to assist, even considering the fact that the emergency radio network had intercepted several critical messages about the current situation (Lagadec, 1982).

Human casualties did not occur in either of these oil spills, even though the damage to the natural environment was significant. On the 15th of February 1982, one of the largest tragedies of the oil and gas industry happened, as the Ocean Ranger semi-submersible offshore oil rig sank into the Grand Banks of Newfoundland – taking with it all 84 crew members, none of which survived. To cope with an upcoming storm, the drilling rig disconnected the marine riser tensioner from the sub-sea wellhead and blowout preventer. Later on, a rogue wave – an abnormally large and fairly rare kind of wave in which the height is defined as twice that of the significant wave height (The Economist, 2009) – crashed onto the platform. Unable to reveal any immediate damages to the rig, apart from the loss of a lifeboat, the crew stayed on the platform to assess the situation further. Quite some time after the wave, they made reports of heavy damage to the rig, and attempted to evacuate. Albeit most of the crew members made it to the lifeboats, none of them were able to survive throughout the storm. For the most part, the weather conditions were accountable for the tragic outcome of this incident. However, at the risk of human lives, such conditions must be met by sufficient standards of safety – categorically, any such risk is unacceptable. It is also disputed how efficient the evacuation procedure of the oil rig was, which suggests that the crew was not sufficiently instructed in how these are to be carried out. (Dodd, 2012).

Continuing on adding to the bleak death toll related to the oil and gas industry, the Union Oil Company's Romeoville refinery suffered from a massive explosion and a following fire two years later, in 1984. This was an onshore incident completely unaffected by weather, and wholly accountable to poor facility standards, as a large gas tower cracked, and an unidentified ignition lit up the container and created the explosion. 17 people, including 10 firefighters, were killed in this incident (Groves, 2006). In the same year, the even worse San Juanico disaster happened, when a liquid petroleum gas tank exploded outside of Mexico City, Mexico. The explosion directly killed between 500 and 600 people, and over 5000 people suffered serious burn injuries. On one side, the poor design of the tank facilitated the explosion, and on the other side, the population was permitted to build residences very close to the tank – in safety terms a completely unacceptable practice (Bernechea & Arnaldos, 2013).

An incident that holds particular relevance to one of the main topics of this very study is the Piper Alpha accident. Piper Alpha was an oil platform in the British North Sea and operated by Occidental Petroleum (Caledonia). In July 1988, yet again, a mixture of human error and crucial technical flaws led to an explosion on the facility, which would tragically take the lives of 167 people. This is one of the examples of an incident that directly made dramatic changes to the behavior of the oil and gas industry as a whole. First, most offshore operators would immediately assess their own facilities for similar weaknesses. Secondly, there was a Public Inquiry (an official review of an incident, as ordered by a government body), which led to the creation of no less than 106 recommendations for the oil and gas industry – all of which were accepted. The Health and Safety Executives would be responsible for 57; the operators – 40; the industry as a whole was assigned 8; and the last recommendation was allocated the Standby Ship Owners Association. The industries' recommendations were rapidly and successfully implemented (Oil and Gas UK, 2008).

Arguably the most environmentally damaging human-caused industrial accident in history is the infamous Exxon Valdez oil spill in 1989. Grounding near the Aleutian Islands south of Alaska, the supertanker spilled crude oil in a highly sensitive area, evoking massive damage to the natural environment and the imminent end of livable conditions for people native to the area. Not only was it a showcase of lacking preparedness and emergency response, but it also displays the importance that the safety is no stronger than the weakest link – which in this case is argued to be the captain of the ship, whose daytime activity was consumption of liquor (The Supreme Court of the United States, 2007) – and the court would also conclude that these highly irresponsible actions were facilitated by a deranged corporate culture within ExxonMobil. Once again, this caused ripples in the industry-wide engagement for mitigating safety risks. ExxonMobil would immediately require alcohol- and drug testing on its employees – and also adopted to a wide array of other safety-increasing measures, as they finally accepted that "safety comes first" (Brady, 2014).

Major accidents would fortunately elude the oil and gas industry for quite a while following the Exxon Valdez incident. 2005 would be the year of the next major accident. Texas City, a small city unsurprisingly located in Texas, US – a city which had previously suffered the deadliest industrial accident in the US history (The Texas City Disaster; with a casualty count of 581 people), would again experience an industrial accident when BP's refinery in the city exploded and killed 15 people and wounded another 170. BP commissioned former Secretary of State James Baker to conduct a study to assess the wrongdoings leading up to this accident. Baker, et al.'s 374-page report (2007)

illuminates an assessment that BP's risk management in their US refineries did not exercise good process safety management; risk assessment was flawed; the refineries didn't even comply with the company's standards; among many other shortcomings. It was, however, clearly supporting the notion that the accident would have been avoidable under better management.

Lastly, there is the recent behemoth catastrophe of the Deepwater Horizon oil spill. The oil spill, dated to April 2010, was both lethal and devastating to the nature; Lethal - because the explosion initiating the spill would claim the lives of 11 people. Atop of that, the spill's impact on the coastline environments in the Mexico Gulf was terrible. The project would pioneer the limits of possible offshore drilling depths – 10,683 meters of vertical drilling depth. The water area was classified as ultra-deepwater, which is defined as more than 1,500 meter depth. Greenpeace (2012) would have the water depth and lacking experience and preparation for such projects to be the main causes of the accident. On the contrary, Sintef (2011) proposes that the accident is not accountable to a single failure, but rather a series of events leading up to a systematic breakdown. Further, they suggest a list of eight underlying causes of the accident, all of which are in some way or another relatable to the concept of good HSE (Ibid).

This bleak subchapter of the study holds an important purpose: to show that accidents happen. Repeatedly, and over the course of 50 years, the oil and gas industry has suffered dramatic losses in terms of human lives. Its occasional impact on nature has at times been entirely perverse, and it is arguably one of the industries with the most adverse impacts on the globe. It's the same story throughout, as an accident would occur, and the industry will implement some way of coping with these in the future. It may very well work, but the industry is pressured into pursuing even more challenging production areas, and naturally, the safety requirements should increase correspondingly. Judging from the historical events listed in this subchapter, it would seem that the requirements tend to lag behind the actual events they are appointed to mitigate. On these thoughts, at some point in time, the notion that "accidents will happen" surfaced. One must accept this as a fact, but let it sharpen the measures for preparation, prevention and response. Notably, this subchapter also ever mentioned cataclysmal one-off occurrences leading to visible changes to the industry. HSE purposefully aims to mitigate the risk of such kinds of events, but just as importantly in its everyday practical implementation, HSE regulation also considers smaller events; the stuff that wouldn't go in the history books. The scope of accidents isn't really defined or even relevant: an accident or a hazard, regardless of its impact, is part of the understanding of the risks that must be reduced.

#### 2.1.3.2 A history of HSE as a legal field

As elaborated on above, the HSE as a managerial field was given purpose by the real-life consequences of its absence. At which point in history the concept of HSE emerged is unclear. However, the recognition of the need to protect the lives of the workforce is something that arguably dates back to the middle part of the 19th century, in the context of the industrial revolution (Abrams, 1994). Awareness and willingness to improve working conditions was first initialized via the formation of labor unions at the time; and pressure from the workforce itself was the one that ultimately lead both the companies and the government to change their policies (Ibid). This awareness can first be traced to Europe with the formation of certain inspectorates and commissions to care over certain high-risk occupations, e.g. factory workers and miners, whereas the U.S. development lagged behind; slavery not yet being abolished (Ibid). One of the first traces of legislations to cover workplace safety issues were a social insurance legislation and a worker's compensation law passed by Otto von Bismarck, respectively in 1883 and 1884 (Ibid). This was done in direct response to pressure from the uprising of the labor unions. Abrams (1994), correspondingly identified community action as one of the main drivers of occupational health concerns altogether.

Occupational safety improved in Western society since the initiatives of the industrial revolution. Companies would realize that it was to their benefit of having their workers survive the work day; and the collective efforts of the unionized laborers clearly resulted in a bargaining power to improve their conditions. So on account of these two factors, the companies would improve working conditions on their own initiative (Ibid). While matters were improving in Europe, the industrial safety in the United States was by far and large absent, even after the turn of the century. To illustrate: In 1906, industrially important Allegheny County, housing the city of Pittsburgh and around 700.000 people at the time, a doctor made a record of all work-related deaths in the industries of the county. Over the course of the year, the number of deathless days was greatly out-weighted by days where deaths occurred; 527 deaths in total (CDC, 1999). The doctor, Alice Hamilton, as a pioneer of the field, specialized in occupational illnesses. She would discover the lacking control of workplace safety in the country, and would later be recognized for her efforts and initialization of occupational health as a field in the United States (Ibid).

Governmental regulation of occupational health and safety would also emerge in the 1900s. By 1930, all the states in the U.S. had passed laws on workplace safety (Eddington, 2006). In the years to follow, the industries would be disrupted by the 2nd World War, and the political

environment would arguably not prioritize the need to improve workplace safety in the industries. After the war, the legislations imposed to the various industries would increase in number, but not necessarily in effectiveness. In 1972, Lord Robens of the United Kingdom concluded a report on the public policy strategy to reduce work-related illness and accidents, stating that the current practices were largely ineffective (Ibid). In addition to being simultaneously apathetic and rigid, the legislations were also deemed to be randomly implemented, confusing and incomplete. Characteristically, the current legislations were all about punishment and policing. Robens proposed a newer form of legislation, which included enablement and self-auditing for the workers, and that would eventually be successfully implemented in the British industries shortly thereafter (Ibid). His initiatives are said to drive forth a growth in the legal field of HSE; sparking it as a field of law; a field of education and training; a field of science and engineering; a field of nursing, psychology and sociology (Ibid). Altogether, this coined the concept of HSE as the modern industry knows it.

#### *2.1.3.3 The role of HSE in oil and gas*

HSE as a field of management depends entirely on the industry at hand. Most industries presumably follow the legislations they operate under, so it's of primary importance that such legislations exist. With the emergence of HSE as a legal topic in the 70s, the oil companies would eventually also become subjects to these legislations. One of the first companies to adopt a widespread management tool to deal with HSE-related matters was Royal Dutch Shell, in their 1984 implementation of the Enhanced Safety Management system (Zijlker, 2004). It's commonly accepted that this system sincerely added to the effectiveness of HSE management, especially due to the fact that it facilitated an implementation and improvement of HSE culture among the workers of the organization (Ibid). Other oil companies would follow this path, and implement their own systems for managing HSE. Major international oil companies, e.g. ExxonMobil, BP, Royal Dutch Shell, Statoil, Chevron & Rosneft all, to some extent, publicize their HSE management systems.

## 2.2 Institutional theory

Institutional theory emerged from the domains of sociology, organizational theory and industrial psychology. Two topics concern this theory: first, the question of how the institutions come to be; second, the relationship between institutions and other entities of a society, e.g. organizations. With

*institution* being the operating word, it is important to understand which entities the term encompasses. This, however, is not precisely defined in the literature, as there are many different definitions of "institutions" and "institutional theory" alike. However, a reasonable explanation is that an institution is a stable, valued, recurring pattern of behavior (Huntington, 1965). In practical terms, this can include as much as religious, educational, medical, academic, political, and industrial institutions – as well as our focal point: the legal institutions, encompassing the courts, legal actors, penal system, but most importantly the law itself. The law and its regulations are therefore an institution, and the two main questions of the institutional theory can be re-phrased to support the study: First, how did the HSE regulations as legal institutions come to be; second, how this institution influences the oil and gas industry. This chapter will review some of the most important literature for institutional theory as a whole, while also consider some angles relating specifically to the legal institutions.

### 2.2.1 Institutionalism from Berger to Powell

Neo-institutionalism is the dominating school of thought within institutionalism as an overarching idea or concept. Its inception is said to be in the 1970s, which is accountable to Meyer & Rowan (1977), as well as DiMaggio & Powell (1983). Before all this, Berger & Luckmann (1966) gave an important perspective on institutionalization, as they theorized how institutions come to be. First things first, they rooted their entire thesis in a fundamental philosophical assumption that a man's reality is both relative and socially constructed (Ibid). This means that the world is experienced uniquely and therefore differently from person to person. With this assumption in mind, they stated that in all social and non-social human activity there will be some sort of *habitualization* – i.e. the act of forming a habit. Repeated action makes a pattern, and this pattern becomes a habit (Ibid). This is meaningful for the purpose of creating order out of chaos. When pursuing a desired outcome from a set of actions, the person must choose a path of actions to follow. These paths are commonly very diverse, leaving the person with hundreds of options. However, through habitualization of actions, the person has narrowed the number of paths down to one – relieving the person the trouble of choosing among "all those paths" (Ibid). The next step is *institutionalization* – i.e. the process of becoming an institution. Berger & Luckmann (1966) would have it that institutionalization happens when there is a mutual habitualization. That is to say, a habitualization is something individual. When two or more such habits or patterns reach equilibrium (they are never created instantaneously (Ibid))

and coincide, they become an institution (Ibid). There are at least two implications of this theorization: first, before an institution is created, there must be habitualization among the actors; second, the institution is always shared among the actors and thus available to the community. Supposing we support the theory that institutions are created from merging habitualizations, we would also allow for a wide definition of what constitutes an institution. Similarly, it is easier to see how certain institutions may have come to be in this manner, as for example simple social norms: The people of a community develop a pattern to shake hands upon greeting. Over time, this becomes the usual way of greeting, and therefore becomes a social norm: an institution. By extent, and arguably by a much more complex reciprocal habitualization, a law is also an institution, and is also created under the same assumptions and the same process.

**Formal and informal institutions**

When we speak of institutions, there is an important distinction to be made: whether they are formal or informal. Both equally qualify as institutions in the theoretical sense, but they have different features that give them different implications and influence on the world of organizations. The difference can shortly be summarized by North's (1990) short definition of institutions altogether: "*rules of the game* or *humanly devised constraints"*. This refers to a duality of the nature of institutions. On one side, there are the formal institutions: the rules of the game. On the other, the informal institutions: the humanly devised constraints. This distinction is categorical: all institutions are either or.

*Formal institutions:* Formal institutions are manifested as written documents or rules exercised by a formal authority or ownership (Zenger, Lazzarani & Poppo, 2001). North's (1990) definition of formal institutions as *rules of the game* suggests that the institutions do not encompass organizations – however, this is greatly disputed (Hodgson, 2006). One interpretation is that his studies imply that there is a distinction between formal institutions and organizations, but only because the organizations have some additional features (Ibid). In North's (1990) analogy of the game, it is however clear that the *rules of the game* are the rules that the players must follow, and the players are interpreted as the organizations. Therefore, they are separate. With this understanding of what separates institutions and organizations, we can also understand that the formal institutions – as

defined as written documents – are laws, regulations, constitutions and similar documents with a legal or regulatory power.

*Informal institutions:* The second half of the definition above was about institutions as *humanly devised constraints*, which can be interpreted as the informal institutions. Informal institutions encompass norms, cultures, values and ethics. Characteristically, they are all something that exists socially, and is not necessarily manifested in writing. Even though they could be described in writing, the document on which they were described on wouldn't be the institution in its own right – merely a description, whereas the actual institution remains abstract and in the social sphere. As with formal institutions, the informal institutions may differ greatly from context to context – geographically, historically, sector, industry, as well as individually. However, the pattern seems to be that no matter the context, there seems to appear a collective habitualization of the informal institutions, which in turn leads to a common understanding of acceptable behavior – even though it is not explicitly stated anywhere.

A matter of discussion is the relationship between formal and informal institutions. For example – which is more important in determining the organizations' behaviors? Which affects the other the most – are the formal institutions derived from the informal institutions, or is it the other way around? All too difficult to say, but a recurring topic is how these formal and informal institutions can change the behavior of the organization. Coming back to the previous paragraphs, the formal institutions were dubbed *rules* and informal institutions *constraints*. Assuming the *player* (organization) attempts to act in compliance with the institutions, then both the rules and the constraints will have a strong influence on the behavior. Really, they are both just two words denoting a delimitation of behavioral freedom. They both result in the same thing: the scope of possible actions and behavior is limited. Sometimes through encouragement (formal: "*the organization must…"* & informal: "*the organization should…"*), sometimes through discouragement (formal: "*the organization must not…"* & informal: "*the organization should not…"*). Answering the first question, perhaps it is reasonable to say that none is stronger than the other in principal terms – it depends entirely on the institution, but not its type. Answering the second question, it is perhaps just as reasonable to claim that they have a synergetic effect: "the law is a product of the norms of its time, and the law in turn reinforces the norms".

**Ceremony and myth**

Meyer and Rowan's (1977) idea of formal structure as ceremony and myth is a counter-argument to the otherwise well-received proposal that organizations are rational and always attempt to maximize efficiency. The argument is based on the existence of "institutional myths" in the organization's environment. These myths are somehow representative of the perceived norms or values of the society they operate in. It is also possible that the myths of the environment can become rationalized in their own right. What perchance starts off as unreasonable expectations to an organization's formal structure may become reasonable over time. The organization then conforms to these myths to gain legitimacy. Secondly, we must also understand that the "formal structure" refers to the way that the organization is structured, which is essentially meaning the organizational chart and the hierarchy it depicts – and the formal relationship between the different responsibilities of its participants. The problem arises when, in terms of structuring the organization, there is a difference in what maximizes economic efficiency and what satisfies the institutional myths. Meyer and Rowan's (1977) argument was that the organization, instead of rationally attempting to maximize efficiency, would rather attempt to conform with the institutional myths of their environment, when these are mutually exclusive. Choosing the latter over the former, the organization creates a "ceremonial façade" in their formal structure. It is ceremonial, because it is something that is supposed to be visible to the environment, and in a sense, it is a matter of appearance; symbolic.

Meyer and Rowan (1977) made six proposals with this theory. First, after the emergence of rationalized institutional rules, the organization accepts and adapts to these, and thereby changes their formal structure. Second, a more modernized society is prone to contain more rationalized institutional structures within a domain of activity, as well as containing more such domains to begin with. Third, organizations that adapt the rationalized institutional rules to their formal structure will increase legitimacy and survival capabilities. Fourth, controlling and coordinating activities in formal organizations lead to conflict, and therefore loss of legitimacy. Thus, such efforts are avoided, and the structural elements and activities are separated in the formal structure. Fifth, organizations whose structures are more similar to the institutional myths maintain a stronger display of confidence, satisfaction and good faith. Sixth, the organizations will attempt to minimize inspection and evaluation of their formal structure by both internal and external agents.

The gist of the argument can be traced back to the notion that legitimacy is more important than economic efficiency, both in the short and long run. The need for legitimacy is absolute in many organizations, and perhaps especially in oil and gas companies, whose licenses to operate are decisive also for the long-term survival of the organization.

**Mechanisms of isomorphism**

DiMaggio and Powell (1983) also examined the nature of the organization, as they tried to understand why organizations appear so uniform. They argued that homogenization of organizations occurred as the organization grew bigger and became more established. This is called institutional isomorphism. Isomorphism means that organizations modify their characteristics to match with the organizational environment surrounding them (Ibid). DiMaggio and Powell (1983) argued that there are three main mechanisms of institutional isomorphism: (1) *coercive isomorphism:* organizations become homogenized because of politics or the need for legitimacy, both in a formal and informal sense, e.g. the laws and norms of society; (2) *mimetic isomorphism:* organizations become homogenized because of uncertainty in the environment, i.e. adapting safe and established practices to mitigate risk of failure; (3) *normative isomorphism:* organizations become homogenized because their participants are professionalized, i.e. meeting institutional dogmas from educational background and their professional network of similar professionals (Ibid). DiMaggio and Powell's perspective on neo-institutionalism differs from that of Meyer and Rowan's. While the latter two are concerned with the structural analysis, the former two take into account the principal/agent theory (Nee, 2003). The following three subsections will examine these three mechanisms of isomorphism a bit further.

**Coercive pressure**

*Coercion* refers to the influence or pressure from intimidation or display of power and domination. *Coercive isomorphism* is in a sense based on this form of influence. Coercive pressure leads to isomorphism, as the organization is changing its behavior to act in accordance with the expectation of another organization that it is dependent on (DiMaggio & Powell, 1983). This type of pressure is evident in situations where one organization is clearly more powerful than the other – both through market power or legal power – and there is dependence from one to the other. For example: The

Food Safety Authority of a country often has a legally manifested power to cease the operations of food producers and restaurants that are not acting in accordance with the rules on food safety. The food producers and restaurants are dependent on the approval from the Food Safety Authority, and will therefore change their behavior to fit with all the legal requirements of food production and preparation, in order to gain legitimacy. Therefore, consciously complying with values, norms and institutional requirements (thereby laws and regulations) is the result of coercive pressure (DiMaggio & Powell, 1983).

One of the clearest illustrations of coercive pressure is from the power the formal institution of a law has on the organizations, but it must be noted that this is not the only way coercive pressure can appear. Coercive pressure can result from a power relationship between formal and informal institutions, both directly and indirectly. The only real linkage between all the varieties of coercive pressure is that an organization is dependent on a more powerful organization or institution for legitimacy. A consequence of being coercively pressured is the organization's tendency to remain preoccupied with monitoring and supervising its compliance with the rules or requirements they are driven by (Matheson, 1987). Because the dependence upon another organization or institution is a key assumption of coercive pressure, relatively resource-weak organizations such as not-for-profit organizations may be susceptible for coercive pressure. This is because they have dependency from their stakeholders for resources, e.g. governmental or publicly funded support (DiMaggio & Powell, 1983). Resource-rich and otherwise powerful organizations are therefore less prone to be coercively pressured. However, resources are not the only forms of legitimacy the organization may require: being rewarded the license to operate is for instance something resource-rich and powerful oil and gas companies are completely dependent upon.

**Mimetic pressure**

To *mimic* is to copy the behavior of others and from there comes the second pressure for isomorphism. *Mimetic pressure* occurs when an organization is trying to copy the behavior of other organizations in their environment to gain success or legitimacy (DiMaggio & Powell, 1983). Whereas coercive pressure is dominated by *dependence*, mimetic pressure is dominated by *uncertainty:* uncertainty of the environment and objectives leads organizations to identify and adopt the practices of other, seemingly more successful organizations (Ibid). This uncertainty can be understood as

unclear goals and objectives; new technologies are being developed and put to use; the customer preference is unclear, and so on (Ibid). If such is the case, the organization may try to seek out one or several organizations in predominantly their own environment, and benchmark their practices. It is not a prerequisite that the organization that is being mimicked is aware of this process, and the mimicked organization may often carry on like usual, unaware that it is being copied (Ibid). Therefore, there is not necessarily an element of cooperation or even domination in the relationship between the two organizations. Although unlikely if the organizations are competing, mimetic pressure can also be facilitated by one of the organizations aiding the other.

As mentioned above, the organization would predominantly seek to identify the leading organizations within their own environment or organizational field. An oil and gas company is more likely to look to the oil and gas company they regard as the most legitimate – likely also within the same geographical area as they are operating themselves. This is perhaps what sets mimetic pressure apart from common benchmarking, which can involve copying the behavior of the top companies, regardless of their organizational fields. "Uncertainty" often implies a fundamental lack of understanding an aspect of the operation. Because of this lack of understanding, it is also observed that organizations attempting to mimic other organizations copy behaviors that were initially designed for a problem the copy-cat did not experience to begin with (Washington & Patterson, 2011) Another problem related to mimetic pressure is the lacking availability of information as for how the more successful organizations behave. The external appearance of their behavior may be influenced by internal processes and practices the organization does not communicate, and is therefore difficult to copy.

**Normative pressure**

*Normative pressure* is anchored in the simple, but ambiguous term *normality*, i.e. what is considered to be the correct way of behavior. Normative isomorphism is therefore driven by adapting to the practice that is common within the organizational field, which in turn is driven by *professionalism* (DiMaggio & Powell, 1983). Professionalism, in this sense, is the very process of reaching a collective understanding of the appropriate behavior among the professional members of the organizations – occasionally across the boundaries of the organizations (Ibid). In order for this to be possible, DiMaggio and Powell (1983) assume that the individual members of the organizations will be

embedded in a set of norms and values of his or her occupational context. Therefore, workers of certain types of occupations will appear more uniform in the way they believe and behave, and this will also influence the organization they are a part of. These sets of norms and values can be embedded in the personality of the individual worker from as early as the education, from where the worker receives the first impressions and guidelines for the profession (Ibid). It may further be communicated within the network of professionals on business conferences, seminars, journals and academic literature, training programs and workshops (Galaskiewicz & Wasserman, 1989).

The relationship between normative pressure and the other two categories of pressure can be interesting. First, the professional social networks needed to facilitate the professionalism mentioned above are often not affected by coercive pressure, e.g. laws or powerful organizations (Galaskiewicz, 1985). Therefore, professionalism is free to develop without the control of coercive measures. Second, the process of professionalism seems also to be driven by uncertainty, as the professionals have been observed to reach out to their peers in complex questions or uncertain environments (Ibid). So in a sense, professionalism is drawing resemblance to mimetic pressure, but on an individual level, rather than organizational level. Further on, normative pressure is considered to be a very powerful type of pressure, comparable to coercive pressure. This is because the behavior of the organization is made up from the behavior of its individuals, which in turn have a strong deposition to follow their inter-organizational dogma. This is especially due to the tendency for professionals to share personality traits with professionals of other entities than their own (DiMaggio & Powell, 1983). Notably, the normative pressure isn't only led by the influence of one professional on another, but also from the effect from having a circulation of professionals within the business environment (Ibid). Over time, the organizations in the environment will experience a shift in memberships: professionals get job offers in rivaling firms and take with them their experience and practices from one company to another, which also is a form of driving normative pressure (Ibid). This may also warrant a problem, as the constant recycling of the same individuals among the organizations may hamper the potentially positive influence of fresh minds.

### 2.2.2 The law as an institution

The law's role as an institution is interesting. In the academic milieu, the law has not always been accepted by the researchers as an institution, but since the turn of the millennia, the law has gradually

been analyzed more in institutional terms (Schauer, 2009). The law as an institution unequivocally leads to a regulative institutionalization: the organizations accept the institution because they are legally bound to it. Given its special role at such, Twining (2009) argues that it is collectively accepted that the law as a social institution is inherently differentiated from most others. Therefore, we could argue that the law requires a specialized way of being studied, not necessarily corresponding with the general methods of the sociological academic field – mainly because it is disputed whether it should be analyzed as a sociological concept or using plain normative, legal terms (Schauer, 2009).

On the topic of studying comparisons of law, MacCormick (2007) offered some insight: instead of assuming that a particular law is inherently better than the other; rather so, the student must avoid altogether to attempt seeing the examined law in the best possible light, and should put aside any such pre-assumptions before commencing the study. Using an unbiased methodology for comparison, MacCormick (2007) argued that the researcher may be able to discover some underlying differences between the places they emerged from. In other words, they may capture the law-makers attitudes towards maintaining peace and justice in the society, and the manner of which this is done is not arbitrary. Of course, for this study, the concern is less about peace, but more so about safety. Having this in mind, it is fruitful to consider an institutional approach to comparing the regulations: after all, one may very well regard the regulation as an institution.

Going back to the argument of a specialized method of analyzing the law as an institution, it is useful to consider the influence from legal positivism. Legal positivism is a school of thought in the philosophy of law in which the central claim is that the law is constructed, and not based in a universal moral. Consider this: not all laws are universally accepted as just, fair, necessary or reasonable – but their legality isn't questioned (Ibid). Using the institutional terms (i.e. isomorphic pressure, formal/informal institutions and ceremony/myth) to analyze the laws, MacCormick's (2007) argument is that it would give a clearer, less biased picture, if the researcher assumes legal positivism in the nature of the law.

# 3 Chapter III Methodology

## 3.1 Research design and philosophy

The imperative of a research design is to facilitate maximum value of the study incorporated with it. It should maximize value, not in the sense that it will provide all the desired answers, but to the aim of uncovering the full truth about the matter at hand; reaching a conclusion that reflects not only the questions asked, but the answers as they appear in reality. We hypothesize minimally in the questions we ask (see chapter 1.2 on *purpose & problem statement)*, allowing us to a greater extent to enter the studies ridden of bias. We do not inherently suggest either a linkage or a vast difference between the legislations of the countries. We do not possess a strong idea on how international oil company manages HSE under unfamiliar legal frameworks. The study is duplex, as it analyzes two different levels (institutional level and company-level), but the overall research design is the same for the study as a whole. To better cope with the challenges of the research question, we have chosen to tailor the research design to resemble a content analysis, albeit with a hermeneutical approach.

The study is characteristically qualitative in all its parts. It's assuming an epistemological position resembling the social constructivist paradigm, immediately discrediting any notion of an objective truth to uncover, but rather seeking to find knowledge through interaction (Easterby-Smith, Thorpe & Jackson, 2012). Strong social constructivism argues that not only social reality, but even scientific facts are constructed by humanity (Kukla, 2000). Extreme social constructivism would have it that *everything* is constructed (Ibid). This is not descriptive of the world-view and views on knowledge this thesis abides to. Rather so, the thesis is guided and supported by our milder social constructivist point of view: in the social sphere, there are none or few objective truths we can uncover. That is, whenever our research involves understanding the meaning of a conversation or an in-depth interview, we cannot accept everything that is said as an objective scientific fact. It's a fact that *what's said is said,* but not that *what's said is true*. Similar, but to a lesser extent, we also with caution accept the normative statements of the legislations. These are written bodies of texts, with carefully selected words that in principle are constructed to be unambiguous and ridden of confusion. But even at that, one can often observe a difference between what's written in a law, and how this law is being controlled or executed in reality. Our point is that even though the legislation may make a certain statement, we cannot accept with certainty that it is a scientific fact that this is how the law is being exercised in reality.

The problem with the philosophy of epistemology (i.e. constructivism vs. positivism) is that it fails to provide any definite proof of whichever direction is correct – even if we can accept that there is a certain relativism present, with constructivism being better for certain kinds of studies (i.e. soft social science) and positivism being better for others (i.e. hard natural science). Its failure to provide proof is somewhat of a self-fulfilling prophecy, as epistemology is indeed the philosophy of knowledge in its own right. This, of course, leads to debate. The "c-word", as Kukla (2000) puts it, sparks immediate controversy whenever it is mentioned in certain academic milieus. Constructivism is commonly blamed for being an easy way out of rigid scientific dogmas. However, as it is not in the purpose of this study to argue in favor of one direction or the other, we can dismiss the discussion altogether. Instead, we will provide some insight into our arguments for assuming a constructivist position, as well as describing how this affects the course of the study.

The central question, as previously mentioned, is how we perceive information about the phenomena, whether it is a testament of an objective truth or socially constructed. If we argue that an objective truth would be stronger, and therefore more valid, then we must challenge this notion by arguing against the objectivism of what we study. In broad terms, the phenomenon studied is HSE management – on an institutional level, as well as on the company-level. The question then remains: why is HSE management not an objective truth? First, phenomena we would normally consider as more solid has in certain circles already been accepted as socially constructed. For humanity, modern researchers tend to view *gender*, *race, emotions* and *the self* as socially constructed (Kukla, 2000). For society, *Japan, Ireland, Zulu nationalism,* and *women refugees* have been considered socially constructed (Ibid). For nature, *illness, Indian forests* and *quarks* have been described as socially constructed (Ibid). These are just samples of what researchers actually consider – and by extent get quoted on – as socially constructed phenomena. By comparison with some of these, considering HSE management as a socially constructed phenomenon is not very bombastic. Second, if good HSE management was an objective truth, then one would expect to see more uniformity in both the institutional levels as well as on company level, but the fact remains that there are several different interpretations of how the legal frameworks are created, formulated and exercised – and there are also differences among how the companies choose to interpret HSE management. Berger & Luckmann (1966) speak of social relativity of reality and knowledge, stating that a person's reality and knowledge differs with his or her social setting. This paves for a third argument, that individually, all people experience different realities and have different knowledge. Considering that we are indeed

studying *people*, we argue that their perception of reality is fundamentally different, which strengthens our argument that the phenomenon is socially constructed.

## 3.2 Data collection

All data handled in this study are qualitative. On one side, there are the legislations which in their very nature are qualitative. On the other side, we do not see the value of quantitative data from the case company given the research questions we've asked. The data we require in both parts of the thesis requires deep elaboration as opposed to numerical values.

The source material is the legislations governing HSE regulation in Norway and Russia. These are referenced under specific sections of the reference list. The Norwegian legislations are available in Norwegian and English, but for the sake of simplicity and readability, we chose to examine the English translation. The Russian legislations are only partially translated to English, and the parts that are translated are long since expired. Therefore, we utilize the Russian edition of the HSE regulations.

The case company is exclusively examined by the aid of in-depth interviews with their employees in the Moscow office of FMC Eurasia. The interim knowledge acquired in the prior legislative analysis will serve as the basis for shaping the interview guides with the informants. These interview guides can be found in the appendix. We had several meetings with the same informants, aiming to the largest extent possible to merge our understanding with theirs. Each of these meetings had different themes and topics, attempting to uncover different angles with respect to the main research problem.

The in-depth interviews used in both parts are semi-structured. Easterby-Smith, Thorpe & Jackson (2012) list three settings in which semi-structured interviews are appropriate. That is, the interview guides are merely guidelines for the conversation, but the researcher is flexible to get off that path if he sees it fit; subscribing to the natural flow of the fruitful conversation. First, we are not fully acquainted with the professional language, terminology and jargons found in the HSE milieu, so in order to understand their constructs, semi-structured interviews are more appropriate. Secondly, and similarly, the aim of semi-structured interviews is to partake and thus understand the informant's world. Thirdly, structured interviews can be ineffective in the trust needed to reveal more confidential and sensitive information. Semi-structured interviews may feel more personal for the

informant, and they are thus more likely to open up more. HSE management, while not necessarily the most secret component of a business, is still to some extent a matter of confidentiality and trust from the company.

### 3.2.1 Setting and participants

The legislative comparison does not require many participants, as the main materials in use are written texts. In the case analysis we cooperated intensively with two participants. Those two persons are employees of FMC Eurasia's HSE office. Informant 1 is the overall HSE manager for FMC Eurasia as a whole, and his main task is to implement a holistic HSE system for the newly established company; a system of which should be both compliant with the legislations and conform to the procedures of parent company, FMC Technologies. Informant 2 is the HSE manager in the Moscow office, and is working more hands-on with specific HSE-related tasks.

## 3.3 Data processing and analysis

While matching a common pattern and mindset provided by the overarching research design, the methods for data processing and analysis differ slightly between the two parts of the study. This chapter covers how the gathered data is analyzed on the basis of content analysis and hermeneutics; how this amounts to tangible methods of analysis in each part of the thesis; and lastly, how the analyses are divided into 1st and 2nd orders.

### 3.3.1 Content analysis for qualitative data analysis

The main idea behind a content analysis is to apply some sort of coding scheme to examine the meaning of a text. Any text contains an idea, and this idea is the content the text tries to convey. In all its simplicity, a content analysis is therefore the process of coding certain phrases or words within a text to elaborate on their particular contents (Hsieh & Shannon, 2005). Emerging from its traditions as a quantitative tool of study, the content analysis has found new relevance in its more recent application as a research design tailored to qualitative studies as well (Zhang & Wildemuth, 2009). The former, more quantitative approach was based on counting word from large bodies of text. The idea was that this particular word would correspond greatly to a pre-defined meaning, and

the word's presence and occurrence in the text would imply its importance. This approach is not appropriate for our study – which is not surprising, as we can see that there is a fundamental difference between the quantitative and qualitative approaches to content analysis to begin with.

First, their areas of application are different. Quantitative approaches are more commonly used for analyzing mass media, whereas its qualitative counterpart is more prevalent in anthropological, sociological and psychological studies (Ibid). Second, their methods of reasoning are also different. Quantitative content analyses are ideally deductive, while qualitative content analyses commonly emerge into an inductive reasoning (Ibid). Third, the sampling methods differ. As often seen with quantitative approaches, the data sampling in quantitative content analysis is ideally random – and on the contrary elaborately selected in qualitative content analysis (Ibid). Finally, their outputs are different. Quantitative content analysis is statistical in nature, and can be the subject of a variety of statistical analyses. Qualitative analyses are deterministic, and will not possess the same numerical qualities and statistical usability in their outputs (Ibid). These four differences suggest that there is, in fact, a fundamental difference between the two main directions of content analysis, and therefore it is important to underline that this study will exclusively use qualitative content analysis.

All content analysis – qualitative and quantitative – is characterized by coding. Coding is to assign a code/label to a word or a phrase among raw qualitative data (Strauss & Corbin, 1998). This technique exists in two forms. The first, and most basic, is open coding. In practice, open coding is simply to highlight a strand of text or a word that carries the content the researcher is searching for. The second is called axial coding, which is the higher-level structuring of a group of codes (Ibid). The coding software NVIVO's node function corresponds to this type of coding, as it is a tool to organize or categorize codes. Axial coding can involve hierarchical (sortable) and non-hierarchical (non-sortable) coding while grouping codes into categories (Ibid). Hierarchical axial coding allows for multiple layers, utilizing sub-codes within certain categories. The most common approach to coding is to code the entirety of the text, and then look for relationships and determine the axial codes. This is also our approach in both parts of the studies.

Within the qualitative content analysis direction, there are three more specific approaches. These are called conventional, directed and summative content analyses (Hsieh & Shannon, 2005). One of the main differences between the three is the methods of coding. Conventional content analysis derives their open codes and axial codes (categories) from the text directly, letting the content of the text determine which categories are necessary (Ibid). While using directed content

analysis, the researcher relies on some pre-understanding of categories using in the coding scheme, commonly a theory or other research findings. The researcher then continues to track down content that fits the categories that were already formed (Ibid). Lastly, a summative content analysis is more reminiscent of the quantitative approaches. The reasoning behind this is to start with a quantification of sorts; count the words or phrases, and then compare them. After this is done, the more subjective search for meaning commences (Ibid). Hsieh & Shannon (2005) argues that these three approaches, in the order they are presented, reflect a more and more deductive reasoning, and correspondingly less and less inductive reasoning. For both the theoretical comparison and the case study, we are at a loss of existing theory or literature apt to aid in the construction of pre-defined concepts or coding categories. Therefore, it is appropriate to subscribe to the former approach; conventional content analysis (Kondracki, Wellman & Amundsen, 2002), and that is what we have done in our study. Subchapters 3.3 and 3.4 operationalize this research design by elaborating how the data is collected and analyzed, using the methods of a content analysis.

### 3.3.2 Hermeneutics for cross-lingual data interpretation

This study is immersed in the mindset, reasoning and assumptions belonging to the methodological philosophy of hermeneutics. Hermeneutics can be described as a research design largely rooted in the social constructivist epistemological philosophy (Easterby-Smith, Thorpe & Jackson, 2012). However, it is a quite holistic and fundamentally different process than many other social constructivist designs. In essence, the aim of hermeneutics is about gaining an understanding of the situation through examining the context. Additionally, there's also been claims that hermeneutics is the only adequate method for interpretive research where empirical natural science is unsuitable. Historically, hermeneutics surfaced as a technique to interpret the Bible, whereas a literal interpretation was growing more and more insufficient at the time (Dilthey & Jameson, 1972). At such, understanding the context around the writing of the Bible was essential to figure out the intended meaning of the text. The field and philosophy of hermeneutics has since been to a great extent been further developed, something that is partially accountable to the mentor Martin Heidegger, and even more so his student, Hans-Georg Gadamer (Garagalza, 2013).

On the topic of hermeneutics, there are four features that are relevant for forming the research design of this study; the whole and the part; prejudice and merging of horizons; language;

and the hermeneutic circle. These are among the ideas, assumptions or tools that are commonly associated with the philosophy and methodology of hermeneutics. To make these features reasonable, one must first accept a fundamental assumption: When analyzing a text source, which for instance can be a transcribed in-depth interview, or even legislation, a principle to follow is that the text does not reflect the truth. It is by itself not enough to give the required insight to its subjects. It's spoiled by the one-sidedness of its author, and often it will aim to enforce information. However, the aim of hermeneutics is not about obtaining general information, but rather so to understand the situation around it.

*The whole and the part:* This refers to one of the core ideas of hermeneutics. The meaning of a text cannot be derived accurately without examining its surrounding context (Dobrosavljev, 2002). The text is called "the part", and its context "the whole". The whole and the part, then refers to the relationship between the individual piece of text and the context by which it was written, and how this is all the subject of investigation. Further, the perceived meaning of the part – or the perceived meaning of the whole – can both change with respect to examining the other. A researcher may read a text, unbeknownst of its background or author, and find a meaning in this text. However, this meaning is likely to change once the researcher explores the questions of "who wrote this, and why?" This interdependence between the whole and the part is universal, and is the foundation of cognition, or the ability to unfold meaning (Ibid).

*Prejudice and merging of horizons:* As stated in the previous subchapter, this study will take on a conventional qualitative content analysis approach; ideally without any preconception on which types of axial coding that will be utilized. Effectively, this means that we claim non-prejudice. This is impossible. Gadamer defined prejudice as a soil for growing judgment, i.e. the researcher's own basis for unfolding a meaning (Ibid). It's inescapable that a cognitive being can be fully unbiased and fully without prejudice. That said, prejudice is not something that is inherently negative, but rather something that should be understood to aid in the interdependence elaborated above. However, these prejudices are said to be the limitations of the researcher, and must therefore be broken down eventually (Ibid). The prejudices tie the researcher to his traditions. Attempts to unfold meaning with prejudice are, in G. B. Shaw's words like: "*Charging like Don Quixote at the windmills"* – it is futile. Breaking down these prejudices should come naturally with an understanding of the whole and the part, and using the hermeneutic circle, as explained below. Further, to break these prejudices is metaphorically termed to "open one's horizons" (Dobrosavljev, 2002). The reasoning behind this

term is that if a researcher has prejudice or has coined himself into a definite situation, then he has no real vision of what comes next. He values what is closest, and disregards possibilities that are not apparent in the moment (Gadamer, 2004). The truth, however, is not always immediate, and can lurk in this horizon. Continuous exploration and search for this meaning is only facilitated once the horizon is opened. If not opened, acquisition of knowledge will lead to debasement from the bias of the researcher. We aim to acquire and not to debase. Finally, the imperative of hermeneutics is the merging of horizons: the horizon of the researcher, and the horizon of the author.

*Language:* Language is a necessary precondition for human thought, i.e. we think in a certain language. Heidegger argued that language is inseparable from humanity (Laverty, 2003), and Gadamer (2004) accordingly argued that all understanding must happen through language. An epistemological assumption for social constructivist philosophies is that reality is inter-subjective and not objective (Easterby-Smith, Thorpe & Jackson, 2012). The languages' roles are to frame the reality of the individual, which implies that language is not objective either. Phrases are given an individual meaning based on the subjective reality perception, and words serve as ingots for the meaning they carry. Additionally, language is dependent of culture and epoch. Languages evolve over time, and from culture to culture. Two persons allegedly speaking the same language are only approximately doing so. Lastly, our language is not only a frame, but a border. This holds particular relevance for this study, by which half the source material for the legislative comparison is in a language one of the researcher does not speak, ref. subchapter 3.3.4. People arguably use language in more ways than they realize, and it is integral in their ability to communicate – both outwards and towards their own selves, i.e. cognition.

*Hermeneutic circle:* The last feature of hermeneutics discussed in this chapter is the hermeneutic circle, which is the tool that binds all the assumptions and ideas together into something operational. Figure 1 describes the basic relationship between the whole and the part, and how their interdependence forms the way they are understood in unison. This is also the basis for figure 2, which further elaborates on the relationship between the researcher and the participant – the latter by whom can be both the author of a text or the interviewee in an interview. The continuous whole/part-idea is operationalized on both these participants. Both circles represent the basic hermeneutic circle: and within each circle; within each person, lies a set of prejudices that will be broken down. So the interesting phase of the process is the one that is market in red, in the mutual area of the circles. In this area, there is a melting of understanding, i.e. the understanding is mutual

between the interviewer and interviewee. They will exit from the circle at the exit point, where they have reached the end of their mutual understanding. In the event that it is possible, it is important that both parties verify and accept the understanding that has emerged.

The content analysis, as mentioned above, is more tangible and operationalized than the hermeneutics as far as actual methods go. However, the hermeneutic philosophy is constantly in the mindset of the researchers; and it needs to be, especially due to the fact that the two legislations compared are in different languages and written in different contexts.

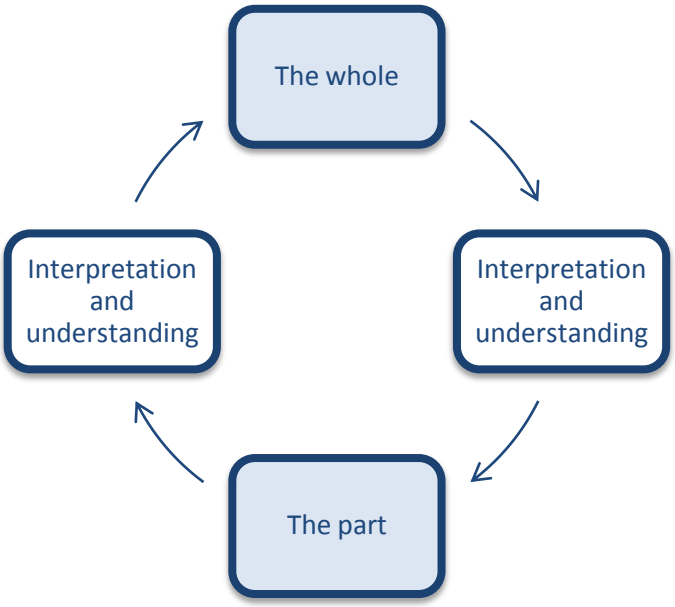


**Figure 1:** Basic hermeneutic circle

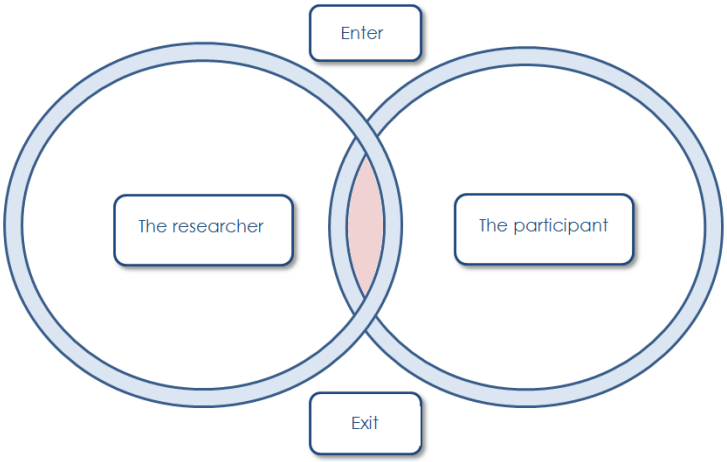


**Figure 2:** Hermeneutic circle with two participants

### 3.3.3 Content analysis and hermeneutics as a single research design

The hermeneutic philosophy of methodology is adapted to this thesis because of its credibility in terms of discovering the meaning behind a text source. Notably, this thesis is cross-lingual, utilizing sources from Norwegian, English and Russian literature. A literal interpretation is not possible, as translations will be decisive to reach a common understanding, both among the two authors, and also with the case company and the reader of the study. If a literal interpretation of a text is ever a good option, it is certainly less so once the text is translated to another language by another author. The meaning doesn't change, but its presentation does. Therefore, a better understanding of the context is critical to understand the legislations. This is thus the main justification of using hermeneutics.

This still doesn't explain why we also use content analysis. While both hermeneutics and content analysis are research designs in their own right, there is still a conceptual difference to be found between them. Hermeneutics is perchance more philosophical and assumes some fundamental, but not unreasonable features that the researcher must accept. The content analysis, however, is more tangible. It's less of a mindset, and more of a tool, i.e. elaborate use of coding schemes. They are not in conflict, aside from the notion that conventional qualitative content analysis is best done without pre-defined terms, i.e. prejudice. We must therefore accept that we are prejudiced, and to the greatest extent not less this hamper the ability to understand the categories needed in the content analysis.

### 3.3.4 First part: Legislative comparison

Content analysis is all about coding schemes, which leads to the creation of conceptual categories by which one would later examine the relationships between (Julien, 2008). To facilitate a coding activity to create such conceptual categories, we have constructed a methodical framework. This framework aims to compare the HSE legislations in a step-by-step, logical manner.

1. **Presentation of the regulations**, including contextual factors such as application, scope, governing bodies, accessibility, language, date of revision, and so on.
2. **Raw coding, step 1**: all content of the Norwegian legislations that are considered important are highlighted. It is sorted by the structure of the regulation itself.
3. **Axial coding, step 1**: all content from the raw coding are allocated to different categories.

4. **Raw coding, step 2:** all content of the Russian legislations that are considered important are highlighted. It is sorted by the structure of the axial coding scheme.
5. **Axial coding, step 2:** all content from the raw coding are allocated to the already defined categories.
6. **Compare and contrast**: axial categories across legislations are merged, and their contents are compared directly. A brief summary and review is given, as well as whether they fit fully, partially or not at all.
7. **Conclusion:** Examine the analytical findings and merge these into a common set of conclusions to answer the research question and the relevant sub-questions in chapter 6.

The framework is largely built upon the principles of the content analysis, and the way we interpret and understand the legislations is aided by the hermeneutic philosophy of methodology. Figure 3 illustrates an example of how this methodology works for a single piece of raw coding.

**Figure 3** Methodology of comparative content analysis (example)

**Raw coding (Norwegian legislation)**

*A coordinating working environment committee shall be established for each field, or, where all parties are in agreement, a coordinating working environment committee that covers several fields, where these have shared management and operations organizations, shared contractors and contracts, and where considerable personnel groups work on several of these fields. A joint, local working environment committee shall also be established for each individual mobile facility.*

**Raw coding (Russian legislation)**

*По инициативе работодателя и (или) по инициативе работников либо их представительного органа создаются комитеты (комиссии) по охране труда. В их состав на паритетной основе входят представители работодателя и представители выборного органа первичной профсоюзной организации или иного представительного органа работников*

**Interpretation**

Working environment committees must be established on the facility.

**Translation & interpretation**

Working environment committees must be established in the organization.

*Hermeneutic interpretation*

**Content creation**

*Working environment committees*

**Content creation**

*Working environment committees*

**Concept allocation (axial coding)**

*HSE Culture*

**Concept allocation (axial coding)**

*HSE Culture*

**Comparison**

Under both legislations, the company must establish a working environment committee consisting with the participation from employee representatives. In Norway, this must be done for each facility, but in Russia it is only necessary to establish a working environment committee for the entire organization.

As this part of the study draws on the methods of the content analysis, one should also be aware of the understanding of raw coding and axial coding. The primary raw coding is dubbed *content*, and refers to specific strands of text in the legislation. The axial coding is dubbed *concept*, and these concepts are our own regroupings of the various *contents* illuminated. These *concepts* and corresponding *contents* can be found in each core summary table (e.g. tables 3-6). Here is a list of reference of the *concepts* we have chosen to work with:

| | |
|---|---|
| **Risk-based approach:** | Content that supports, facilitates or specifies a risk-based approach of HSE management. |
| **Standards:** | Content that supports, facilitates or specified a standard-based approach of HSE management |
| **Holistic HSE integration:** | Content that is related to the management of HSE via manifesting its importance as an integral part of the overall project management, or via specifying methods of HSE management. |
| **HSE culture:** | Content that is related to the safety and well-being of human lives through better interpersonal practices, healthcare services and security measures against hazards not necessarily negatively impacting the natural environment. |
| **Security:** | Content that is related to the safety of human lives as well as the environment through implementing specific practices aimed to mitigate risks of hazards and accidents possibly impacting the safety of humans and the environment. |
| **Documentation:** | Content that implores, recommends or suggests efforts to document a situation or a process, as well as to maintain formal relations with an external entity; either a governmental authority or the public. |
| **Sanctions:** | Content that is related to the effects of unsatisfactory compliance and punishment thereof. |

### 3.3.5 Second part: Case study

As the case study is not a direct comparison in the same sense as in the subchapter above, the method of analyzing data varies a bit. The framework of the theoretical comparison is not put to use for this part, but the principles of the overarching research design remains intact. That is to say; the case study will also hermeneutically interpret the informants' world-view – which is arguably a more obtainable feat when real persons are involved – not just a body of law. NVIVO is thus again the main tool in use for analysis, of which the input will be the transcribed interviews, and the output

will be the raw codes and axial codes. From there on, an epitomized understanding will be elaborated. Whereas the theoretical comparison adapts to a "comparative analysis"-approach; the case study can be branded a "categorical analysis". It is a single case, with no other cases for comparison, so the majority of the data must be reflected upon in their own right.

### 3.3.6 1st and 2nd orders of analysis

The thesis would not be layered on two levels without purposefully combining the findings into a sensible conclusion. Subsequently after analyzing the regulations and the management practices, the thesis aims to examine whether there is a logical coherence between the results. The institutional level of HSE, i.e. the totality of the legal frameworks is the most rigid level, and can almost be accepted as a constant. The company-level management of HSE is flexible, and is also the level that requires adaptation so long as compliance remains the imperative for the company. Therefore, one precedes the other: the thesis is not about how the legislations will change to meet the practices of the companies: it is about how the companies adapt to meet the requirements of the legislations. Conversely, it is the sequence of this study and its analyses.

In addition to the main sequence of the study, as explained above, the study is further structured into different orders. The 1st order of analysis is a type of analysis that only considers the empirical data found via the data collection. Simply put, it attempts to answer the research questions given the information found through the course of the study. The 2nd order of analysis takes the same findings and examines these with respect to established theories, with the purpose of trying to solidify a relationship between theory and practice. This study is consciously structured by a 1st/2nd-order reasoning in both of its main parts. For the legislative comparison, the 1st order of analysis is to illustrate the main differences of the legislations. The 2nd order analysis is split in two different perspectives: analyzing the findings with respect to isomorphic pressure, as well as formal/informal institutions. For the case study, the 1st order of analysis is to highlight the main challenges of implementing an HSE management system when entering a new market (and new HSE legislation). The 2nd order of analysis is also here split in two parts; first, analyzing the findings with respect to ceremony/myth; second, analyzing the challenges with respect to formal/informal institutions.

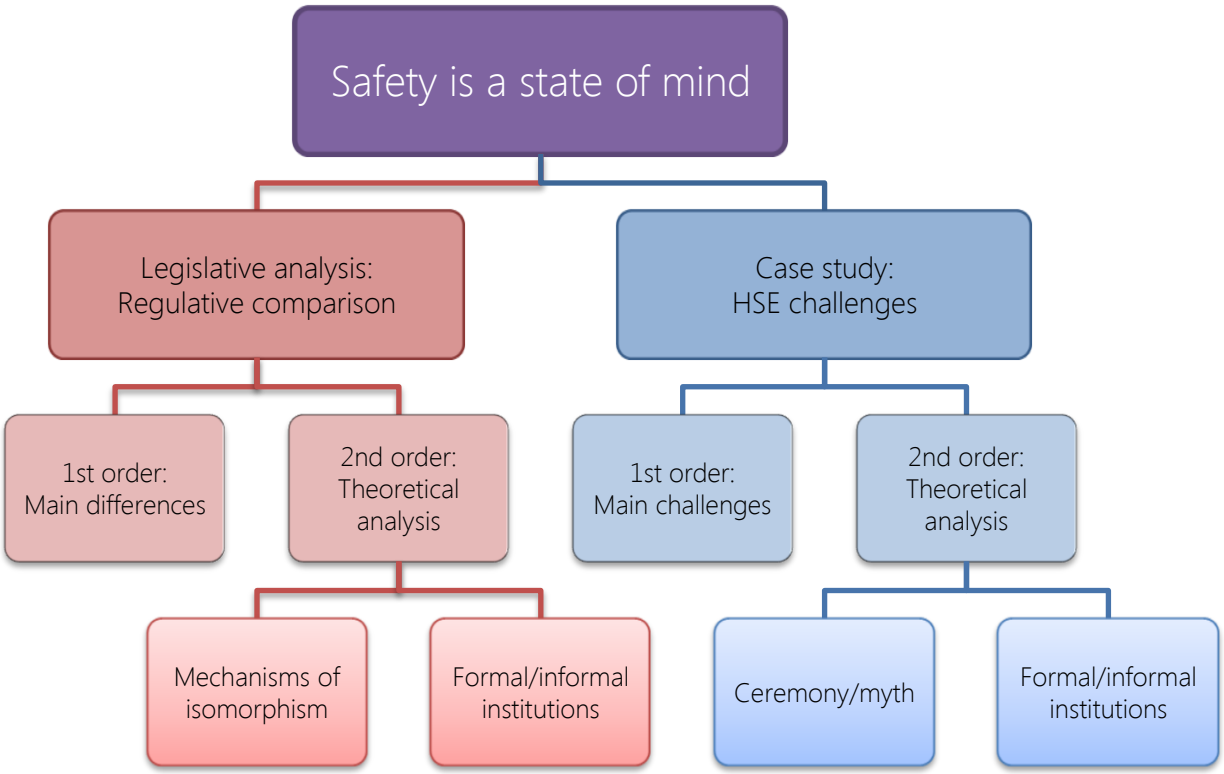


**Figure 4:** Structure of analysis

## 3.4 Validity & reliability

In measuring the quality of a study, the terms validity and reliability are often addressed. A common analogy lays out the difference in simple terms: Imagine we're playing darts; the aim is to hit as close to the center as possible with the dart arrow. Now let's assume that the dart arrows represent the findings of a study. A valid study would hit very close to the target. A reliable study would hit at the same spot even if thrown repeatedly. We want the study to be accurate, so therefore it must be valid. However, if it turns out that it would miss the target on the next throw – its accuracy may only be accidental. Therefore, the study must be both valid and reliable – hitting the bull's-eye time and again.

All measures of validity refer to the same thing, but the concept is split into several interpretations with different areas of application. For example, the commonly measured external validity would not be applicable to this study, and is much more feasible in quantitative studies in which the aim is to generalize the findings to a larger population (Calder, Phillips & Tybout, 2001),

i.e. which is not at all the aim of this study. As there is no single method, or even a set of methods, to effectively measure validity in qualitative studies universally (Golafshani, 2003), i.e. with statistical measures, the validity in qualitative studies must be measured qualitatively as well. Golafshani (2003) continues to argue that the then-current understanding of validity and reliability of concepts was not applicable to qualitative studies without redefinition or alternate approaches. Since, there has been an emergence of approaches to ensure trustworthiness of a qualitative study.

Sandberg (2005) elaborates on three criteria for validity applicable to interpretive, qualitative studies: Communicative, pragmatic and transgressive validity. Communicative validity is to have an ongoing dialogue among the researcher and research subjects where alternative claims are discussed. The dialogue should be continuous throughout the research process. The alternative views could help facilitate a more reflected interpretation of the phenomenon, unless the alternative is clearly fallacious. The most apparent arena for such communication is the interview situation. Therefore, the researcher can help ensure such kind of validity by asking open-ended questions and open for more discussion and mutual elaboration (Ibid). This is to a great extent the case for this study. The communication with the company and the informants begun even before the topic was born, and most of the communication is openly accessible for all participants. Claims and quotes from earlier interviews would also be challenged or recited on later occasions, to make sure they the informants still pledged to this understanding.

Pragmatic validity, on the other hand, involves testing the knowledge in action. There are several ways to test the suggested interpretation. First, one can observe the interview objects to see if what they actually do is similar to what they said. Secondly, during interviews, one can ask the subjects to demonstrate how a statement would work in practice. Third, one can present an interpretation to the subject based on their own statements to see whether they agree (Ibid). Observatory techniques have been deployed to some extent, particularly to the purpose of demonstrating the realities surrounding the in-practice management of HSE in the company.

In addition to promoting these two criteria for validity, Sandberg (2005) also criticizes them for the implication that the researcher will strive for unequivocal truth, and avoid any problems or sources of knowledge involving ambiguity and complexity. Transgressive validity attempts to overcome this by examining if the researcher's conclusions reflect the indeterminate fulfillment (Ibid). There are three notable ways of ensuring such validity. The first way is to intentionally distort

current interpretations to increase an understanding of the taken-for-granted assumptions and codes of the research. Secondly, one could proactively search for contradictions, discrepancy and ambiguity in the phenomenon studied; elaborate on them, rather than avoiding them. Third, as Sandberg (2005) anchors in the Western male-dominated imagery, inviting also a feminine perspective on the subject is important. This study is written by persons of both genders – and the two main informants in the company are respectively a woman and a man.

These three criteria of validity are not directly concerned with the reader, but more so about the researcher's ability to think critically and distance their selves from the framework of the study. In a sense, they are also much more tangible, and practically works like tools to ensure validity in a practical way. However, similarly to all qualitative measures of validity, they do not actually *measure* anything. It is just assumed that while doing what these criteria recommend, the researcher will implicitly increase the chances of the study being valid. This also applies to this study: regrettably, there is no way to statistically support the level of accuracy of what we claim to describe, but with all these tools deployed, the findings are more trustworthy.

As mentioned earlier, research quality is not only characterized by validity, but also reliability. Reliability involves a consistency in findings, and should ideally be able to be reproduced later under the same assumptions and methodology (Golafshani, 2003). Reliability, therefore, effectively adds to the trustworthiness if proven right. However, it should also be noted that rigid demands of reliability may not be optimal. Stenbacka (2001) states that reliability cannot be a criterion for qualitative studies, as this would mean that most qualitative studies are useless. Perchance replication of qualitative results are far-fetched and unrealistic for most studies; or it is simply hard to accurately showcase that there is reliability to begin with – repeating the study altogether may prove impossible. Again, reliability involves a degree of trustworthiness in the eyes of the reader – hardly a tool in itself. Sandberg (2005) emphasizes that replicability is inherently unimportant altogether, as it is uninteresting in interpretive studies. Demonstration of the work process is more important for ensuring reliability (Ibid). Most importantly, this signifies the need for the researcher to demonstrate their interpretations throughout the study. Detailed observations – ranging from the formation of the research question, through the search and selection of research subjects; the data collection and finally the analysis – must all be denoted in the study itself (Ibid). Essentially, this warrants the need for a methodology chapter to begin with.

Sandberg (2005) also coins another term on the topic, dubbed reliability through interpretive awareness. The assumption is that the researcher cannot escape his interpretations over the course of the study. Simply put; the researcher is a part of the conclusion that is being made via his own personal assumptions (Ibid). This adds to the argument that replicability is more or less an impossible feat. The researcher's uncontrollable participation of the interpretation implies that there is subjectivity. The gist of Sandberg's (2005) argument is that instead of overlooking this subjectivity, the researcher must embrace it and understand how it affects the study – which should also be thoroughly elaborated upon in the report itself. While understanding the researcher's point-of-view and assumptions, the reader presumably can trust the study more. We believe this is also represented in this study; both authors towards the reader and their informants clearly demonstrate that they are neither lawyers nor HSE engineers – but come from a business management perspective. This, among other fundamental assumptions about the researchers' position, will hopefully give the study credibility for what it actually is – a business management thesis.

### 3.4.1 Relevance of theory

The research question, theory and findings of a thesis must correspond to each other. The idea is that a good theorization can aid the researcher in improving the means of getting from the research question to the findings. With knowledge of existing literature and theories similar to the research questions, one can either try to support these theories or challenge them. Admittedly, in research designs such as grounded theory, one should avoid existing theory altogether (Easterby-Smith, Thorpe & Jackson, 2012), but this study is not of that kind – in any case, the theory represents the accepted worldview in the contemporary scientific or professional milieu. Therefore, we aimed to elaborate on accurate and relevant theory based on the various aspects of our research question, which we in turn used to aid in the creation of the interview guides.

Subchapter 2.1 about health, safety and environment is clearly relevant for the study onwards, as it is the phenomenon of what we are studying. Notably, we are applying the very concept of HSE into two different levels of governance (institutional and company-level), but we do not challenge the concept of HSE in its own right. Therefore, we accept a common understanding of what HSE is, and use this understanding while designing the study. Since HSE is a surprisingly vague topic, it is important to elaborate in great detail the meaning of HSE, and how it came to be.

Therefore, we also chose to examine the history of HSE as a concept, and the reason why it was created – the accidents themselves. Lastly, HSE is not exclusive to the oil and gas industry, but this study is only concerned with that. Therefore, we also laid out the context for HSE in the hydrocarbon industry.

The other half of the theoretical input is found in the subchapter 2.2 on *institutional theory*. The three theories of neo-institutionalism, as well as a clarification especially relating to the law's role as an institution, all serve as major theoretical frameworks for the 2nd-order analyses: for the legislative comparison, the theories of isomorphic pressure and formal/informal institutions are used; for the case study, the theories of ceremony/myth and a continuation of the formal/informal analysis are used. In that sense, the theoretical anchoring of the research question and the findings is largely traceable to the ideas of institutionalism.

### 3.4.2 Ethical considerations

The study in itself does not touch upon a very controversial or particularly sensitive subject. However, in general terms, a researcher is bound to a set of ethical obligations we intend to follow. Most of these directly concern the persons that are being studied. No informants are referred to by their real names, and to the best of our ability, we will make attempts to save their identities from being traceable; especially in the sense that a direct quote could not be made accountable to a single individual. While interviewing, we used recording equipment. This was notified and accepted by all the informants in every interview. Similarly, the informants have been informed of their rights to abort any interview at any time, without providing any explanation. They also reserve the right to retract all material they have provided thus far from the study; also without any explanations needed. All the informants have been informed about the scope, purpose and duration of the study.

# 4 Chapter IV Legislative comparison

The first part of this study intends to explore the institutional frameworks of HSE regulations in Norway and Russia. The purpose of this chapter is therefore to report on major findings from a comparative analysis of the Norwegian and Russian regulations. The chapter starts with an introductory overview of the governing instances in the two countries' oil and gas industries. Then it moves on a thorough review of the Norwegian regulations, from which a set of concepts are derived (see chapter 3.3.4 on legislative comparison). These concepts are aiming to be the main categories of the regulations, and therefore be able to house the most important characteristics and features of the legislations. Following this, we will review the Russian regulations structured with respect to the concepts derived from the Norwegian regulations. After the regulations have been reviewed, the analytical part commences. As mentioned in the methodology chapter, the analysis consists of two orders of analysis: first, an overview of the most critical differences; second, a theoretically anchored analysis of the findings.

## 4.1 Governing instances

HSE is regulated in widely different manners in the Norwegian and Russian hydrocarbon industries, both in terms of structure and responsibility. This chapter seeks to illustrate how the regulations appear in the two countries, as well as which public authorities and governmental bodies are relevant for the supervision of the industry.

In Norway, the governing structure of HSE regulation can be seen in figure 5: three ministries are particularly relevant for matters related to HSE – even though other ministries are peripherally also relevant – namely, the Ministry of Petroleum of Energy, the Ministry of Labour and Social Inclusion and the Ministry of Climate and Environment. All these ministries control agencies who work more hand-on with topical issues of their ministries domains. As for HSE in Norway, the PSA is the dominant governmental body of authority. The Norwegian Labour Inspection Authority is responsible for the supplementary Working Environment Regulations, and the NEA provides support for the environmental issues of the HSE regulations.

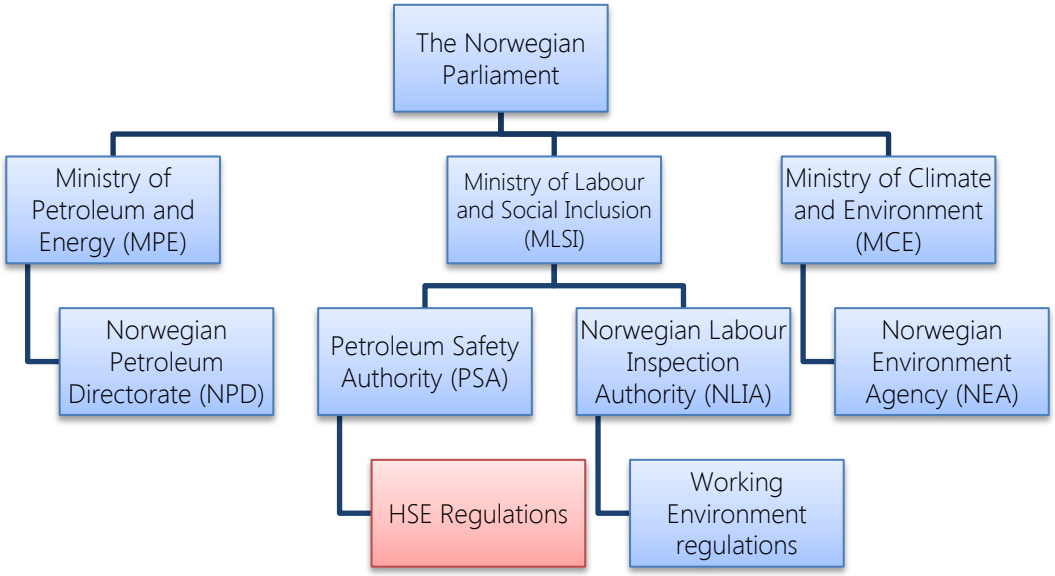


**Figure 5:** Organizational chart of relevant governing bodies and regulations for HSE in Norway

The Russian system has a broader structure. At least 7 ministries and 5 agencies have their say on the matters of HSE. Figure 6 maps the organization of these ministries under the law-giving power, the State Duma. This means that the companies operating in the Russian oil and gas industry need to maintain relations with a lot of governmental bodies. They are more inclined to keep a direct communication with the 5 agencies listed on the lowest level of figure 6 than the 7 ministries. If there is a reporting duty, the various laws and regulations are providing information on which governmental body is aptly addressed.

Whereas the structure of the governmental bodies in Russia can be seen as a bit convoluted, the complexity does not end there. As for its Norwegian counterpart, we were able to merge both governmental bodies and legislations alike (figure 5), the sheer amount of legislations on the topic of HSE in Russia is staggering: it has been said that as much as 90.000 different documents (laws, regulations, degrees, standards, among others) make up the Russian HSE regulations (Sulkhova, 2015, presentation) Figure 7 displays eight such laws; and four additional regulations to supplement these. The list is obviously not exhaustive, as several other laws and regulations may also have an influence on the implementation of HSE management in Russia – but the most important legislations are all covered by the analysis.

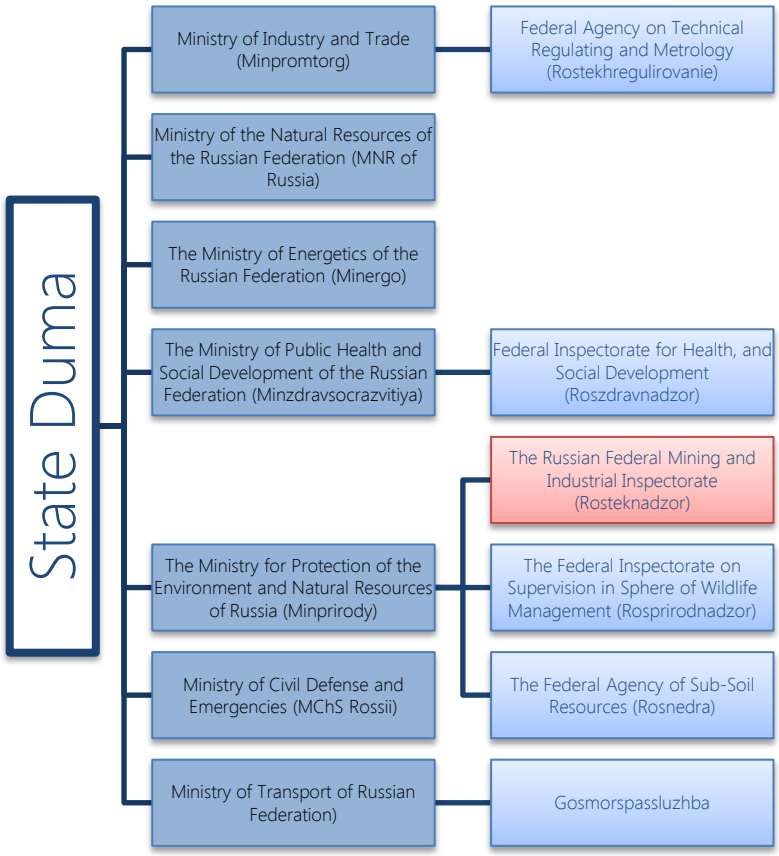


**Figure 6:** Map of relevant governing bodies and regulations for HSE in Russia

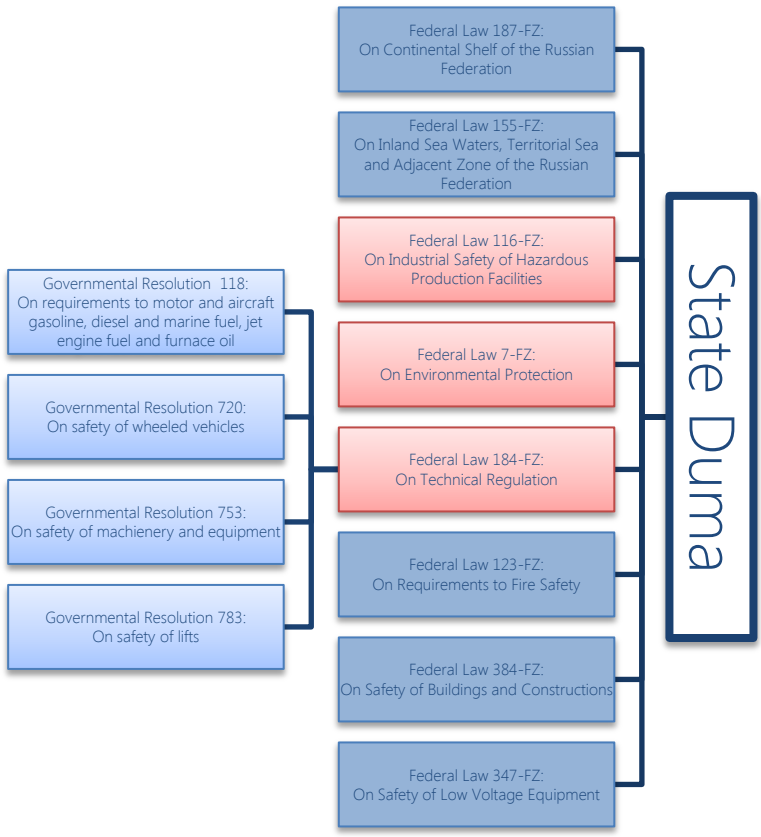


**Figure 7:** Laws relating to HSE in the Russian hydrocarbon industry (not exhaustive)

## 4.2 The HSE regulation of Norway

### 4.2.1 Introduction and availability

The regulation of health, safety and environmental concerns in the Norwegian oil and gas industry is clearly manifested in a set of regulatory documents supplementary to the overarching laws – e.g. the petroleum act, the working environment act, and the pollution and waste act. As a combined effort to supplement these laws, there are both the regulations themselves, as well as a corresponding guideline to ensure a better understanding of the regulation. Additionally, the Petroleum Safety Authority Norway has supplemented a set of interpretations of these regulations, also to the purpose of mitigating inaccurate understandings of its application. Importantly, neither the guidelines nor the

interpretations are legally binding per se. Compliance is pursuant to the laws and their regulations. The regulations and guidelines are publicly available in both Norwegian and English.

The regulations of offshore petroleum activity in Norway have been the subject of many revisions over the years. This illuminates that the regulations are under constant evaluation and will be developed further if the need arises. Inherently, it seems like a rather flexible platform to convey the regulations. The modern framework of regulations has been updated annually since 2011. Before that, the regulations underwent a reform, in which it was reduced in scope from approximately 1200 pages to its current size of less than 300. This advocated a major principal shift in which it did no longer in detail denote specific solutions. It would rather provide and recommend, and therefore rely on, appropriate technical standards in lieu of complex detail-oriented solutions within the regulations themselves (OGP, 2010).

### 4.2.2 The structure of the legal framework and legal actors

Petroleum companies operating in Norway are subjected to a wide array of laws and regulations. Conversely, different legislations have different areas and purposes. Certainly, all petroleum companies are in some way affected by laws on the topic of for example corporate forms, taxation or working environment. However, in the perspective of HSE, the Norwegian Petroleum Act of 29 November 1996, dubbed "The Petroleum Act", is the principal legislation. The Petroleum Act has a set of regulations and regulators responsible for carrying these out. The Norwegian Petroleum Directorate is for example responsible for regulations such as stipulation of tariffs, calculating norm prices, compensation to fishermen, interest of repayment of overpaid $CO_2$-taxes, et cetera. The matters of safety are allocated to the PSA. The PSA is responsible for only two regulations - the HSE regulations; and co-responsible for the working environment regulations. Figure 5 showed the main important governmental bodies in the perspective of HSE regulation, and thus where the responsibility of such a regulation is manifested. Whereas the responsibility of regulations is given to institutions such as the PSA, the laws themselves are not allocated similarly. The lawmaking body of Norway is the Norwegian Parliament, and responsibility over the law befalls to them.

The legal framework defines certain roles or actors in a legal sense. "The responsible party" is the role of the organization – the operator and others – whose activities are covered by the framework (PSAa, 2013, section 6). This term excludes licensees and owners of onshore facilities.

The term "operator" is split in two parts. For organizations whose activities are legislated by the Petroleum Act, the operator is any organization that is operating the day-to-day management on behalf of the licensee. When the activities are not subjected to the Petroleum Act, it is any organization that is operating the day-to-day management on behalf of the owner (ibid). The "licensee" is the organization or individual who holds a license under the Petroleum Act (ibid). In the regulations, the PSA often points out the specific responsibilities of these different actors in the various areas of the law. On many occasions, it also denotes that the PSA themselves have certain kinds of responsibility in certain activities.

### 4.2.3 Regulatory principles

The regulatory framework is shaped by a set of general principles. These principles refer to five main areas of HSE, namely risks, generalization, compliance & responsibility, and performance.

The first and most emphasized principle is that the regulations have a risk-based approach, in which the core aim is to reduce HSE risk. HSE risk comprises the threat of accidents, personal injuries, occupational illness and environmental damage (PSAk, 2015). This is further elaborated in the text of the regulation, where it is specified that the best solution (in a risk-minimizing sense) is to be chosen, provided that the trade-off of costs and risk mitigation isn't significantly disproportionate (PSAa, 2013, section 11). The second principle is that the requirements in the regulations are generalized: unless specifically noted, a requirement in one of the five frameworks will apply to all areas of the company's operation (PSAk, 2015). The third principle is concerning the actors subjected to the law, in which the responsible party[1] must ensure compliance to the regulations, i.e. they are legally binding (ibid). On that note, the employees are regarded as parts of the responsible party, and must therefore contribute in ensuring compliance (ibid). The fourth principle is that the requirements are performance-based, in the sense that they represent the desired outcome or performance as per the view of the government. Performance refers to particular aspects, characteristics or qualities of products, processes or services (ibid). While the guidelines are not the law or even a derivate of it, thus they are not legally binding; the fifth principle states that the regulations and guidelines should all be regarded collectively for the purpose of a better understanding (ibid). The sixth and final principle states that the recommended practices or solutions

[1] Any organization (including operators) that are conducting or participating in conducting petroleum activity, with the exception of non-operating licensees and owners of onshore facilities (PSAa, 2013, section 6) (PSAf, section 7)

often provided in the guidelines are considered satisfactory, and the user can assume that by using them, they are compliant with the regulations (ibid).

### 4.2.4 Regulations

This subchapter will systematically review the most central elements of the regulations as they so appear in the regulatory documents provided by the Petroleum Safety Authority Norway. Four different regulations and corresponding guidelines have been reviewed, as the fifth falls out of the scope of the thesis as per its delimitations. The 10 different documents and how these are referred to can be seen in table 1. In the following chapter, each legislation will be presented based on a content analysis, the main topics of importance related to the five general principles of HSE regulations are presented.

**Table 1**: References to the Norwegian regulatory framework on HSE.

| **Regulations** | Ref. | **Guidelines** | Ref. |
|---|---|---|---|
| The Framework Regulations | PSAa | Guidelines to the Framework Regulations | PSAf |
| The Management Regulations | PSAb | Guidelines to the Management Regulations | PSAg |
| The Facilities Regulations | PSAc | Guidelines to the Facilities Regulations | PSAh |
| The Activities Regulations | PSAd | Guidelines to the Activities Regulations | PSAi |
| The Technical and Operational Regulations | PSAe | Guidelines to the Technical and Operational Regulations | PSAj |

#### *4.2.4.1 The Framework Regulations*

The Framework Regulations lays down the fundament of HSE management for the oil and gas companies. Herein, the regulation highlights the main principles of its application, as well as some fundamental specifications. From the management regulations, a set of topics is emphasized regarding HSE, and this subchapter will cover the most important ones.

A recurring concept is "prudency". The operational word for the aim of the HSE regulation is that the activities undergone should be *prudent*[2]. As such, the activities under this legislation must be of sound judgment in order to reduce risks – and this is both an overall and an individual assessment of all relevant factors. Each assessment is separate, and considerations must be given to specific conditions of the factor (PSAa, 2013, section 10).

[2] "*Careful good judgment that allows someone to avoid danger or risks"*, (Merriam-Webster, 2015)

Another concept that is heavily recurring in the regulations is risk. The regulations also specify the risk reduction principles (PSAa, 2013, section 11). It is implicitly understood that risks are harm or danger to people, environment or material assets, as these are the objects that must not be exposed to significant risk. This risk mitigation is conjointly found in applying internal requirements as well as utilizing the requirements for compliance in the framework (ibid). The first regulatory principle is also stated in this section (ref chapter 4.2.3). Further, if there is uncertainty tied to the efficiency of the measures chosen to reduce risk; another solution must be chosen, or a way to reduce this uncertainty must be found (PSAa, 2013, section11).

A third element of this regulation manifests HSE as a managerial component: the operator must establish or maintain an organization located in Norway which is responsible and capable of ensuring that the company is compliant to the regulations (PSAa, 2013, section 12). Commonly, this would be the HSE department of the operator's company. The responsible party is not required to establish such an organization, but is on the other hand enforced to make sure that the organizations that are carrying out work on their behalf is properly equipped and maintains a satisfactory level of competence to comply to the regulations (ibid). The PSA are empowered to require changes in organizations if deemed necessary (ibid).

The employees, as represented by their elected representative, have the right to participate in HSE-related matters. They can partake in the design of the management system for managing HSE risk (PSAa, 2013, section 13). Further, the Norwegian language should be used in all activities to the greatest extent possible. (PSAa, 2013, section 14). With safety in mind, it also allows the presence of other languages unless it compromises safety. Section 15 (PSAa, 2013) pinpoints the need to have a sound HSE culture within the organization. The guidelines (PSAf, 2014, section 15) elaborates that this would include factors such as: continuous mapping of the culture and risk factors; continuous review of solutions; make it well-known that culture is a collective effort; competence is developed by participation; and that HSE is not to be assessed isolated from value-creating processes. As far as health considerations go, the responsible party is required to ensure preventive and curative health care service on onshore facilities. (PSAa, 2013, section 16) This healthcare should at a minimum be at the same quality as municipal health care (PSAf, 2014, section 16). Doctors are rarely permanently stationed on offshore facilities, albeit nurses are.

The management of activities is also covered in the first legislation. One of the most important practical implications of the HSE regulations is that the responsible party is required to create a management system to ensure compliance with the HSE regulations (PSAa, 2013, section 17). The responsible party is required to make sure that their contractors and suppliers are qualified to comply with the regulations (PSAa, 2013, section 18). Lastly on the note of management, the responsible party must also assess the need for verifications (PSAa, 2013, section 19). Verifications can involve calculations and drawings to review the HSE-related solutions.

Emergency preparedness systems must also be established. In the event that there is more than one facility being used for operations, the operator is responsible for coordinating the emergency preparedness. It should be designed to fit the public emergency preparedness solution. If necessary, the PSA and the Climate and Pollution Agency (CPA) may impose a requirement of standby vessels and/or aircraft (PSAa, 2013, section 20). A very important point with respect to emergency preparedness is found in section 21 (PSAa, 2013), which states that operators can be enforced to cooperate with other operators in other production licenses given special emergency circumstances. This is decided by the PSA and CPA.

Another conceptual area established in the Framework Regulation is *documentation*[3]. First, the regulation states that the responsible party is also responsible for documentation, and explicitly also what constitutes as necessary documentation (PSAa, 2013, section 23). This documentation is freely available to the government, but not necessarily to the public. However, the PSA can warrant whether the responsible party needs to publicize information that is important for safety (PSAa, 2013, section 32). Secondly, section 24 (PSAa, 2013) denotes the possibility of using standards recommended in the guidelines, and as well the sixth principle – wherein standards can be considered compliant. In the event that the responsible party chooses not to utilize such standards, they must be able to document the whether their alternative solution fulfills the requirements in the regulation. The act of combining two or more standards is not an acceptable solution (PSAa, 2013, section 24).

A characteristic feature of employees' rights and duties can be found in section 35 (PSAa, 2013); the "stop-work clause". This section explicitly states that the responsibility safety delegate can stop any operation if he or she deems the process to be in one way or another hazardous.

[3] Content that implores, recommends or suggests efforts to document a situation or a process, as well as to maintain formal relations with an external entity; either a governmental authority or the public

Effectively, this delegate can shut down an entire operation immediately, given that the delegate does not accept alternatives solutions there and then. Given that this stop-work clause is a viable option, the company must also ensure they are able to safely stop any operations immediately (PSAf, 2014, section 35). If work is stopped, the PSA must be notified (ibid). The legal minimum age for working with offshore activities in Norway is 18 years (PSAa, 2013, section 36).

The regulations for design and outfitting of facilities and conduction activities are introduced in this framework, and are thus relatable to the later regulations as well. A couple of points here hold particular relevance: the design of a facility shall facilitate that it can be constructed, operated and, if possible, removed from its location in a prudent manner (PSAa, 2013, section 45). Should industrial disputes occur, then the responsible party must ensure that the safety remains satisfactory (PSAa, 2013, section 50). The guidelines clarify that such disputes can involve employers, employees, and implicitly their labor unions, as well as disputes with the operators and their suppliers and contractors (PSAf, 2014, section 50).

Safety zones are an important feature of safety in Norwegian offshore facilities. These are established in order to cope with the HSE risk surfacing whilst fishermen and other vessels are proximate to the installations. Section 52 (PSAa, 2013) makes it clear that these safety zones are to be created unless the operator can successfully argue that its existence is unnecessary. Subsea facilities can also have safety zones (PSAa, 2013, section 53), but not pipelines and cables. The safety zones can be up to 500 meters in any direction (PSAf, 2014, section 53).

Punishment for noncompliance, also known as *sanctions*[4], is briefly mentioned in this legislation. Section 72 (PSAa, 2013) makes mentioning of the possible punishment of defiance or violation of the regulations, and merely mentions that penalties and other sanctions can be put to use under such circumstances. The guidelines elaborate that this can involve coercive fines, whose scope is determined by the Pollution Control Act (PSAf, 2013, section 72).

Our analysis shows that seven concepts can be derived from the Framework Regulations: *Risk-based approach, standards, Holistic HSE Integration, HSE Culture, Security, Documentation & Sanctions.* All the content we have found can be positioned in either of these categories. Table 3 summarizes these findings from the first regulation by listing the seven concepts, the 24 contents therein, a short description of the content and its location in the regulations.

[4] Content that is related to the effects of unsatisfactory compliance and punishment thereof

To make a brief summary, the Framework Regulation serves as the most fundamental regulation of HSE in Norwegian offshore activity. It defines all necessary roles and applications, and it illustrates the most important aims of HSE regulation in Norway altogether. As it progresses, it can also be viewed as the quintessential summary of all the regulations as a whole, touching upon vital subjects – albeit never in conflict – with the rulings in the other four regulations.

**Table 3** Concepts and content of the Framework Regulations

| Concepts | Content | Description | Section |
|---|---|---|---|
| **Risk-based approach** | Risk management as a key principle | Companies should deal with the hazards in a risk-based perspective | 11 |
| | Risk assessment | The company must identify and assess overall and individual risk factors in their operations. | 11 |
| | Risk reduction | The identified risks should be mitigated at a reasonable trade-off between costs and effect. | 11 |
| **Standards** | Obligatory standards | No standards are obligatory to utilize under the Norwegian regulations. | 24 |
| | Recommended standards | Recommended standards are normally sufficient to meet the legal requirements. | 24 |
| | Standard registry | Authorities maintain a database of recommended standards that will ensure compliance | 24 |
| | Voluntary standards | The company may use other non-recommended standards if they can document the effectiveness of these. | 24 |
| **Holistic HSE integration** | HSE as an inseparable part of the company | HSE must not be isolated from value-creating instances or processes of the company. | 15 |
| | HSE management system | The company must implement a holistic and continuous HSE management system. | 17 |
| | HSE department | The company must establish a functional branch to handle HSE-related matters. | 15, 17 |
| **HSE culture** | Ensure HSE culture | The company must develop a sound culture for HSE in the organization. | 15 |
| | Employee participation | Employee representatives can play an active role in HSE-related matters. | 13, 35 |
| | Health care | Health care must meet a certain standard, i.e. "as good as municipal service" | 16 |
| **Security** | Emergency preparedness | EP must fit public preparedness systems. System must be made available to other operators if needed. | 20-22 |
| | Stop-work clause | Employee safety delegates can stop all operations immediately if deemed unsafe. | 35 |
| | Language requirement | Norwegian is the primary language to be used. | 14 |
| | Safety zones | Safety zones must be established around surface infrastructures. | 52 |
| **Documentation** | Verification | Verifications are necessary if deemed so by the responsible party. | 19 |
| | Self-assessed documentation | Documentation necessary if deemed so by the responsible party | 23 |
| | Transparency | Anything related to HSE can be made public by the PSA. | 32 |
| **Sanctions** | Punishment for incompliance | Punishment of violation is coercive fines or other sanctions. | 72 |
| | Punishment for breaking labor code | Minor offenses punishable by fines and up to three months imprisonment.<br>Major offenses may be punishable by two years of imprisonment. | 72 |

| | | | |
|---|---|---|---|
| | | Life-threatening offenses may be punishable by five years of imprisonment. | |
| | Punishment for pollution | The aforementioned punishment levels may also apply for offenses that involve illegal pollution. | 72 |
| | Punishment for waste | Illegal waste is punishable by fines and up to three months of imprisonment. | 72 |

#### 4.2.4.2 The Management Regulations

The Management Regulations is the second set of regulations applicable to the offshore petroleum industry in Norway, and with certain exceptions also for onshore installations. Unlike the Framework Regulations, these regulations (as well as the remaining three regulations) are not enforced by any ministries. However, both regulations are enforced by the Petroleum Safety Administration, The Norwegian Environment Agency (NEA) and the health authorities. This legislation illuminates four areas of managerial components: the introduction of the concept of barriers; objectives, internal requirements and decision-making; analyses; and notification and applications for consent. The regulation as a whole is largely tied with the established risk-reducing principles from the Framework Regulations. As for the overarching management of these risk-reducing measures, the responsible party is given the overall responsibility to fulfill these requirements. Further, the responsibilities and authorities must be clearly defined (PSAb, 2014, section 6).

Barriers are the actual measures implemented for mitigating risk. They can be physical, non-physical, or both (PSAg, 2014, section 5). The regulation states that such barriers shall be created (PSAb, 2014, section 5). Further, it addresses the duality of risk mitigation: first, the barriers should reduce the likelihood of failures, hazards and accidents; second, reduce the potential impact in the event that an accident occurs (ibid). Risk is considered as a combination of probability and consequence (PSAf, 2014, section 11). Further, it's specified that these barriers preferably should be independent so that the failure of one barrier doesn't lead to the failure of all others (PSAb, 2014, section 5). The responsibility of designing and maintaining barriers befalls the operator. Additionally, the crew of the facility is to be informed about the existence and intended use of all the barriers in place at the facility (ibid). The guidelines offer aid in how to specifically create these barriers, via referring to recommended standards.

Objectives, internal requirements and decision-making shape the next central theme of this regulation. First, the responsible party is to formulate short-term and long-term objectives and strategies to support the HSE management (PSAb, 2014, section 7), and the operator shall make sure

that these do not conflict or contradict (PSAg, 2014, section 7). These goals must be operationalized somehow, and the responsible party shall create the concrete terms for acceptable degree of goal achievement. These terms are called internal requirements, and are supposed to be functional, so therefore preferably measurable (PSAb, 2014, section 9). These internal requirements are the minimum-level achievement level of the goals. However, since the entire management of HSE is risk-based, there must also be minimum-level acceptance levels of identified risk factors. While identifying risk factors, one could come up with a long list of potential risk factors that are either highly improbable or would not make a very big impact. Depending on level of risk aversion, these types of risks may be acceptable. When it comes to major accident risks and environmental risks, the operator must set the acceptance criteria (PSAb, 2014, section 9). With a set of objectives, internal requirements and acceptance criteria in place, the responsible party must also establish measurement parameters to monitor risk factors, and these parameters must be used to measure degree of achievement (PSAb, 2014, section 10), which in turn are compared to the internal requirements. All of these requirements in combination form an elaborate system to monitor and control the HSE risks, and are thus one of the quintessential parts of the objectives- and decision making process warranted by the management regulations. This amounts to section 11 (PSAb, 2014), that states that decision-making must be made after all of these components are operational. Any assumptions taken prior to a decision must be registered for potential analysis in retrospect (ibid).

Monitoring and controlling risk is one part of risk management; identifying and assessing risks is another. In order to identify and evaluate the impacts and probabilities of each risk factor, the responsible party shall carry out necessary risk analyses (PSAb, 2014, section 16). These risk analyses are not only required, but they also come with a set of specific requirements. First and foremost, the methodology of the risk analyses must be recognized (ibid), as for instance the NORSOK Z-013 standard (PSAg, 2014, section16). Each risk analysis must be comprehensive and balanced, including a statement of purpose, conditions, premises and limitations (PSAb, 2014, section 16). The risk analyses are not necessarily exclusively internal, so readability is important for the target audience to understand the outcome of the analysis. These analyses are organized and kept in store by the operator or the responsible party (ibid), which is therefore supplementary to the company's risk register. These risk analyses shall be updated, if needed, but the reasoning behind an update must be clarified (ibid). As far as the content goes, the risk analyses aims to uncover: hazards and accident situations; initiating incidents and their causes; accident sequences; & risk-reducing measures (ibid).

The former three paragraphs elaborate on certain areas of the Management Framework, all of which are tied to different components of the conventional risk management model (figure 8). Barriers act as the risk mitigation measures, and therefore correspond to the third component in the model. Objectives, internal requirement and decision-making requirements are all corresponding to the component of control and monitoring of risk. Lastly, the risk analyses shape the technical bases for risk identification and assessment. Doubtlessly, that is part of the purpose of these elements of the Management Regulations – which in its core is tied with the risk-based approach elaborated on in the Framework regulations. The process is completed by the reviewing phase (figure 8), which is also represented in the Management Regulations. Section 19 (PSAb, 2014) sums up the process. As far as reviewing goes, the all accidents or hazards, as well as situations that could have invoked accidents, shall be recorded and registered (PSAb, 2014, section 20). The management system established shall be further followed up by the responsible party (ibid).

Not everything rests on the managerial efforts of the responsible parties and/or the operators. Section 25 and 26 (PSAb, 2014) state that the operator must send an application for consent to the PSA. This means that the PSA must approve of the plans in advance of production start. Notably, this is not the same consent as the plan for development and operation of a petroleum deposit (PDO) and plan for installation and operation of facilities for transport and utilization of petroleum (PIO), both of which are far more substantial. However, PDOs and PIOs are created prior to production start of a petroleum project (NPD, 2010). The application for consent is phased before the startup of any activity, and can therefore be created during the lifecycle of the petroleum project, especially if the specifications of the PDO/PIO are no longer valid due to the changes in activity. (PSAb, 2014, section 25). Finally, there are a few specifications that are related to notification and reporting. In the event of an accident or hazard, that led to or could have led to death, serious injury, illness, impairment of barriers, or pollution, the operator must notify PSA by telephone of this incident, and later confirm the notification in writing (PSAb, 2014, section 29). For accidents involving death or injuries to people, a form must be filled in to notify PSA about this as well (PSAb, 2014, section 31). If an employee feels that he or she is suffering from a work-related illness, then the employer is obligated to report on this as well (ibid). Working conditions and safety of employees is therefore largely reportable to the PSA. However, in the environmental challenges, a report is to be made to the Norwegian Environment Agency (NEA).

**Table 4:** Concepts and content of the Management Regulations

| Concepts | Content | Description | Section |
|---|---|---|---|
| **Risk-based approach** | Risk analysis | The company must perform a risk analysis, which involves identifying and assessing all risk factors. | 16, 17 |
| | Risk register | Maintain a register of all the risk analyses | 16 |
| | Risk mitigation | The company must create barriers to reduce the likelihood or consequence of the identified risk factors. | 5 |
| | Risk control | The company must create objectives or goals for each risk factor, and internal requirements are representatives of the minimum degree of achievement. | 7, 8 |
| | Risk reviewing | The management process for mitigating risk must be continuously reviewed and followed-up. | 19 |
| **Holistic HSE integration** | Quality of risk management | HSE management is a product of the quality of all the components in the risk management process. | 11 |
| **Documentation** | Application for consent | Approval of activity prior to start-up must be given from the PSA. | 25, 26 |
| | Notification of accidents | Accidents and near-accidents must be notified via telephone and writing to the PSA immediately. | 20, 29 |
| | Reports of illness and injury | All personal injuries, illnesses and treatment must be reported to the PSA. | 31 |
| **HSE culture** | Employees' right to self-assessment | If the employees believe they have a work-related illness, the employer must treat it accordingly. | 32 |

#### *4.2.4.3 The Facilities Regulations*

The Facilities Regulations are a more technically oriented set of regulations applying to the offshore facilities of the petroleum production. It is issued and controlled by the PSA, as well as the NEA and the Norwegian Health Authorities. Its technical focus is evident by its use of terminology, which is defined more clearly in section 3 (PSAc, 2014). An important term is the concepts of "loads" and "load-bearing structures". Loads are stresses inflicted by unusual conditions, as for example extreme weather, while load-bearing structures are the physical structures that will take the majority of this stress. These load-bearing structures must therefore be robust, so that the facility is not damaged from such loads. Robustness of structures and solutions is therefore the overarching principle for these regulations. It is also concerned more specifically of the outfitting of personnel areas, physical barriers, emergency preparedness systems and well systems. As seen in the summarized table 5, the Facilities Regulations add to the concepts from earlier regulations, which heavier in-detail emphasis on the *HSE culture* and *Security* concepts.

There are also contents that contribute to the conceptual area of "*holistic HSE integration*". The Facilities Regulations unsurprisingly deal with the design of the facilities of petroleum production. As mentioned, the overarching principle is that this design shall be based on the most robust solutions possible (PSAc, 2014, section 5). The facilities must be divided into main areas

separated from one another; risk of explosion must be classified in the relevant area; explosive and flammable materials must be stored in an area where they involve minimal risk (Ibid). These are the kind of specifications that are present throughout these regulations, and there is little point for this study to review them individually. However, as far as managing HSE goes, the Facilities Regulations are a primary source for compliance for the design phase of the production. Once designed, the facilities should be maintained to remain at an acceptable risk level – but there is nothing that challenges the companies to make continuous improvements in these regulations, as opposed to the former two. Thus, in a sense, they are more static. Lastly, it's stated that any new technologies or methods must be challenged to fit the criteria of the HSE regulations to ensure compliance (PSAc, 2014, section 9). Therefore, all new technologies or methods must be integrated to the HSE management system somehow, as it first will be tested, and upon approval become a benchmark.

There are two specifications adding to the concept of risk-based approach of HSE management, namely the various risk thresholds and the risk monitoring. By risk thresholds, we refer to the actual quantitative thresholds occasionally given in the text of law. For instance, it's stated that no areas which houses personnel or safety equipment shall be hit by waves with a greater annual probability than $1x10^{-2}$ (1%) (PSAc, 2014, section 5). This means that waves so great they are at 1% chance of appearing once a year should never hit these areas. This implies not only that the facilities must be robust enough to handle large waves, but the risk managers and engineers must also have some sort of quantified idea of the likelihood of large waves. Such risk thresholds can be found in sections for different situations as well (PSAc, 2014, section 5, 11, 56). Also directly supporting a risk-based approach is the required outfitting of measurement and recording devices for conditions and factors related to risk – essentially a vital part in the risk monitoring phase (PSAc, 2014, section 17). The guidelines for these regulations further specify that such conditions include structural integrity of load-bearing structures; degradation of materials; and critical operational parameters (PSAh, 2014, section 17).

There are many matters related to the concept of HSE culture in these regulations, and we have chosen to highlight seven of particular importance. First, as already mentioned in the Framework Regulations, the facility must have a healthcare department. This department has a set of requirements to it which culminates into the overall requirement that the quality of the facility's healthcare department shall be high enough to perform prudent healthcare on the employees (PSAc, 2014, section 59). In addition to this healthcare department, the facility must also have at least one

emergency sickbay, which should be outfitted to handle immediate medical situations (PSAc, 2014, section 60). As a measure to prevent medical issues, all manually handled production equipment and tasks requiring repetitive motion must be ergonomically designed (PSAc, 2014, section 20). Weather conditions in the North Sea and other Norwegian offshore zones can be harsh, and therefore the legislation implores the company to ensure that the weather conditions are at lower risk to harm the employees (PSAc, 2014, section 21). Herein, the guidelines specify that the same principle of risk reduction/cost of risk reduction trade-off prevalent throughout the HSE management is put to use (PSAh, 2014, section 21). Certainly, this significantly sharpens the importance of the layout of the outdoors working areas of the facility. The sections following this requirement are also concerned with factors corresponding to the employee's well-being by mitigating hazards: noise levels are to be kept low; vibrations on the facility must not harm the employees; radiation exposure must be kept at a minimum (PSAc, 2014, sections 22-26). In the event that a person should fall into the sea, the facility must be sufficiently equipped to handle such a situation efficiently (PSAc, 2014, section 41, 41a, 45). The equipment used for rescuing shall not expose the user to unacceptable risk (Ibid). The last specification of that adds to the security of human lives are the requirements of safety signs (PSAc, 2014, section 28). These signs are placed in all areas of the facilities where there is an unavoidable exposure to a risk factor, e.g. where the risk is inherently necessary for the production to be possible at a reasonable efficiency.

The last concept that is relevant for the Facility Regulations is *Security*, in which five pieces of content contribute to the importance of this concept. First, there is the content of well safety. Well safety is everything that is related to the design of the well system and surrounding mechanisms, and is therefore one of the larger sources of pollution risk (PSAc, 2014, section 48). The legislation lists a few requirements about necessary barriers in the well to prevent unwanted influx and outflow of liquids and other matters, which may in the end result in some specific requirements to well systems unique to Norway. Secondly, on/offloading systems (e.g. loading of crude oil from facility to tanker) pose a similar environmental risk, and also therein unwanted in/outflow of matter is aimed to be minimized (PSAc, 2014, section 66). As the production facility also generates waste, this waste must be offloaded from the facility in a safe manner (PSAc, 2014, section 67). Most oil platforms today are powered by gas turbines and diesel engines locally, which may also produce the necessary electricity for further production (Myhre, 2001). This generation creates exhaust, which in turn must be released. This release must not involve the risk of ignition, and must not expose the personnel on the

facility to harm (PSAc, 2014, section 68). The last content in this concept is the requirement of communication systems. The requirement doesn't specify exactly what manner of communication is necessary, but that the facility must be able to communicate both internally and externally (e.g. to land-based facilities, ships, aircraft and other vessels) (PSAc, 2014, sections 18, 19).

**Table 5:** Concepts and content of the Facilities Regulations

| Concepts | Content | Description | Section |
|---|---|---|---|
| **Risk-based approach** | Risk thresholds | Risks of a certain annual probability are given as thresholds for acceptable risk factors. | 5, 11 |
| | Risk monitoring and recording | The facilities shall be outfitted with equipment for measuring and monitoring relevant conditions. | 17 |
| **Holistic HSE integration** | Development concept | Development concepts encompass a wide range of conditions, properties and scopes to be considered. | 4 |
| | Facility design | Facilities shall be designed with the most robust and simple design as possible. | 5, 6, 10 |
| | New technology & methods | Any new technology and methods shall be integrated to the HSE management in a manner that ensures compliance. | 9 |
| | Safety functions | All safety functions in the facility must be described for clearly for the management of HSE. | 7, 8 |
| **HSE culture** | Health department | Permanently manned facilities must have a health department of a sufficient quality for prudent health care. | 59 |
| | Emergency sickbay | Permanently manned facilities must have an emergency sickbay additional to the health department, equipped to handle medical emergencies. | 60 |
| | Ergonomic equipment | All manual work activity executed by the personnel must be ergonomically design to avoid physical or mental strain. | 20 |
| | Weather protection | Employees working outside must be sufficiently protected from the weather conditions. | 21 |
| | Noise pollution, vibration, radiation | Employees shall not suffer harm from excessive noise levels, vibrations or radiation exposure. | 22, 23, 24, 26 |
| | Emergency preparedness | The facilities shall be sufficiently equipped to rescue employees who fell in the sea, as well as handle other personnel emergencies, including evacuation. | 41, 41a, 44, 45 |
| | Safety signs | Descriptive signs to inform employees about relevant information for reducing risks shall be placed in the event that employee risk exposure is impossible. | 28 |
| **Security** | Well safety | Well installations must contain sufficient barriers to mitigate unwanted influx and outflow of matter. | 48 |
| | Loading and offloading systems | The facility must be designed to minimize risk of oil spills in on/offloading systems | 66 |
| | Waste management | The facility must be designed so that the waste generated on the facility can be collected safely. | 67 |
| | Exhaust management | The exhaust from the production machinery must be released where there is no risk of ignition, and no exposure of harm to employees. | 68 |
| | Communication systems | The facility must have a functional internal and external communication system with appropriate communication equipment corresponding to needs. This includes an internal alarm system. | 18, 19 |

#### 4.2.4.4 The Activities Regulations

Whereas the Facilities Regulations give an input on the design of the facility, the Activity Regulations aimed to give guidance and enforce how to use the facilities in the right way. Some of its focus is upon the concept of activities and how these differ; as well as further specifying how the health service for the personnel should work in practice; and how the management should plan and handle maintenance and discharge issues. The Regulations apply to all offshore petroleum installations. Similarly to the Management Regulations and the Facilities Regulations, these are also enforced by the PSA, the NEA and the Health Authorities. From examining the managerial implications of the regulations, we have found that the regulations contribute correspondingly to the same concepts as the Facilities Regulations, and at that they follow a fairly similar pattern in terms of how the chapters and their contents are laid out.

There are three elements that in particular add to the risk-based approach evident in the Norwegian HSE legislation. First, it is stated that all the employees of on the facilities must be thoroughly informed about the risks they are facing in their everyday operation (PSAd, 2014, section 44). This is of course a vital part in implementing the risk management procedures among the people that have first-hand contact with the production flow: the workers. Second, the company is required to perform or partake in a continuous study of the external environment. This is an extensive requirement that ranges from agreeing upon cooperation and contributions between the various parties (PSAd, 2014, section 52); to conducting baseline studies ahead of production start for comparative purposes (PSAd, 2014, section 53); to accurately monitor the condition of the seabed habitats at least every three years (PSAd, 2014, section 54); to accurately monitor the water condition and pollution effects on fish stocks (PSAd, 2014, section 55); to reporting these studies to the correct authority by the yearly deadline in April (PSAd, 2014, section 56). Third, and also similarly, the company must create an assessment of the risks and potential environmental impacts of the chemicals discharged from the production (PSAd, 2014, section 64). It is accepted that various chemicals will eventually be discharged to the local environment, but the effects of the discharge is determined by the qualities and quantities of each different chemical, and therefore the company must classify the likelihood of discharge of all the chemicals in use (Ibid). There are four such classifications; black, red, yellow and green, i.e. from biggest to smallest impact (PSAd, 2014, section 63).

Some matters require a more integral change of how the company is organized to meet HSE requirements, and thus contribute to the second concept, *Holistic HSE Integration*, namely four crucial pieces of content. In their operations, the company has a set of activities, i.e. the actual tasks that are being performed in the day-to-day operations, hence the coined name for these regulations. These activities must be organized and coordinated in an appropriate fashion. That is to say, the tasks must be allocated among the workers in such a way that they will minimize the risk exposure for the employees; mitigating the physical and mental strain for each individual (PSAd, 2014, section 33). This means that the personnel must not be given too much of a workload, and must be given tasks that are somehow conflicting with each other. Secondly, the company must establish a working environment committee with representatives from the employers and the employees (PSAd, 2014, section 4). The aim of this committee is to coordinate all HSE related matters within a field or on a mobile facility, which further implies that the committee may have representatives from different companies. All the members of these committees must receive training in HSE-related matters (PSAd, 2014, section 22). There are two specifications that address the concept of activities. The responsible party would normally have a set of generic activities (e.g. production, drilling, well, maintenance and modification activities) in their day-to-day operations (PSAi, 2014, section 28). However, certain kinds of activities are labeled as critical activities, as they inherently or normally would implicate more risk exposure. These need to be coordinated specifically, using the risk restrictions derived from the requirements in the Management Regulations (PSAb, 2014, section 16)(PSAd, 2014, section 27). The activities labeled as critical include hydrocarbon-bearing systems; hot work; work with explosives; work with radioactive materials; activities with high risk of acute pollution; activities requiring to disconnect a safety system; and lifting (PSAi, 2014, section 26). In addition to critical activities, there is also a section about simultaneous activities: whenever two different activities are performed at the same time, they are considered simultaneous activities. On their own, they are approved activities in terms of risk exposure, but in combination the synergetic effect may make the simultaneous activities unacceptable. That is why all such activities must be identified and conducted only if they do not involve an unacceptable increase in risk exposure (PSAd, 2014, section 28).

When it comes to more hand-on practices with direct implications for the safety of the personnel, there are also a few elements to mention. Once again, the regulations point out characteristics of the established health care service on the facility. First of all, it's stated that all the

employees have the right to undergo regular medical examinations to ensure that they are not suffering physical or mental strains from the work. Of course, they are also entitled to know the results from these examinations (PSAd, 2014, section 6). There should also be a preliminary examination of health to assess the medical condition of the employee before entrance in the production flow – much comparable to a baseline survey. Secondly, the regulations state that the facility must at all times host at least one nurse (PSAd, 2014, section 8). There can be more, but this number is dependent on necessity. Each facility must also have a physician on-call and available for immediate transportation at all times (PSAd, 2014, section 10). Also related to an improved HSE culture is the increase in competence by training the personnel. Unsurprisingly, all the employees must undergo basic training in matters relating to HSE, e.g. getting know-how in safety systems, evacuation routes, emergency response drills, et cetera (PSAd, 2014, sections 21 and 23). The aim is that all the personnel shall be able to handle a hazard or accident situation. Further, certain tasks require special certification, of which are of course required prior to the personnel's execution of such work (Ibid). These certifications are for example necessary for work related to bell diving, surface diving, work with chemicals, drilling and well activities, work on electrical installations, lifting operations, use of communications, et cetera (this list is by no means exhaustive)(PSAi, 2014, section 21). Lastly, it's determined that only people who is working on the facility may stay there, which excludes the possibility of casual visits to the facility (PSA, 2014, section 18). Additionally, it's also determined that all the employees shall have their own cabin. The employees may share a cabin temporarily if special conditions warrant such; however, they may never share a bed (PSAd, 2014, section 19).

Three elements add to the *Security* concept. First, the regulations provide an extensive input on how to manage the maintenance of the facility. Simply put, the responsible party must make sure that the facility is properly maintained (PSAd, 2014, section 45). Three important functions of the maintenance scheme facilitate this aim. First, all systems and equipment on the facility must be classified by potential negative impact on employee health and the environment in the event of their failure – as already determined in the Management Regulations (PSAd, 2014, section 46). From this information, the responsible party must identify the necessary maintenance level and frequency for each system and equipment (Ibid). Further, with respect to these classifications, the most at-risk systems and equipment must be explicitly subjected to their own maintenance program (PSAd, 2014, section 47). Additional to this maintenance program, the responsible party must also assess which

systems and equipment that must be prioritized, and therefrom create deadlines for each individual maintenance object (PSAd, 2014, section 48). The Activities Regulations also relates to handling waste and pollution. Incidentally, production of hydrocarbons will involve to some extent the discharge of oil back into the sea, i.e. discharge of oily water. This is acceptable, but the amount must be minimized (PSAd, 2014, section 60). The threshold limit is 30 milligrams of oil per liter of water on average (Ibid). When it comes to solid waste, the Regulations implore the responsible party to minimize the amount of waste generated. However, the waste that is generated must not under any circumstance be disposed of in the sea – it is to be collected and transported to an appropriate onshore facility (PSAd, 2014, section 72).

**Table 6:** Concepts and content of the Activities Regulations

| Concepts | Content | Description | Section |
|---|---|---|---|
| **Risk-based approach** | Risk information | All employees must be aware of all work-related risk factors by the time of the execution of the work. | 44 |
| | Environmental monitoring | The company must partake and cooperate in monitoring the external environment around the production area. | 52-59 |
| | Environmental assessment | The company must assess the environmental impact of all potential chemical discharges. | 64 |
| **Holistic HSE integration** | Organization of activities | The work, including task allocation and workload, must be organized so that exposure to hazards and physical and mental strain is avoided. | 33 |
| | Working environment committees | A working environment committee with employer and employee representatives shall be established for all working areas. The members must receive HSE training. | 4 |
| | Critical activities | Critical activities must be identified and carried out under their pre-defined limitations. | 27 |
| | Simultaneous activities | When two activities are performed in combination, they are labeled *simultaneous activities*. The act of combining these activities must not lead to unacceptable risk. | 28 |
| **HSE culture** | Medical examination | Employees must be offered regular health examinations, and they are also entitled to know the results. Employees exposed to hazards shall be offered special treatment. | 6, 9, 11 |
| | Medical professionals | There must always be a nurse available on the facility. The facility shall have always have a physician on-call and available for immediate transport to the facility. | 8, 10 |
| | Competence & training | All personnel must undergo basic competence training. Some certification and special training is necessary for special tasks. The personnel must be trained in emergency drills. | 21, 22, 23 |
| | Stay on facilities | Only people working on the facility may stay there, unless a special permit is given. | 18 |
| **Security** | Maintenance | All equipment shall be classified by the impact of their potential failures and be maintained with respect to that. High-impact faults must be subjected to a tailored maintenance program. All maintenance must be planned by prioritization. | 45-51 |
| | Discharge | Oily water may be discharged to the sea, but must be cleaned and the oil content must be minimized. On average, the oil content must not exceed 30mg/liter. | 60 |
| | Waste | Waste generation should be minimized, but generated solid waste must never be discharged to nature, but instead collected. Oil waste may be injected to the machinery. | 72 |

#### 4.2.4.5 The Technical and Operational Regulations

The technical and operational regulations are exclusively applying to onshore facilities (PSAe, 2014, section 1). In light of the delimitations of this study, these regulations will not be considered.

### 4.2.5 Summary

From the Norwegian HSE regulations we could derive seven relatively broad categories, dubbed *concepts*, which aimed to, in a collectively exhaustive and mutually exclusive manner, encompass all the *contents* characteristic to the Norwegian regulations we deemed relevant for further comparison. Needless to say, not all the content of the regulations have been included, but the most crucial features of the regulations are captures in these concepts. For sake of illustration, figure 9 displays how these concepts are distributed among the four regulations we have reviewed. If nothing else, the chart tells us that the Framework Regulation covers the broadest scope of topics; while the Management Regulations are mostly concerned with the overall approach; and finally the Facilities and Activities regulations are both mostly concerned with *Holistic HSE Integration, HSE Culture & Security*.

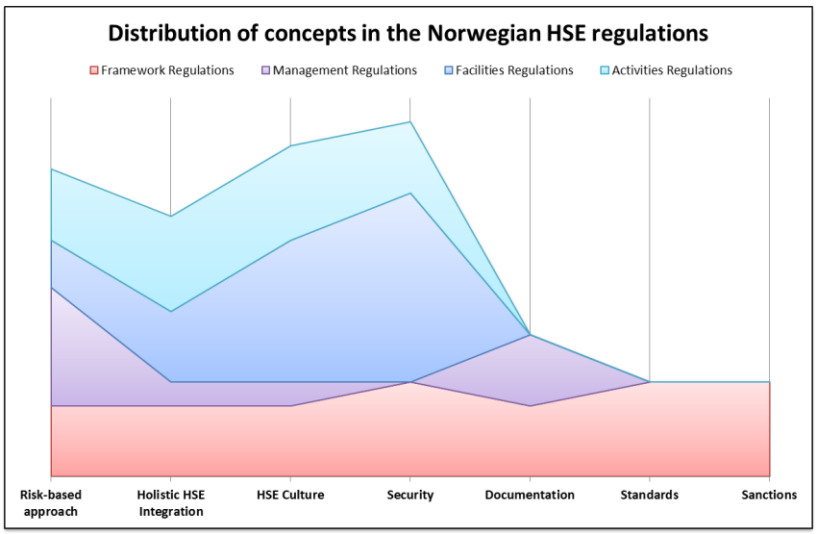


**Figure 9:** Distribution of concepts in the Norwegian HSE regulations

Unsurprisingly, the main document, the Framework Regulations, is dominating the distribution, having the sole input on matters such as sanctions and use of standards. Other, more important concepts, such as the risk-based approach and holistic HSE integration are present throughout the entire legislation, which so to say strengthens their influence on the practices of HSE management. They are thoroughly elaborated upon in all the appropriate regulations, and are ridden of ambiguity for the reader.

There are a set of main features of the legislation as a whole to be derived. The very concept of implementing a risk-based approach in dealing with HSE as opposed to heavy usage of standards or detailed-fixed legislations is perchance the most important one. Additionally, one would benefit from noticing that the Norwegian HSE regulation is very concerned with preserving the health of the employees through the various specifications that are concerned with the establishment of an on-facility health care system; showcasing strict demands for the quality and accessibility of such a service. Secondly, it's important to highlight the employee's potential influence on the production through various features in the regulations: the employees may stop all work they deem unsafe; participate in HSE-compliance committees; offer input to the organization of workload, among other features that may not be existing in many other legislations. Thirdly, the reporting duty is reasonably clear and the appropriate instance for reporting is similarly well-defined. There is some ambiguity as for the necessity to report certain aspects of the operation, as this is deemed as a subject to self-assessment. Also, the company should be aware that the PSA stand free to make a fairly substantial amount of information about their operations publicly available. Lastly, and even though the legislations are not especially detail-focused, they also specify some fairly intricate specifications that are bound to involve not only a substantial workload purely connected to HSE and not directly value-adding activities per se; but separating costs with HSE from the costs of value-adding activities is indeed not an acceptable managerial procedure.

## 4.3 HSE regulation in Russia

### 4.3.1 Introduction and availability

HSE regulation in Russia is a rather spread concept altogether, deriving various normative requirements from several different sources rather than a single one: that is to say, instead of having a single law relating to the HSE management in the petroleum sector, the oil and gas companies must be acquainted with requirements that befalls all the industries for a certain sphere. This implies that the oil companies wanting to operate compliantly must for example consult the Russian general laws on fire safety; safety of lifts; safety of buildings; et cetera – and these are all laws that can apply to a broad variety of different industries. So the principle is clear: there is no law specifically tailored to the oil and gas industry – and therefore the operators must be widely acquainted with a broad legislative framework to operate legally. This has a major implication for the approach of analysis for this thesis: We cannot review each law separately and systematically as was the case with the Norwegian legislations. Instead, we will look directly for the concepts and contents illuminated above. Therefore, this subchapter is structured with respect to the seven concepts we have already derived.

The Russian HSE regulations are partially inaccessible for two reasons. First, all the laws and regulations are publicly available on the internet, albeit scattered. None of the ministries or agencies mentioned in chapter 4.3.2 on *the structure of the legislations and legal actors* has made a compilation of the laws regulating HSE in Russia. Arguably, this is due to the fact that HSE is less clearly defined as a concept altogether in the Russian oil and gas industry. The general petroleum laws of Russia are fairly accessible, but these do not sufficiently cover the requirements to safety standards in the production facility, and are therefore not broad enough. Secondly, all the laws are only available in the Russian language. Some of the laws have been translated into English, but not nearly exhaustively so. Even at that, some of the ones that have been translated are also dated and no longer relevant.

### 4.3.2 The structure of the legislation and legal actors

Looking back to chapter 4.1 on *governing instances*, where we mapped the governance of the Russian HSE regulations, we saw that there are indeed a lot of governing instances and federal legislations to consider for an HSE manager operating in Russia. However, it is possible to circle out the most relevant instances when it comes to regulating the Russian oil and gas industry. In figure 7, we can

see a set of related ministries. The Ministry of Natural Resources of the Russian Federation (MNR), The Ministry of Energetics of the Russian Federation (Minergo) and The Ministry of Industry and Trade (Minpromtorg) are the ones with the highest degree of responsibility for this industry. MNR is also the authority that organizing and administrating the Russian subsoil licensing regime (Josefson, 2012). Minpromtorg was established in 2008; and upon the signing of the federal law "On technical regulation" in 2010, they were given the primary responsibility to regulate this legislation. This is among the legislations that are most relevant in an HSE perspective (along with "On Industrial Safety of Hazardous Production Facilities" and "On Environmental Protection"), although it does not fully cover all the relevant aspects of petroleum production. It is marked in red in figure 7. It is among the most relevant, because it covers the usage of standards in Russian industrial companies, which in broad terms is the main approach to how HSE is being regulated in Russia.

In addition to the ministries and the federal laws, the institution that to the highest degree resembles the Norwegian Petroleum Safety Authority is Rostekhnadzor, which is given the responsibility to implementing the laws for the oil and gas industry; as well as being responsible for supervising this industry (Zhulina, 2013).

It should also be noted that while Russia is federation consisting of 6 oblasts, 22 republics, 9 krais, 4 autonomous okrugs, 1 autonomous oblast and 3 federal cities, and therefore maintains a correspondingly complex legal system in all jurisdictions beneath federal level, the hydrocarbon industry is largely a federal-level matter. The law warrants that the legal regulation of industrial safety is only government by federal (and not regional) laws; while also Presidential and Governmental acts may support this legal field (On Industrial Safety in Hazardous Production Facilities, 1997, article 4).

### 4.3.3 Regulatory principles

The regulation of HSE in Russia is based on the use of standards. However, there is an ongoing shift from imploring obligatory standards to facilitating the use of voluntary standards (OGP, 2010). By using national standards, the company would to a great extent comply with all the requirements. We can, however, discuss the nature of a standard: A standard is suggesting a means to reach a certain end – but the latter is more important than the former. If different means can reach the same end, then it wouldn't matter much which means are put to use. And if a certain set of means are better fit the assumptions of a company to reach the appropriate end, this set of means is more desirable than

any other. Simply put: if two or more standards are approved to facilitate the correct outcome, then the company should be able to choose the one that, given their assumptions, would prove most efficient. This is perchance the thought behind this shift, which is further illuminated by a set of principles of standardization as they so appear in the federal law, "On technical regulation":

1) All standards put to use must be explained to the greatest possible extent to satisfy the interests of the reader (On Technical Regulations, 2002, article 12).
2) Implementation of internationally renowned standards is possible as long as they are not officially disproved as unfit for the Russian conditions; whether it is climatic, geographical, and technical or other features; and as such the standard is forbidden to use (Ibid).
3) The standards must to a great enough extent avoid obstacles that hampers the main goals of standardization (Ibid).
4) The standards must not conflict with the requirements of the technical regulations (Ibid)
5) If a unified approach to different standards is used, the conditions for doing so must be elaborated upon (Ibid).

### 4.3.4 Regulations

As previously explained, the Russian HSE regulation is structured differently, and by extent, over 90.000 legislations, standards and other legal documents hold some kind of relevance for HSE management. It's useless to attempt to go through them all systematically as we did with the Norwegian regulations: instead, this subchapter will go through the discoveries from analyzing the regulations *with respect to* the already formulated concepts and contents from the Norwegian legislation (refer to chapter 3.4 – *data processing and analysis* – for a more detailed description of methods).

#### *4.3.4.1 Risk-based approach*

None of the main legislations implore the oil and gas producers to implement a thorough risk-based approach to HSE management. As elaborated in chapter 4.3.4.2 on *standards*, the legislations are largely what we can address as a "standards-based approach", which is indeed a fundamental part to the very paradigm of these regulations. However, there are certainly traces of practices reminiscent of

a risk-based approach implored or recommended also in the various legislations of the Russian Federation.

The law, "On Industrial Safety of Hazardous Production Facilities" (1997) states that the operator of a hazardous production facility – a category in which most oil and gas production facilities would fall under – must create and submit a Safety Substantiation. This Safety Substantiation is a document that essentially conveys a thorough risk assessment of the production facility. This means that the operator of a petroleum facility is by law required to perform an overall risk assessment of their facility, as well as to include all relevant information about possible threats; conditions of safe operation; maintenance and abandonment scheme (On Industrial Safety of Hazardous Production Facilities, 1997, article 3). This Safety Substantiation is something the Russian State Register must have at all times. If there is cause for changing the Safety Substantiation, this must be done within ten working days after the discovery was made (Ibid).

The operator of the facility must also implement an Industrial Safety Management System (On Industrial Safety of Hazardous Production Facilities, 1997, article 11). The requirements to these systems are quite broad, and altogether they make out a complex part of the main rulings of this particular law. When it comes to risk, the Industrial Safety Management System is specifically required to identify, analyze and forecast risk of accidents and hazards, which is essentially a risk assessment (Ibid). As this is already decreed in the Safety Substantiation, the efforts of the two can be combined. However, the Industrial Safety Management System must also include a plan for reducing these risks of accidents and hazards (Ibid). However, it does not mention to which extent these risks must be reduced and what may be considered acceptable risk. Secondly, it also specifies that if a third party shall operate on the facility, it is still the main operator's responsibility to make the plan for risk reduction (Ibid). Thirdly, the Industrial Safety Management System must provide regular updates on risk reduction efforts on the facility, essentially making out a requirement for risk control (Ibid). Fourthly, the Industrial Safety Management System must facilitate employee participation (Ibid). The employees of the operating organization must be invited to partake in the decision-making process for measures to reduce the risk factors at the facility.

Yet another documentation effort the operating company is required to make is the Industrial Safety Declaration (On Industrial Safety of Hazardous Production Facilities, 1997, Article

14); or more precisely, it is required for class I and II hazard facilities[5], which are the two categories of facilities tied with the highest level of risk. In this declaration the risk term is also prevalent, as the contents of the declaration must also encompass a risk assessment reminiscent of those mentioned above (Ibid). Additionally, it shall review to the extent of which the measures against the risk factors are adequately effective (Ibid). However, the specific contents of this declaration are actually determined by the executive authorities on a case-to-case basis. In any case, inclusion of an overall risk assessment is doubtlessly a part of this declaration, which again adds to the evidence that risk analysis is to a large extent important in the Russian HSE regulations.

The law, "On Industrial Safety of Hazardous Production Facilities" is the only one of the main legislations that supports a risk-based approach to managing HSE-relevant matters. However, it should be mentioned that the risk management mentioned in this law is a side-point rather than the overarching dogma of the practice the legislation tries to facilitate. The differences in the concept of risk-based approach are summarized in table 7.

#### *4.3.4.2 Standards*

Oil and gas companies are normally subjected to the legislation, "On Technical Regulations" (2002). This legislation is encompassing a variety of matters related to regulations of technical and industrial facilities, but also specifically some features about the use of standards in Russia. In the legislation, a standard is defined as a document that describes features such as: repeated utilization; characteristics of a product; rules of operation; characteristics of a process; production; construction; installation and adjustment; storage; transportation; sale; and performance (On Technical Regulations, 2002, article 2). Additionally, the legislation encompasses standardization rules and norms; classification applied in the procedures; standards of organizations; and sets of rules as documents belonging to the sphere of standardization (On Technical Regulations, 2002, article 13). The legislation differs between the terms *national standards* and *international standards*. The former refers to standards approved by the Russian authorities, while the latter are approved by an international company (On Technical Regulations, 2002, article 2). National standards are often named GOST, deriving from the Russian words for "state standard" – "**go**sudarstvennyy **st**andart". The principles of standardization

[5] Class I facilities are production facilities for strong chemicals or chemical weapons. For oil and gas, a class II categorization is possible under a set of conditions regarding hydrocarbon sulfide content and natural gas pressure (On Industrial Safety of Hazardous Production Facilities, 1997, Chapter III).

have already been denoted in chapter 4.3.3 on *regulatory principles*. This subchapter aims to elaborate on some of the important characteristics of the standards-based approach to HSE regulation. Therefore, it will describe features such as the standardization goals; list of standardization documents; documents in the sphere of standardization; approval; and standards of organizations.

Standards apply to a variety of organizations, which may or may not be normally tied with the HSE concept altogether. However, as the goals of standardization so appears in the Russian framework, the standardization is indeed a holistic measure aimed at improving HSE-related matters for the industrial companies. There are four main goals with the process of standardization. First, standardization is implemented to attain a higher level of safety in terms of health of individuals, as well as safety for personal, organizational or public property, and finally the safety of the ecology and the life of animals and plants (On Technical Regulations, 2002, article 11). This is achieved mainly by the facilities, which are taking into account the risk of emergency situations, whether they are man-made or not (Ibid). Secondly, the standards are implemented to ensure competitiveness and high quality products with efficient resource use (Ibid). Third, the standards must provide assistance for third parties to observe and inspect the compliance of technical requirements to the product or process (Ibid). Fourth, the standards must establish a system of classifying information of a technical, economic or social nature relevant to ensuring the former three goals and general compliance (Ibid).

As already mentioned in the principles of standardization, the operator may implement an international standard under a set of conditions. Inherently, this means that not all international standards are approved for use in Russia – but some are. The Russian authorities approve, develop and promote a set of national standards the oil companies may choose to implement (On Technical Regulations, 2002, article 14). The implications of the rulings for the company of this article are centered on which standards the company should aim to choose for their operations. As the authorities are required to develop a set of national standards, they may also offer more support in the implementation of these. Approved standards are just that – approved; regardless of whether they are national or international. For the company choosing a standard, the choice is between the advantages of international standards (e.g. it is approved in several countries), and the advantages of national standards (e.g. they may receive better support from the authorities). International standards, by that thought, would appeal more to international oil companies than national oil companies.

The Russian standardization authority must create a list of all the standards they approve for voluntary compliance (On Technical Regulations, 2002, article 16). This has two implications for the company: first, the standard they choose to use for a product or service must be approved in advance by the appropriate authority. Second, the list of standards they may choose from is readily available in the authority's publication. Compared to the pre-reform system in Russia, wherein mostly all products and services had a single standard (OGP, 2010), this is a more open-ended system with more opportunities for the companies. However, it is also inherently limited, as the company cannot simply choose to use *any* standard, because its effectiveness must be documented somehow. Also worth mentioning is that normative compliance to some specific technical regulations may involve the use of a certain standard, making such standards effectively mandatory (On Technical Regulations, 2002, article 16). If an organization would like to implement a uniquely tailored standard, they may do so as long as they can document that the standard complies with the four goals mentioned from article 11 (On Technical Regulations, 2002, article 17). The operator itself is responsible for the process surrounding the use of such a *standard of organizations*, and must be based on the principles given in article 12, as mentioned in chapter 4.3.3 on *regulative principles* (On Technical Regulations, 2002, article 17). The draft of the standard must then be sent to the technical committee of the standardization authority of Russia, and the pending approval will determine whether or not it can be executed (Ibid). The differences and similarities in the concept of standards are summarized in table 8.

#### 4.3.4.3 Holistic HSE Integration

Holistic HSE integration involves contents relating to the implementation of an HSE management system (regardless of the chosen approach, i.e. risk-based or standards-based), as well as matters relating to the organization of such efforts, post-startup activities and the pre-startup design of the production facilities. As "risk-based approach" and "standards" were clearly defined in both the Norwegian and Russian legislations, content related to HSE integration is more diversely spread. Doubtlessly though, this is an observed issue for Russia – not only for the petroleum industry, but in all the industries; and as then-Prime Minister of the Russian Federation, V. V. Putin put it:

> *"It is easier and less costly to invest in occupational safety and health than to deal with the consequences of occupational accidents that may happen or happen as a result of negligent attitude to these problems."*

Vladimir V. Putin (NDPHS, 2012)

…and then-President of the Russian Federation, Dmitry A. Medvedev:

*"I think it is vital to speed up the introduction of a modern system of professional risk management..."*

Dmitry A. Medvedev (Kremlin, 2011)

Since the quotes were made 3-4 years ago, the regulatory system has changed, as mentioned in chapter 4.3.4.2 on *Standards*. However, no overall system of professional risk management has been established and occupational health and safety is still a problem in the Russian oil and gas industry – even though they claim that there have been no accidents in the offshore oil and gas industry so far (Zhulina, 2013). There is no trace of a mandatory establishment of a formal HSE department. Compliance with the laws is certainly not optional for the companies, but the establishment of a managerial function to deal with voluntary standards is entirely up to each company. Since the legal HSE framework of Russia is particularly complex, most companies still choose to establish such a branch of their operations. Many oil companies, including FMC Technologies, offer positions as "HSE Manager", a position that is usually either requiring an advanced university degree in technical or legal programs. Public universities in Russia, like for instance the Gubkin State University of Oil and Gas, offer degrees relating to this field. The conclusion is that in lieu of an actual formal requirement to establish an HSE function, the companies will do it out of necessity, because complying with the legislations of Russia is a comprehensive task.

Employee participation is also a conceptual area of holistic HSE integration. While not technically a part of the HSE legislation as we have sampled it, the labor code still has some important implications for the industry. For instance, labor protection committees must be set up in Russian organizations at the initiative of the employer or the trade union (Labor Code of the Russian Federation, 2001, article 218). These committees are working with the companies at the aim of ensuring protection for the employees through reducing the risk of accidents and occupational illness (Ibid). They are also given authority to make inspections of the working conditions and they are implored to offer their findings to the workforce (Ibid).

On the topic of activities during production, the Russian legislation also offers input as for how these activities can be classified and organized. There are four groups of activities: (1) relating to the lifecycle from design to abandonment of the facility; (2) manufacturing and maintenance of

technical devices on the facility; (3) industrial safety expertise; and (4) training of employees of the facility (On Industrial Safety of Hazardous Production Facilities, 1997, article 6). The reason why this is important is that these activities must be licensed by the authorities (Ibid). For each of these activities there is a set of mandatory requirements that the license applicant must fulfill before the license is given. Most major activities connected with a hazardous process or facility must be approved in advance. Also unlike the Norwegian legislation, the Russian legislation offers no mention of the concepts of "critical" and "simultaneous" activities, ref. chapter 4.2.4.4. on *the activities regulations*.

The design of production facilities is firmly controlled by legal requirements in Russia. Article 8 of the law, "On Industrial Safety of Hazardous Production Facilities" (1997) offers insight on how the facilities must be designed. As this is indeed applicable to all sorts of hazardous production facilities, it doesn't go in detail on how oil or gas production facilities are supposed to be designed, but the formal process around the design phase is thoroughly described. The key conclusion is that mostly everything from the design through construction and overhaul to abandonment must be documented and approved by the authorities (Ibid). Any deviations from the approved plan must not happen; and any changes to the plan must also be approved (Ibid). In contrast to the Norwegian legislation, the Russian counterpart does not exactly specify *how* these plans will be approved and which principles must be used for the design of the facility. However, it is implicitly understood that the approval of safety given by the authorities is only given to facilities with an acceptable level of risk. The differences and similarities in the concept of holistic HSE integration are summarized in table 9.

#### 4.3.4.4 HSE Culture

HSE culture, i.e. measures ensuring the safety and well-being of humans encompass social programs such as manifesting an overall organizational culture for better HSE management via the inclusion of employees; having an adequate health care service available for the employees; measures to mitigate pollution that would normally mostly affect human health; as well as training the employees in the HSE topic.

While an integral, but somehow intangible part of the Norwegian regulations, the requirement to create an "HSE culture" within the overall organization may be absolutely crucial to

the effectiveness of HSE management (Zijlker, 2004), it is not a part of the Russian regulations. Even at that, the PSA claims that upon its introduction to the Norwegian regulations, it was unique in the world of HSE regulation (PSAk, 2002). Perchance the reason why it is not included is the very fact that "ensuring an HSE culture" is a fairly vague phrasing without any solid guidelines to how this is done. However, as PSA puts it, in lieu of functional terms to describe how compliance can be met, it is up to the organization itself to find a fitting solution (Ibid). There are also resources available to develop and grow HSE culture, as for instance OGP's paper on the topic (OGP, 2010b). Arguably, this could have benefitted the Russian oil industry – but for now one must only accept that it is indeed not a requirement.

A characteristic and decisively important set of contents in the Norwegian legislations is all matters relating to the health care of the employees on the facility. The Russian regulations of the oil and gas industry make no specific mention of requirements to a health care service. However, more general legislations will still apply for all industrial companies. If an accident occurs, then the company is required to arrange transportation to a health care facility immediately; while also ensuring that no other are at risk of being injured and secure the area of the accident (Labor Code of the Russian Federation, 2001, article 228).

Some types of pollution and hazards are largely a matter of concern for humans, and not the nature and external environment. The Russian legislations include a set of measures aimed to avoid accidents on people. In Norway, one such measure is to reduce level of noise, vibrations and radiation to such low levels that they do not injure the employees neither in the short nor long term. Its Russian counterpart is present, as the negative effects of noise, vibrations and radiation alike must all be prevented and eliminated so they do not impose unacceptable risk for the people, animals, plants and other life (On Environmental Protection, 2002, article 55). When it comes to acute measures to safe human lives in emergency situations, the Russian regulations awards the responsibility to establish these routines to the operator of the facility (On the Continental Shelf of the Russian Federation, 1995, article 8). The Norwegian legislation highlights the necessity to offer adequate protection against weather conditions, but such a requirement is not explicitly present in the Russian legislations. Perchance this is due to the fact that most oil and gas production in Russia takes place onshore and under more stable weather conditions than in the North Sea. As oil and gas production may involve tedious repetitive motion and awkwardly placed equipment and machinery, the Norwegian regulations also promote that the employees have the right to ergonomic equipment

to the purpose of avoiding mental and physical strain. Also this is somehow lacking in the Russian legislations. However, it could be mentioned that the employees have the right to use workplace equipment that are in good condition (Labor Code of the Russian Federation, 2001, article 163). This is also mentioned among the overall safety requirements for all laborers in Russian industries (Labor Code of the Russian Federation, 2001, article 211).

The last area of HSE culture that is important in the Norwegian legislation is related to the training of employees with respect to HSE-related matters. In Russia, the operator of a hazardous production facility is obligated by law to ensure that the employees are properly trained in industrial safety. This training must be certified by the authorities (On Industrial Safety of Hazardous Production Facilities, 1997, article 9). This training and examination is supervised by the Russian authorities. In addition to the general training of employees about HSE-related matters, production companies with a workforce of more than 100 employees must set up a labor protection service, or establish the position of a labor protection expert (Labor Code of the Russian Federation, 2001, article 217). In this law, it is further specified how all the employees, including managers, must undergo training in labor protection; a requirement that is sharpened once the work involves hazardous equipment (Labor Code of the Russian Federation, 2001, article 225). The differences and similarities in the concept of HSE culture are summarized in table 10.

#### *4.3.4.5 Security*

Security measures are specific measures aimed to prevent or reduce risk of harm to the external environment – and possibly also human lives. This is the conceptual area that is the largest in scope and with the biggest amount of in-detail specifications on the appropriate practices – which is the case for both the Norwegian and Russian legislations alike, maybe the latter more so than the former. From the Norwegian legislations, we chose to highlight four sub-concepts relating to emergency preparedness, communication, equipment, and pollution, as these were representative of the managerial implications of the HSE regulation. This subchapter elaborates on how their Russian counterparts unfold.

Implicitly understood from the overarching HSE regulatory principles and requirements, the operator of a hazardous facility must naturally establish a set of emergency preparedness procedures (e.g. On Industrial Safety of Hazardous Production Facilities, 1997, articles 9 and 11). The North Sea

is equipped with certain public measures for emergency response, and as previously stated; the operator's own emergency preparedness system must fit with the public system so that their usages are not mutually exclusive. There is no such requirement to emergency preparedness systems in the Russian oil and gas industry. Characteristically, Russian oil and gas production is mostly onshore, wherein the need for public safety systems arguably may be smaller. There is also no mention of whether the operator must make available their emergency response systems for other parties experiencing acute emergencies. Another interesting content is the employees' rights and obligations to cease a work process, or so-called *stop work-clauses*. The regulations say that in the event of an accident, the employees are obligated to stop the work they are doing and shut down production – as long as this doesn't increase the risk of accident further (On Industrial Safety of Hazardous Production Facilities, 1997, article 9). This is technically not a stop-work clause in the same sense as in Norway, since it only applies in situations where an accident has already occurred, whereas the Norwegian stop-work clause is always applying – where the employee has the right to stop the work *before* a predicted accident would occur. A third content on the topic of emergency preparedness is the establishment of safety zones. Safety zones in Norway are understood as zones surrounding the production facilities in which the level of security is sharpened and the accessibility for other vessels is reduced. In Russia, safety zones may also be established, but they are significantly different. Russian safety zones are established by the authorities, and not by companies. They do not imply that the area should merely have increased safety levels; they implore that there must be full protection of the natural environment within the zone (On Environmental Protection, 2002, article 57).

Another topical area related to the communication on the platform. Importantly, the operator must install a fully operable communication system that should work in case of emergencies and accidents (On Industrial Safety of Hazardous Production Facilities, 1997, article 10). This communication system also includes monitoring, alarm and action-support functions. Technical expertise, especially offshore, is hard to come by in Russia, so technicians are often hired from abroad (Informant 1, 2015a, interview). As many people would speak English on the facility, there is no formal requirement that the language of choice is Russian (Ibid). That said, one is likely to encounter a lot of Russian documents and written language while working on a Russian facility, even though the most important text is often also translated to English (Ibid). Such important text can for

instance be on safety signs. As expected, the national standards for outfitting production facilities require that these signs are in place (Ibid).

The equipment used for oil and gas production must of course maintain a high standard in order to prevent accidents from happening. And at that; maintenance of equipment on the facility is crucial, and certainly covered by the Russian regulations. First of all, the responsibility of maintenance is dependent on the specifications in the contract of the production facility. Assuming there is only a single company operating, they assume full responsibility for all maintenance. Subcontractors may be responsible for maintenance of certain equipment if that is part of their contract. However, the overall responsibility that everything is properly maintained befalls the operator (On Industrial Safety of Hazardous Production Facilities, 1997, article 6). Day-to-day maintenance is often carried out by inspections, usually necessarily every 10 days per piece of equipment (Informant 1, 2015a, interview). All pieces of equipment have a serial number and are filed in a register for items to be inspected, and there is therefore a corresponding checklist of everything to inspect (Ibid). This work can be fairly exhaustive and detail-focused (Ibid). When it comes to risk of accident, there are two parts of the production facility that are extra sensitive – offloading systems and the well itself. The well safety is rigidly governed by the GOST standard for well systems, which specifies technical details about initial design: measurements and technical solutions; as well as ongoing activities, such as maintenance procedures and documentation for compliance with supervision (GOST 32358-2013, 2013). The aim of the well safety in terms of HSE is the same as in Norway: the prevention of unwanted influx and outflow of liquids. Another sensitive point in offshore production is the loading/offloading system between the facility and the vessel, by which the crude oil and natural gas are being transferred. According to Informant 1 (2015a, interview), the national standards also cover the offloading system. It should also be possible to use an international standard atop of this, with the aim of reducing all risk of spills (DNV, 2009). The managerial implication here is that the operator must choose whether to just accept the national standard, or use another as well, and thereby coordinate mutual compliance.

Pollution is a recurring problem at oil production facilities. Regulations towards pollution in general for both countries are a part of the environmental protection sphere, and thus covered by environmental laws and regulations. Both countries follow the "polluter pays"-principle: In Norway, pollution is permitted assuming the company uses the best available technology, and the permitted pollution is not subjected to fees (Bambulyak, 2014). In Russia, the pollution must be permitted as

well, but the level of pollution is governed by norms/standards, as well as absolute limits – and the pollution must be compensated for monetarily. This sum is estimated using a complex mathematical formula (Ibid) and its rate is ultimately determined by the federal authorities (On Environmental Protection, 2002, article 5). The federal authorities also determine the maximum allowable pollution for each industry (Ibid, article 14). However, these are ways the pollution is being controlled; but a more HSE-related topic would be how exactly pollution should and could be mitigated. The Norwegian legislation in particular challenged waste and waste management, exhaust and discharges. In Russia, industrial waste is considered to be of negative impact to the environment, and is by law required to result in a payment (Ibid, article 16). When it comes to exhaust and emissions to air, the Russian legislations largely follow the same pattern as with waste: it is predominantly concerned with the limits and compensation for the negative impacts, rather than imploring how the exhaust system shall be built to reduce risk of accidents and hazards, as well as reducing the total emissions altogether. The last topic of interest as far as pollution goes is discharge of oily water. Russia has since 3rd of February 1984 used the MARPOL 73/78 convention (International Convention for the Prevention of Marine Pollution from Ships) – which also applies to offshore oil facilities (Kashubsky, 2006). This convention prevents the facility to discharge sewage into the sea, and discharge of oily water is limited to fifteen parts per million (Ibid). The differences and similarities in the concept of security are summarized in table 11.

#### 4.3.4.6 Documentation

Documentation and reporting from the companies towards official authorities and the public are interesting features of the Russian HSE regulations. The requirements about documentation aren't very challenging, but there are many of them. Mostly everything about the company's operations must be reported and approved. The implication for the HSE manager is added complexity to the day-to-day operation, seeing as everything must be done right – and they must also prove that they do it.

At least three important pieces of documentation are required for all operators on Russian soil and subsoil: the safety substantiation (On Industrial Safety of Hazardous Production Facilities, 1997, article 4), the Industrial safety declaration (Ibid, article 14) and the ecological survey. The former two are already described in chapter 4.3.4.1 on *risk-based approach*. The environmental impact

assessment (EIA) is a requirement prior to constructing an oil production facility. Regardless of its size and potential impact, the impact assessment must be made and documented, and from there approved (Ratsiborinskaya, 2010). This study will not venture in-depth on the nature of the Russian (or Norwegian) EIAs, as those are complex matters in their own right. However, it is important to notice some of the implications the EIA has for the operator's workload related to documentation. According to OECD (2006), the Russian environmental legal framework was composed of over 30 federal laws and hundreds of supplementary legal acts – and atop of those, Russia has also ratified several international conventions and acts. This makes it very difficult for the companies – as well as the regulators – to know with certainty which norms and practices they must follow, as there may be overlapping requirements (Ibid). The actual process of the EIA is determined by the utilization of one of two common practices, the State Environmental Expertise (SEE) and the Assessment of Environmental Impacts (OVOS) (Ratsiborinskaya, 2010). The SEE requires the company to document the project plans to the regional SEE department, which will either approve or disprove the plan (Ibid). The OVOS is a more process-oriented and less documenting-oriented approach that derives a more Western understanding of EIA (Ibid). The operator may not choose freely which of these approaches will be utilized, as this is determined by the conditions of these two regulations (Ibid). However, Ratsiborinskaya (2010) assesses that neither of the approaches are good enough to fit the purpose, as both as overly rigid, complex and being more focused on the means, rather than the end. The conclusion for the HSE managers on the topic of the EIA is that it is: (1) difficult to know which laws to follow due to the sheer number of them; (2) difficult to create a viable EIA due to the ambiguous legal environment; (3) easy to know when and where to report, as this is rigidly determined by the laws – but the *amount* of documentation is the feature that only ever adds to the complexity of the Russian EIA.

Another feature of documentation in Russian oil and gas is a rigid system prevalent in many industries, and still lingering from the Soviet era: Prikaz (Приказ). This is a system that requires that every position of the organization must have an extensive documentation of title, function and responsibilities (Informant 1, 2015a, interview). For instance, it is not enough to allocate the position of an "HSE manager" – the HSE manager must also have a corresponding document explaining in detail the various responsibilities he or she has within the organization. So on one side, all the employees must have such documents. On the other side, all the various functions and equipment in the facility must also have an assigned person responsible for it. Say for example that the authorities

inspect a piece of machinery and find it faulty. They should then be able to pinpoint the exact person responsible for the maintenance of this machinery, and from there decide on repercussions (Ibid). The differences and similarities in the concept of documentation are summarized in table 12.

#### *4.3.4.7 Sanctions*

Repercussions can be dubbed sanctions – a minor conceptual area relating to the legal consequences of not complying with the legislations. One could say that the first and foremost consequence of not properly managing HSE is the inherent value-destroying characteristics of accidents and hazards – but atop of that, the regulations may also attempt to coerce the companies into compliance by giving notice of the legal ramifications of not doing so.

All the major laws that relate to HSE in the oil and gas sector also provide a section that relates to the liabilities of noncompliance. We can start with the most important legislation: on industrial safety of hazardous production facilities. This legislation recognizes that there is a difference between individuals and companies, but these can suffer punishment if given if found guilty in an offense (On Industrial Safety of Hazardous Production Facilities, 1997, article 17). In more practical terms, the legislation states that if any individuals suffer injuries or death following an accident on one such facility, the company must pay a compensation for this offense – because ultimately, the company is responsible for the complete mitigation of accidents altogether (Ibid). In the event of the death of an individual, the operator is due the next of kin a compensation of 2 million rubles, which at the time of writing approximately exchanges to *NOK 263.000* or *USD 32.000* (Ibid). In the event of injury, an overall health assessment must be made in accordance with Russian practices, and the compensation will reflect this assessment. It should not exceed 2 million rubles (Ibid). However, as these are compensations between the offender and the victim, the operator or responsible individual may also be due further punishment following the civil legislation of the Russian Federation (Ibid).

Offending the environmental law has also some specific ramifications. The various types of offenses can be largely characterized as events that lead to negative impact on the environment that has not already been permitted by the authorities (On Environmental Protection, 2002, articles 75-80). There are also some quantitatively determined punishment levels for various crimes: production and/or dumping of waste and other material not allowed in the legislations is punishable with up to

200.000 rubles or up to three years in prison (The Criminal Code of the Russian Federation, 1996, article 247); events leading up to pollution or poisoning of the environment or people is punishable with a fine from 100.000-300.000 rubles or up to five years in prison (Ibid); events leading to the death of mass illness of people is punishable by a sentence between three and eight years in prison (Ibid). Negatively impacting a safety zone (ref. chapter 4.3.4.5 on *security*) is punishable with up to two years in prison (Ibid, article 254). The graver term "ecocide" refers to the mass destruction of natural environment, including plants and animals, as well as bodies of water, is punishable by 12-20 years in prison (Ibid, article 358).

The technical regulations, which relate to the utilization of standards for products and processes, are less specific when it comes to punishment levels. They are mainly concerned with identifying the liable party for the offense. The conclusion is the same for all kinds of noncompliance with this legislation; the manufacturer is held liable (On Technical Regulations, 2002, articles 36 & 37). On an oil production facility, the "manufacturer" can vary from case to case. If for example the offense relates to the breach of standards of a wellhead system, then the subcontractor installing it or the operator maintaining it may be liable, depending on the nature of the fault and contractual agreement. The differences and similarities in the concept of sanctions are summarized in table 13.

### 4.3.5 Brief summary

The approach to reviewing the Russian framework had to differ from what we did in the Norwegian, simply due to the sheer size of the Russian legislative framework – it would be meaningless to go through the entire legislation systematically. Therefore, the structure of these subchapters appealed to the temporary findings from the review of the Norwegian legislations, which gave us seven concepts to work from. The content supporting these seven concepts were then challenged systematically by an attempt to illuminate their counterparts in the Russian legislation.

One can immediately draw some temporary conclusions about the characteristics of the Russian legislations. They are indeed many, and they are therefore also complex. Not only is there a distinct lack of any particular regulation that specifically targets the oil and gas industry. The laws are topically created, e.g. related to environmental protection *in general,* or operating hazardous production facilities *in general*, and the company must know which ones apply where. If the company wants to know the more specific to-do's in the production facility, they need to consult the

standards. And herein lays one of the main characteristic features of the Russian regulations; it is largely based on the utilization of standards for processes and products.

## 4.4 1st order of analysis: main differences in HSE regulation

The analytical part of the fourth chapter is divided in two different levels: first, an analysis of the empirics; second, a theoretically anchored analysis (chapter 4.5). This subchapter is dedicated to the first order of analysis: directly uncovering the main differences and similarities of the two regulatory frameworks in a purely empirical light. To get a small flavor of how this appears to be, we can visualize the correspondence of the contents within the concepts between the countries. This is done in figure 10. This chart shows that there are in principle some differences, some partial differences, and also some similarities. However, there are some problems with this chart: (1) it assumes that all pieces of content are equally important – they're not; (2) there is an inherent vagueness in the labeling of fitness – wherein goes the border of partial and full fit?; (3) it appears that a "no fit" means that the other legislation is explicitly requiring something else – when it can mean that such a feature simply isn't specified. In overcoming these problems, the remainder of this subchapter will examine the factors leading up to the chart – the main differences between the HSE regulations.

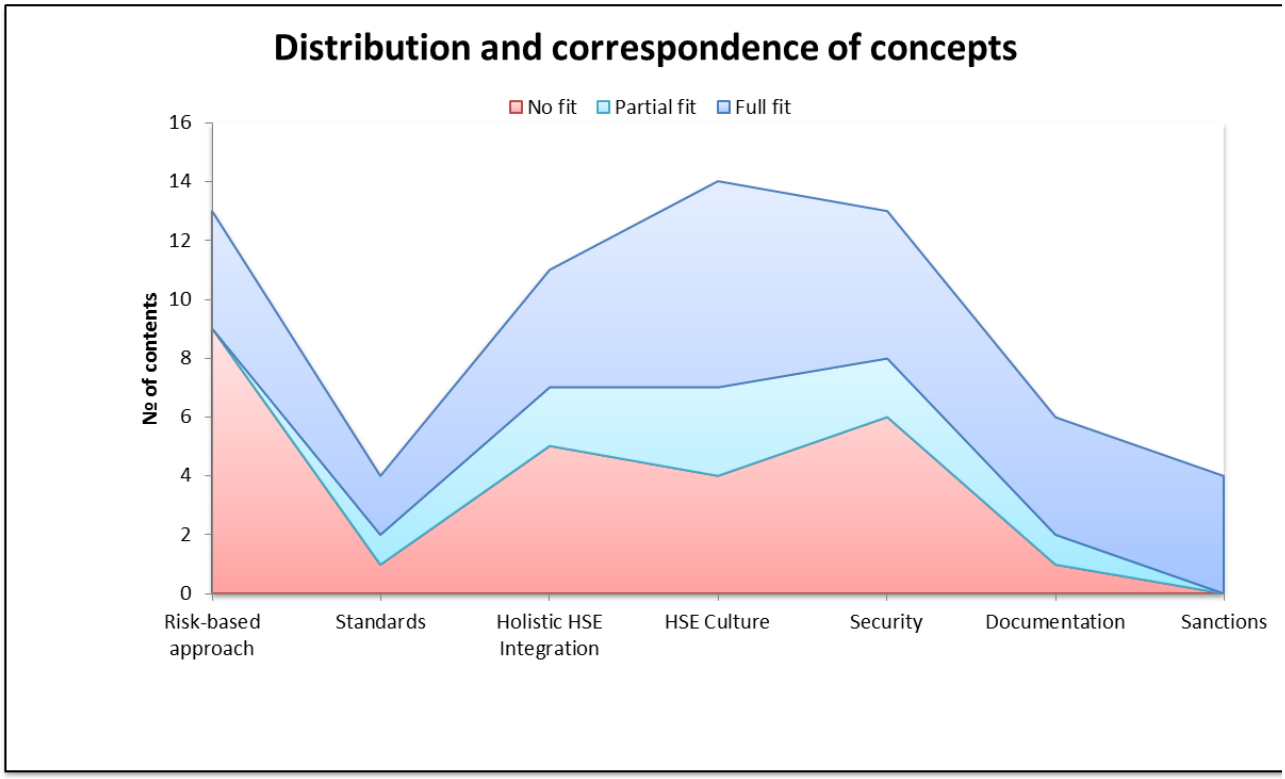


**Figure 10:** Distribution and correspondence of concepts between the two frameworks

As we have compared two legal frameworks, there was bound to be a set of differences. Some of the differences were important, while others were unlikely to lead to large managerial implications. Some features were explicitly in conflict, while others simply weren't matched by the other legislation. There were also similarities between the legislations. As the more detailed findings can already be found in the comparative tables (ref. tables 7-13), a more interesting conclusion is to extract the most fundamental differences and similarities we have found between the HSE regulations in Norway and Russia. These are illustrated in figure 11.

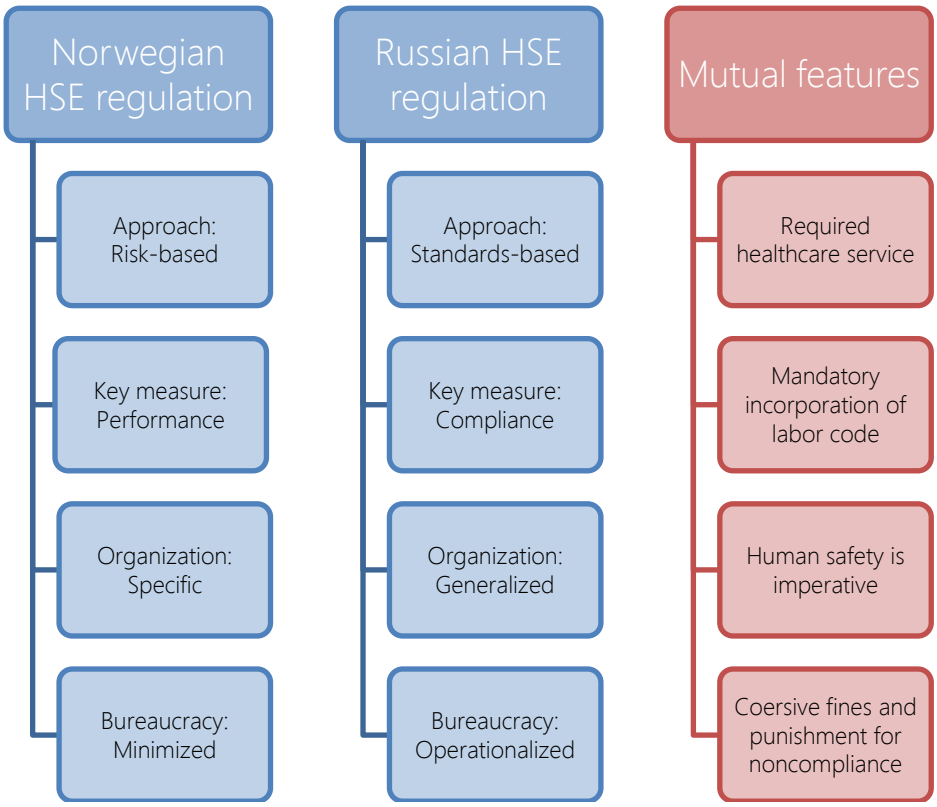


**Figure 11:** Overview of main differences and similarities between the HSE regulations

There are four major planes of differences and four crucial similarities we extract as conclusive for the comparison of the regulations. The differences are determined by the planes *approach, key measure, organization* and *bureaucracy*. Our argument is that these four features to a very large extent capture the essence of the difference between the regulations, and that all other, more specific differences are somehow a derivative of these four. Therefore, these are the most fundamental differences.

*Approach*: The approach is the derivation of the main philosophy behind the execution of the regulation. It is a dominating pattern or a characteristic that distinguishes it from other possible approaches. The risk-based approach of Norway is characterized by treating all accidents and hazards as risks and in that respect implement a tailored system for effectively managing these risks. This is so holistically encompassing the methodology promoted in the regulations that it can only ever be considered the top-level approach. Risk management is a more side-set feature of the Russian regulations, which is better characterized by utilizing a standards-based approach. By this, it is meant that the regulations attempt to achieve their goals by implementing a system of standards – voluntary and mandatory – that will apply to various parts of the organization and its facilities. The managerial implications of these varying approaches are crystal clear: the entire reasoning and process for

managing HSE is entirely different. In Norway, they must implement a risk management system; in Russia they must confide to a set of standards. For an international oil company that desires uniformity in their HSE management, it should also be possible to conjoin these practices into a hybrid, as they are not mutually exclusive.

*Key measure:* As the approach establishes the ideal practice for reaching the aims of the regulations, the key measure is the general idea about how the companies and authorities tend to operationalize and measure their successfulness in terms of HSE management. Regardless of approach, the mentality towards this key measure can still change depending on the context of the regulation. In Norway, we argue that the key measure is performance. This means that above all else, the companies and authorities will consider the actual performance of the companies' HSE management: how many accidents, near misses and hazards do they report, and so on. Essentially, it is just a way to measure to which extent the risk management system is functioning in correspondence with its aim – the mitigation of risks. The Russian approach, as we see it, is less concerned with the actual performance and more concerned with the level of compliance. Because the regulatory framework is largely made up from the use of standards, it is also to a great extent possible to measure to which degree the companies are following these standards adequately. When using a standard with concrete, detailed and specific requirements to products or processes with the aim of reducing the amount and impacts of accidents and hazards, one must assume that the standard itself is ideal in achieving this goal. And while assuming that the standard is adequate, the key measurement is quite naturally to ensure that this standard is being followed accurately. This is among the roles of the supervisory authorities of the Russian oil industry. Again, this difference has a major impact on the HSE management for the companies, as it could potentially alter the whole organizational attitude towards HSE altogether. In one country, you would have a constant focus on measuring and reporting the amount of accidents (which is in retrospect of the process); in the other country, you would have a constant focus on measuring degree of compliance with the technical requirements of the standards (which is during the process).

*Organization:* The term "organization" is used here to describe how the regulations themselves are organized. At that, we do not simply refer to the sheer spread and quantity of the relevant legislations, as we so many times have already mentioned. "Organization" is also about focus, and this is perchance best explained by using the actual findings. In Norway, we assess the regulations to be "specifically organized". By that, we mean that the HSE regulations are made with the specific

purpose of being applied for HSE regulation in the oil and gas industry – and have no other areas of application. In Russia, the regulations are "organized generally", which in contrast to the specific organization implies that the regulations are not specifically tailored to HSE in the oil and gas industry. There is a set of laws that each has their own area of application, which in a sense are highly comparable to *relatable* legislations in Norway (e.g. Norwegian Pollution Control Act; Norwegian Working Environment Act). However, these separate legislations, who may very well apply to all of Russia's industries, are not bound together as a unity branded as "HSE regulations". This may also have implications for the HSE management, as they must organize their legal and compliance efforts differently. The generalized interpretation would lead to a bigger chance of overlaps and loopholes in the legal framework; and it also results in a governmental function that is dispersed into several different units, which are all to a degree relevant for the oil companies, as they may have been allocated responsibility for supervision or support of an aspect of the regulations. The specialized interpretation appears to remove these two features, which we would argue is fortunate for the oil and gas industry in Norway.

*Bureaucracy:* Last and least, we have the differences with respect to bureaucracy. Bureaucracy expectedly refers to the necessary procedures surrounding governmental involvement in the oil and gas industry. Notably, the theoretically possible level of government involvement in the Norwegian and Russian oil and gas industries, as facilitated by the regulations, is more or less the same: the government can potentially have a lot of influence on the operation. In Norway, this seems to be only a theoretical possibility and only triggered under special circumstances. We therefore argue that the bureaucracy is "minimized" in Norway – the state influence is there out of worst-case-scenario necessity, and not as a part of the normal function. In Russia, however, governmental intervention is an imploration rather than a suggested possibility. The law clearly states necessary procedures with respect to reporting and being inspected upon certain features of the operation, and to a much larger extent than in Norway. We therefore argue that the Russian bureaucracy is "operationalized" – and thus being made into a tool to help ensure effectiveness of the regulations. This goes hand in hand with the "compliance" key measure, as elaborated above. The companies must be measured – the bureaucracy facilitates intricate and holistic measurement. The managerial implication is also very clear and very important in this case, as the HSE management in Russia would be cooperating with the government in a whole different way than in Norway. The complicated governmental structure only ever adds to the bureaucracy in Russia.

Having gone through the most important differences, we can also appreciatively highlight a set of four important similarities between the regulations. Rather than being a fundamental part of the functionality of the regulations, as the four *planes of differences* above were, these similarities simply pose four specific features or aspects that simply coincide between the regulations. First, the *required healthcare service* under both regulations seems to match fairly well in terms of scope and quality. The facilities must be equipped with a professional staff and adequate equipment, which is reassuring for the purpose of preventing workplace illness among the employees. Second, the *labor codes/working environment acts* of the countries are respected and applied under both regulations. In the Norwegian regulations, there are some slight alterations specifically applying to the oil and gas offshore facilities, but nothing major. In the Russian regulations, the labor code is fully applied also to the oil and gas industry. Without having studied these legislations thoroughly, they are still at a glance similar, which certainly makes it easier to use employees across borders. Third, we argue that of all the concerns in the regulations, it is clear that the *human safety is imperative*. Protection of the external environment and the property of the companies and the state are often high on the agenda for the regulations, but they are unmatched by the requirements relating to the safety of human health. In simple terms; if a choice must be made, the lives of human must be prioritized. This is for example why fire response routines are only legal once they are safe for the humans executing them. This principle fortunately applies to both legislations. Lastly, both regulations to more or less the same extent allows for *coercive fines and punishment* for noncompliance. The same offenses have fairly similar potential punishments, and on both sides, the punishment appears to have a preventative function; essentially attempting to scare the companies away from noncompliant behavior.

In summary, the model in figure 11 summarizes the major conceptual and fundamental differences, as well as the four most important similarities between the Norwegian and Russian legislations. Our final verdict is that even though many specific features of the regulations seem to be fairly similar, the overarching methodology and execution is where the main differences unfold. That is also why we believe that these differences indeed are a concern for the HSE management and not necessarily for the HSE technicians and engineers – it is about the holistic implementation of HSE altogether, and not about the technical details. However, we would also argue that even though the methodology and mentality between the countries may be widely different, it is not a given that cross-border operations in these countries should be impossible. Rather on the contrary, operating under both regulations is not only possible, but also adding to the experience and learning of the

organization as a collective. Appreciating other perspectives and solutions will not only give new insight to HSE management as a concept; it may also make the company extract good practices from the foreign legislations and apply them to their international HSE base policy.

## 4.5 2nd order of analysis: institutional differences

The 1st order of analysis illustrated the main empirical differences between the regulatory frameworks. The 2nd order of analysis considers these findings using theoretical terms, and from there attempt to uncover a theoretically anchored understanding of the differences. This is because a deep reflection on this question can lead to a more solid understanding of other possible factors resting beneath the hard facts, i.e. the differences themselves. Two approaches are used to theoretically analyze the empirical data, both rooted in the institutional theory presented in chapter 2. The first subchapter herein will examine the regulations with respect to *mechanisms of isomorphism*, using DiMaggio and Powell's (1983) institutional pressure mechanisms as a theoretical basis. In the second, we build on North's (1990) theory of *formal and informal* institutions with the addition of contingency factors to explain the differences in a different perspective.

### 4.5.1 Analysis of institutional pressure mechanisms

From institutional theory, we have highlighted DiMaggio and Powell's (1983) three reasons for isomorphism, i.e. coercive, mimetic and normative pressure (see chapter 2.2.1 – *Institutionalism from Berger to Powell)*. We argue that the regulatory frameworks in the two countries have become what they are through different ways of isomorphism. The Norwegian regulations are explained by normative pressure, whereas the Russian regulations may be driven by coercive or mimetic pressure. The chapter is structured by first analyzing six different aspects of the regulatory systems and how these are suggestive of certain kinds of isomorphic pressure. These all eventually lead up to the two following subchapters, wherein our interpretation of why the separate regulations can be explained by different pressure mechanisms is elaborated on.

#### 4.5.1.1 Regulative aspects signifying isomorphic pressure

There are six different aspects of the regulative systems with features explained by isomorphic pressure. These aspects are called accessibility, main approach, activities, safety of people, safety of the environment, bureaucracy, as well as sanctions and punishment. The exact meaning of what these aspects cover is elaborated in each subsection.

**Accessibility**

Albeit a simple fact, it shouldn't be ignored that the accessibility and structuring of the legislations are widely different. The Norwegian regulations on HSE are unequivocally clear: there are five of them, but they are presented in a single compilation, and they are all regulated by a common agency – the Petroleum Safety Authority of Norway. For the company, this means that all matters relating to HSE can be simply addressed by a very accessible set of regulations. In fact, they are so accessible; one could expect non-HSE workers to get acquainted with the regulations as well. Similarly, there is no confusion as to where the company must address their possible inquiries – the PSA. This agency can later redirect the inquiry to another instance if necessary. Comparatively, this is a major difference in Russia. There is a fundamental lack of clarity as for what constitutes the HSE regulations – which laws and regulations actually make up the legislations? The answer is fairly simple; stating that it is whichever law and regulation that implores any matters that can affect how the company works to reduce the risk of accidents and hazards in their operation. However, this implies a very sizable legislation, which in turn is difficult to fully grasp. At times, there is also confusion as to which laws to follow, as there may be overlaps between the requirements of various laws, regulations and international conventions. Derivative of all this complexity comes also loopholes, which makes the companies able to manipulate their operation to legal noncompliance (Ratsiborinskaya, 2010).

As with the legislations themselves, the responsibilities of the various ministries and agencies is also not entirely clear. The legislations often refer to "the Russian authorities" while referring to the supervisory institution the company is subjected to. This intentional vagueness can be explained by a seemingly constant shift in the responsibilities of the various agencies while the Russian government is in a period of flux and restructuring, ironically aiming to increase efficiency of the oil and gas industry.

We argue that the differences in the "structure" of the legislations making up the HSE regulations, as well as the structure of the agencies that supervise and support the industry, can be explained by differences in institutional pressure mechanisms. In Norway, the regulation is focused and specified, and the result of professionalism within the sphere of HSE: the HSE engineers and managers of oil companies cooperated with the authorities and shaped the reformed HSE regulations, which have a single purpose – to improve HSE in the oil and gas sector. Therefore, there is strong resemblance of normative pressure in Norway. As for Russia, we see a widely different case, as the regulations are not focused and tailored to the oil and gas industry. Such would be to the benefit of the HSE professionals, but they have collectively failed to pressure the regulations accordingly. Instead, the regulations are just a determined by coercive pressure; decided by a government who will not give legitimacy to the companies who do not accept the many regulations.

**Main approach**

As already elaborated in chapter 4.4 on "*1st order of analysis: main differences in the HSE regulations"*, the regulations follow two different principal approaches. The Norwegian regulations assume a risk-based approach, which implies that the company above all else must implement an effective system for controlling risks. This is rooted in the understanding that the main evils of HSE – accidents and hazards – are both ultimately viewed as risks, and must be treated as such. This is advantageous because the companies are given a better opportunity to adapt their HSE management systems to the individual risks they face in their operations, rather than what is "generally understood to be relevant risks for all oil companies". Therefore, the Norwegian system can be characterized as performance-based. The regulations facility a principal way of managing the HSE-related matters, but in the end, the most important aim is that the companies reach the overall requirements, rather than the in-detail specifications. This is also a major difference between the Norwegian and Russian regulations, as the Russian system assumes a standards-based approach, relying to a much greater extent on mandatory and occasionally voluntary standards in which to a great level of detail describe how the process and products must come to be. So whereas the Norwegian regulations are performance-based, the Russian regulations are descriptive, which ultimately results in the operators constantly needing to check if their efforts are compliant to the requirements of all the standards they use.

The implication this has for the operator is interesting. If operating only from either one of the two countries, the choice of approach would be rather simple. However, international oil companies would expectedly face a dilemma of sorts: should they completely change their approach to HSE depending on their location, or should they try to incorporate a company-wide policy that somehow facilitates compliance with all legislations? Suppose the latter approach is more desirable for the companies, then it must be said that the Norwegian and Russian regulations are not mutually exclusive per se. It is indeed a different way of reasoning, but not to such an extent that one cancels out the other. In fact, it appears that there are advantages to draw from both approaches. In Norway, the operator may very well use a standard for reaching the overall objective of the HSE management – risk mitigation at an acceptable cost/benefit trade-off – and are in fact encouraged to use certain standards to meet these requirements (albeit never implored to). Likewise, while the Russian regulations both implore and encourage the use of certain national standards, a certain level of risk management is still required as well. Adapting to the two different approaches is therefore in essence possible.

Also under this point, we can see clear patterns in terms of institutional pressurization. In Norway, the professionals working with HSE are often tied to the risk management function of the same organization (Informant 1, 2015a, interview), and risk management is therefore a part of the way they think and act. Their collective influence drove the regulations into a paradigm in which risk is the key challenge. This is entirely different in Russia, where the HSE managers are often unaware of the very concept of risk management (Informant 2, 2015b, interview). Even though they often believe that the use of standards in Russia is an unreasonably complicated matter (Ibid), there seems to be no significant pressure leading to the abolishment of such practices. On the contrary, the dominating organizations of which all the oil companies are dependent on, i.e. the supervisory authorities and the government, are content with the situation as it is: standards make it more pragmatic for them to control and supervise, as they facilitate measurability in terms of compliance – either the standard is followed, or it is not. That is coercive pressure. However, the Russian system also seems to show patterns of mimetic pressure, as evident from the quotes by the President and Prime Minister in chapter 4.3.4.3 on *Holistic HSE Integration*. There it is understood that the ambition, over time, is to adapt to a more Western risk-based system for safety in oil and gas. Perhaps this is the result of an unfortunate, but unequivocal struggle of avoiding accidents in the Russian oil and gas sector (Schmal, 2015, presentation).

**Activities**

The two regulatory regimes have minor differences when it comes to requirements to the organization and integration of HSE management. For instance, the Norwegian system states that the company must establish an HSE department while operating under the regulations. In Russia, the law states that if a company has more than 50 employees, they must assign a position dedicated to HSE – or at least to the safety of the organization's employees somehow. This figure does not grow proportionately with the size of the organization. However, due to the workload related to HSE in Russia, an adequate HSE department is established out of necessity.

Activities are organized differently in the regulations. While addressing the topic of organizing the activities on the facility, both regulations determine that there should be some sort of classification system of which activities the operators have. Atop of that, the Norwegian system clearly states that all activities must be organized by the responsible party with the aim of reducing mental and physical strain on the employees. The Russian system is slightly different: activities must be classified, but also reported and approved. The aim is more or less the same, i.e. to mitigate risks, but the required approval for every activity is not something that is found in the Norwegian system. But what the Norwegian system has, and the Russian system lacks, is the consideration of critical and simultaneous activities. Critical activities refer simply to activities involving an elevated risk picture; simultaneous activities are two activities performed at the same time – and the responsible party must therefore estimate whether the simultaneous execution involves a changed risk picture. The idea behind the latter is fairly clever, as it is often unbeknownst how an operation works in a functioning system, as opposed to in isolation. We argue that this reasoning came to be as an extent of the argument of the chapter above. The ways of planning and coordinating different activities is nicely tailored to fit within a risk management system. So while the normative pressure led to a risk-based approach, it also led to other elements such as activity planning to fit with this approach. In Russia, however, there is a distinctive lack of requirements to how the activities should be planned. So in that sense, it would be wrong to argue in favor of coercive pressure in this topic. However, due to the uncertainty the lack of requirements leads to, and then it is reasonable to assume that the less legitimate companies will look to the accomplished oil companies and mimic their behavior: mimetic pressure.

When it comes to the design of facilities, we argue on the contrary that the regulations in principle are fairly similar. The aim of the design is clear under both regulations, wanting to mitigate the risks of accidents and hazard. The Norwegian legislations have in mind offshore facilities, whereas most production facilities in Russia are land-based. This, however, does not change the principles behind the design of facilities – only the design itself. So with a common aim, both regulations also encompass a common methodology. This methodology is extensively focused on the importance of accurate planning. Everything from the design phase until the decommissioning of the facility must be planned and assessed in great detail. Similarly, all unforeseen exceptions to this plan, like for instance the adaptation of new technology or processes, must be treated appropriately. In Norway, this simply implies that it must be ensured that it will not increase the risk, and in Russia, the deviations must be approved by the authorities – much like the overall pattern seen so far.

**The safety of people**

Perchance fortunately, there is very little of importance to highlight as major differences between the regulations when it comes to measures to help secure human lives. One such difference can simply be explained by different assumptions for the legislations: in Norway, it is important that all personnel are properly protected from the weather conditions. This isn't covered in the Russian legislations. We argue that this is due to the fact that the Norwegian oil industry is far more exposed to risk related to harsh weather than the inland production facilities in Russia. Sea storms can potentially be fatal in the North Sea, but this is hardly a concern for production facilities located onshore. Maybe due to the same reasoning – the fact that Norwegian facilities are located in the sea – there is also another difference. Whereas it is generally forbidden to share a cabin, and strictly prohibited for two people to sleep in the same bed in Norway, the Russian regulations fail to make a similar prohibition.

One of the most important features of human safety, both in the short and the long run is the establishment of an adequate health care service. This is mutual for both legislations, manifesting a firm requirement of a healthcare department on all facilities. One could argue that this similarity is very fortunate for companies operating across borders. The oil and gas facilities are often dependent

on the work of technical specialists, and therefore access to qualified personnel may often involve looking above and beyond borders. Temporarily using personnel employed in one country on a facility in another country subjects them to the labor codes of both countries. That is to say, if they are by law given the right to an adequate health service in the first country, then they are also given this right in the second. And while many country-specific workers' rights may be solved on the spot (as illustrated in the next paragraph), the right for a healthcare service may be slightly more problematic. This simply because one cannot on short sight and cost-efficiently establish a fully-fledged healthcare service on a foreign facility just to satisfy the laws of a technician's country of origin. The big implication is that cross-border flow of competence should be better facilitated by these requirements.

As previously stated, an employee is generally given the same rights as in his country of employment. That means that a Norwegian employee temporarily engaged in Russia, must be given the same rights as he would in Norway. Occasionally, these rights are more than the norm would have it in the country of engagement. Herein is a difference: In Norway, any employee wanting to get off the facility will have their request met without discussion – the responsible party must organize the transportation off the facility immediately (Informant 1, 2015a, interview). Similar demands must not be met in Russia – unless they have temporarily engaged an employee from a Norwegian sub-contractor. It has actually happened that a Norwegian employee has exercised this right on a distant oil production facility, forcing the company to send him back immediately. Peripheral or not, in the event that it actually happens, varying employee rights such as this may have serious implications for the operator.

It is fair to say that the interest of human lives is taken well care of under both regulations. The physical and mental well-being of people is among the primary aims of both regulations, and the main way of reaching that aim is more or less the same. There are minor differences, but nothing with serious implications for a company that operates in both Norway and Russia. On the contrary, we would argue that the mutual pursuance of a safe working environment is among the features that makes cross-border activity more attractive and certainly more feasible. It allows for the flow of employees in an industrial sphere where technical specialists are needed for efficient operations. Although there are similarities, the mechanisms leading up to these may be different within the countries. As training is not just important, but actually the key challenge to ensuring human safety (Karpova, 2015; Shliss, 2015; Muradyan, 2015, presentations), an interesting aspect is how training is

executed. In Norway, training is often done via professional seminars and programs organized by the companies, or organizations representative of several companies. Such seminars are the source of normative pressure (2.2.1 on *Institutionalism from Berger to Powell*). In Russia, the authorities organize the training programs: what should be taught, and what should be tested. Therefore, what is being trained is not a determinant of the companies' own safety experts, but of the knowledge and imploration of the government; coercive pressure.

**The safety of environment**

Environmental safety is handled somewhat differently between the legislations, even though they largely pursue the same desired outcome; which is the mitigation of environmental accidents. The Norwegian regulations cover both aspects in the same legislation; that is, both safety of humans and the safety of environment is a concern of the HSE regulations. In Russia, these two are more or less separate, with human safety largely allocated to the law on hazardous production facilities, and environmental safety to the law on environmental protection. Characteristically, the law on environmental protection is general in nature, not applying specifically to the oil and gas industry.

When accidents are afoot, the emergency preparedness system is crucial. It may encompass a wide variety of measures: fire response; oil leakage and spill response, and so on. Both countries have an emergency response system that is being maintained by the public sector. Both the Norwegian (Bjerkemo, 2010) and the Russian (Ivanova, 2011) systems are both sea- and land-based. The company's role in the emergency response system is different between the countries. In Norway, the company's own emergency response system must be designed to fit the public system – that is to say; the public system must work on their facility, and their own system must also work elsewhere if needed. The latter implies that the companies in Norway are also obligated to support accident response, but without carrying the economic burden of these efforts. ER systems are therefore professionally coordinated; normative pressure. Neither of these is required in the Russian legislations directly. However, since the Russian system is standards-based, the emergency response system also follows a certain standard; coercive pressure. This, in turn, would make the systems mutually compatible. The implication for the company is that the emergency response system is indeed not one whose design is flexible. A non-qualified guess would also be that the system requirements in Russia and Norway are different – after all, there are different environmental

conditions to consider. This implies that the international oil company may not rely on a single design of an emergency preparation system that will comply to both regulations. Therefore, it is a friction in cross-border activity.

Another important difference is the approach to maintenance routines. Both countries must establish a database of all maintenance objects, but in Norway it is important that these are classified and sorted by importance, so that the maintenance can be prioritized thereafter. In Russia, all the maintenance objects must be maintained before the deadline – and that's that. No matter of how little urgency the maintenance objects may have, the ones closest to the deadline must always be prioritized by the company. The amount of required reporting related to maintenance does not increase safety. We argue that the Norwegian maintenance scheme is clearly tailored to fit with the risk-management system of activities, and therefore, by extent of the arguments above, is driven by normative pressure. On the flip-side, the Russian maintenance scheme is ruthlessly commandeering a 10-day deadline for every item on the facility, and everything must be inspected and maintained in 10-day cycles; coercive pressure.

Waste and exhaust treatment varies slightly between the countries. In Norway, it is categorically forbidden to dump any waste in the sea. The waste generation must also be minimized, and preferably sorted for recycling. In Russia, one may dump certain types of waste in the sea, and it is not been made mentions of required measures to reduce waste generation. However, all waste that is being generated is considered pollution, and must therefore be compensated for. Non-permitted dumping is also a criminal offense punishable by imprisonment. Therefore, there is an economic incentive to reduce waste generation, and in effect, companies would rationally try to minimize the waste generation. The same arguments can be made for exhaust, of which is considered pollution, and must therefore be compensated for monetarily in Russia. However, Bambulyak (2014, presentation) argued that the Russian system on waste and pollution management is under development, and in his comparison of the Norwegian and Russian systems, he concluded that there are similarities to highlight. This may be due to mimetic pressure driving the Russian institutions to look for other solutions where pollution and waste is seemingly less of a problem.

A last minor difference is related to the concept of safety zones – which turns out to be two entirely different things in Norway and Russia. Whereas in Norway, safety zones are areas around the production facility that involves a higher degree of protection from external vessels, the Russian

safety zones are merely zones in which there shall be no pollution. Essentially, it is the same name for two different things. The important thing to notice is that the Norwegian type of safety zones is not a part of the Russian regulations, which could suggest that there is an increased risk of unfortunate contact with external vessels. However, realistically thinking, it is doubtful that there will be a scenario in which a foreign vessel enters the areas around a Russian offshore production facility – except for the time it actually happened[6].

**Bureaucracy**

A major difference between the regulations is the level of bureaucracy. Bureaucracy, in this sense, is determined by the complexity of regulatory authorities; the quantity of legislations; as well as the amount of documentation and approval needed for compliant operations. It is, however, unavoidable to address the topic of differences in documentation and approval between the two regulatory regimes. In Norway, there is a certain extent of documentation necessary. Atop of this, some documentation may be necessary if the company deem it necessary. Again, the interesting case is Russia: here, the level of documentation is detail-focused and excessive. Mostly everything should be documented: the role of the employees; the conditions of all the equipment; the design and overall plan of the facility; and no less than two documents descriptive of the safety measures in place in the facility.

This is unfortunate, because the level of documentation in Russia is beyond unreasonable, and is experienced as counter-productive. The means become more important than the end: put simply; because there is so much to report and document, the company is overloaded by the very activity of reporting in its own right. This, in turn, may lead to sloppiness. Because there are so many items on the checklist for reporting, the responsible personnel may develop a tendency to rush through all of them. Had it rather been a select few, but much more important items, one could argue that the employee responsible for inspecting them would be more careful. Therefore, we argue that there is a mismatched attitude towards bureaucracy in the two countries. On one side, you have a country in which the performance is the key challenge, i.e. reaching the overall targets of the

[6] On August 24th 2012, Greenpeace activists boarded and seized Gazprom's production platform on the Prirazlomnoye field. Protesting what they believed to be an attack on the sensitivity of the Arctic environment, the activists temporarily ceased the production on the facility, and gained much attention on the topic. They were later arrested by Russian authorities on charges of piracy (BBC, 2013).

regulations, e.g. having zero accidents. On the other side, you have a country in which compliance is the key challenge, i.e. following all the rules – and there are many of them. The former *key challenge* essentially doesn't require a lot of bureaucracy – as the authorities assume a support function. The latter *key challenge* essentially requires a lot of bureaucracy to make sure that all rules are being followed – as the authorities assume a supervisory function. Admittedly, we argue in polarized terms: certainly, the authorities of both countries both support and supervise; certainly, there is bureaucracy in both countries as well. But the gist is very clear: the extent of the bureaucracy is substantially higher in Russia, and this is a very important implication for the management of an oil company, as it completely changes the whole attitude and way of approaching HSE work. Perhaps the level of bureaucracy in the Norwegian oil and gas sector is what is considered necessary at a minimum, but the professionals within the sphere may and will report and seek support to and from the authorities if they feel it is advantageous; normative. In Russia, the effect is that the companies report everything they have to do in order to seek legitimacy (coercive), but otherwise they avoid the support function of the authorities at all costs (Informant 2, 2015, interview).

**Sanctions & punishment**

A final dimension or sphere in which the regulations are somewhat different, is the extent of which noncompliance is punished. To summarize, we found that both countries treat unpermitted waste and pollution as illegal, and the sentencing for these offenses are coercive fines or imprisonment. Russia's maximum penalties for such offenses are slightly higher than in Norway. However, noncompliance isn't limited to only illicit pollution and waste disposal. If an accident or a near-miss happens that results in the endangerment of human lives or external environment, the company is in principle not sufficiently prepared in terms of HSE. If an accident happens, the reason can be pure misfortune. However, in retrospect of an accident, it is often relatively easy to determine the cause of the accident, or at least determine which part of the system that failed. Therefore, pointing out systematic errors is possible, and therefore it is also easy to give blame after an accident has occurred.

This part of the study is predominantly concerned with the *normative*, paying more attention to which practices are facilitated on paper, and thereby assuming that all the laws imply the actual way the company and the authorities behave. The practices in *reality* may or may not be different, but we remind that this is a topic for the company-level case study. So for now, we can only illuminate

the fact that the treatment of sanctions on paper is fairly uniform. They have a mutual understanding of what can be considered offenses; the corresponding punishment types and levels are more or less the same. However, even though the punishments may be somewhat in the same ballpark, the way of presenting these sanctions is different. In Norway, the sanctions appear to be only a minor part of the main legislations. A tiny, uninformative section shallowly mentioning the possibility of coercive fines and imprisonment is all that appears in the Framework Regulations. Further specification and referencing is given in the corresponding guidelines, but only through some research in external legislations, the reader will understand the actual scope and extent of these punishments. In Russia, the sanctions are much more extrapolated, as they are explicitly mentioned in all the legislations; informatively and almost in an intimidating matter. Perchance this isn't without purpose, as this hints that the Russian regulations rely more on the coercive, preventative function of having a punishment. Simply put, we argue that the intent is indeed to scare the companies away from poor HSE management; not just via the inherently value-destructive nature of accidents, but also via the added fines and imprisonment.

#### *4.5.1.2 Norwegian regulations as driven by normative pressure*

As mentioned in chapter 2.2.1 – *Institutionalism from Berger to Powell* – DiMaggio & Powell (1983) defines normative isomorphism as driven by professionalization. The professionalization is in turn a result of the participants' efforts to define the conditions and methods in their workplace (Larson, 1977). The above subchapter went into the specific differences between the legal frameworks, most of which we would argue as being explained by normative pressure in the case of Norway, and coercive/mimetic in the case of Russia. On a higher level, we see two arguments which can explain why the Norwegian regulations are driven by normative pressure.

First, the Norwegian regulations are present as a consequence of professionalism in the industry. Among the companies operating on the Norwegian continental shelf, there are high levels of professionalism within the field of HSE. HSE specialists, engineers and managers are purposeful positions that work collectively. The members of the HSE milieu are cooperating across the "borders" of their own organization, i.e. cooperating with similar representatives of rivaling companies (Informant 1, 2015a, interview). The aim of improving safety in the industry is sincere and elevated above corporate profits, and therefore the companies and competition authorities are

not only allowing such cooperation to happen: it is encouraged. The idea is that this cooperation leads to uniformity within the professional environment of the HSE field, which in turn results in an overall agreement on what constitutes good HSE practice. The collective efforts from the professionals in the companies signify a relatively large normative pressure, as a majority of the participants in the sphere of HSE are uniform in their beliefs. Our argument, therefore, is that this influences the direction of the HSE regulations, as they in turn are influenced and changed by HSE professionals, albeit on an institutional level.

The first argument was concerned with how the HSE professionals can collectively drive the composition of the HSE regulations through normative pressure. However, *ceteris paribus*, the interpretation of the existing law is also a determinant of professionalism. The second argument is therefore that the professionalism, i.e. the struggle to find a particular way of behavior, leads to a mutual interpretation of how the law is. While the law is indeed law, there is always an aspect of interpretation: "how much focus is given to this and that requirement?" Laws are often eventful and detail-rich – and a fundamental, literal interpretation of the law is possibly overwhelming. Therefore, "interpretation" works as a facilitator for understanding and practicing the essence of the law. With organized efforts from the professional community, one would find that they can more or less agree to a common interpretation and through normative pressure shape a mutual platform of accepted behavior.

#### *4.5.1.3 Russian regulations as driven by coercive & mimetic pressure*

DiMaggio & Powell (1983) explained coercive pressure as the isomorphism organizations experience from the formal and informal pressure from other organizations by which they are dependent of. For oil and gas companies, one such organization is the government in all its bodies: the company must act in compliance with the laws given by the authorities, and this is unequivocally crucial to have legitimacy. Several points can be made in favor of coercive tendencies in the Russian oil and gas sector:

Where there is a law, there is formal pressure for compliance. In the Russian oil and gas sector, we argue that this pressure is particularly strong, as the participants of the organizations must act in compliance with certain actions and behavior. There are many strict and detail-focused requirements that the organizations must fulfill – or face repercussions. Of course, these

requirements are created with the intention of enforcing a certain way of behavior for the organizations, and its legal coercive pressure will ensure that the organizations will accept this institution. By widespread acceptance among the organizations, they will steer towards uniform behavior, thus isomorphism.

Secondly, coercive pressure can also be evident from conscious obedience of incorporate values, norms and institutional requirement (Ibid). The HSE regulations of Russia are not incorporate values or norms, but they are indeed institutional requirements. Unequivocally so, the requirements are manifested, and the organizations are coercively pressed into uniformity.

A third implication of this is that the companies operating in Russia are constantly controlling and supervising their own compliance with the existing rules and requirements. A significant amount of time would be devoted to ensure that all the standards are met at all times; constantly checking if all the technical equipment is maintained properly; all the necessary paperwork completed; all employees are sufficiently trained; and so on. There are truly a lot of areas to cover to ensure complete compliance with the HSE framework of Russia, and one would therefore expect that the organizations are coercively pressured into changing their behavior to an organization that rely a lot of supervision and internal auditing.

As mentioned, normative and coercive pressure are mechanisms for isomorphism. The third and last DiMaggio and Powell (1983 – see chapter 2.41 on *Institutionalism from Berger to Powell*) discussed was mimetic pressure. Mimetic pressure is rooted in contingency and uncertainty, which makes organizations to conform to "well-known" practices as they mimic those of other organizations. The behavior in the Russian oil and gas industry may also be reminiscent of mimetic pressure. The regulatory framework of HSE in Russia is complex, and due to the occurrence of loopholes, there is a level of ambiguity, which in turn leads to uncertainty. Facing these ambiguities, the organizations can look to the other companies to see how they are being interpreted, and allegedly approved, among others.

Secondly, as discovered in the law On Technical Regulations (2002), the companies may use international standards voluntarily to comply with the technical requirements of the oil and gas sector. Rather than being coercively pressured into using the Russian national standards (the GOSTs), the companies could be mimicking the international benchmark standards instead. And as with the international standards, the oil companies may also aim to follow the other practices of

international oil companies, assuming they assess their legitimacies as safely operating oil companies. Even at that, some of the companies in the Russian oil and gas sector are international in their own right, and may aim to mimic the behavior of corporation they are a part of.

Third, mimetic pressure may not just originate from international actors: even the best practices within the Russian oil and gas industry may be copied by companies facing uncertainty in their operations. Therefore, they may look to the bigger and more successful companies operating in Russia, like for instance Gazprom and Rosneft, to understand how these companies are dealing with HSE successfully.

#### *4.5.1.4 Summary*

The above analysis shows strong evidence that there is a pattern of normative pressure leading up to the Norwegian regulations, and that the Russian regulations draws more resemblance to coercive pressure. Additionally, and mostly in cases of uncertainty and inaccuracy in the regulations, the Russian regulatory system also portray influence from mimetic pressure. Figures 12-18 have labeled in rough terms these pressure mechanisms leading up to the differences in regulations. This analysis therefore answers which mechanisms that lead to the formation of the legislative frameworks – and by having different mechanisms, the countries also end up with vastly different regulations.

### 4.5.2 Contingent institutional analysis

The subchapter above analyzed the regulations from an isomorphic institutional perspective, using the terms *coercive, mimetic & normative* pressure. This subchapter considers another perspective of institutionalism to theoretically explain the findings of the 1st order of analysis, namely the theory of *formal and informal institutions* (see chapter 2.2.1 on *Institutionalism from Berger to Powell*). In addition to the formal and informal institutions, we recognize the need to adapt to a contextual factor based on contingency theory in our analysis: while the institutional terms can explain a lot of the reasoning, there is still a distinctive lack of explanatory ideas separating the context of Norway from the context of Russia.

No matter how complex they regulations may be, or how different they are from each other, there seems to be some level of consistency within them, albeit separately. This hints that they are

the result of a paradigm of sorts; a certain way of thinking, and a product of the environment they were created in. There are features surrounding their creation that remains more or less similar in the two countries: the setting (i.e. hydrocarbon production performed by private or public companies on publicly owned resources); the participants (i.e. uniformity in terms of which companies operate, which employees they have, and which governmental bodies are involved); the institutions (i.e. a top-level institutional level, both in terms of governmental bodies involved and the laws themselves, which are all federal/national level); the strategic priority (i.e. the hydrocarbon industry is of decisive importance for both countries); and the very aim of the HSE regulation itself (i.e. the mitigation of accidents and hazards). Keeping in mind that both the setting and the outcome are more or less equal, it is curious to see how the means to this end are varying.

This is where theory and empirics is blended: We have created a matrix framework to the aim of understanding why these regulations are different, by merging the ideas of formal and informal institutions, as well as a contextual dimension, with the empirical findings in the first half of chapter 4, ref. figure 19. We argue that this model is capable of explaining the differences between two HSE regulatory systems of the two countries by regarding the features of important formal and informal institutions, as well as the contextual factors of the country.

The model depicts three main explanatory dimensions: formal, informal and contextual. Beneath these are the elements within these dimensions we illuminate as particularly decisive. A central measurement is how flexible the regulation is, i.e. how easily it can be changed. An important assumption for this model is that the legal frameworks cannot be created without what we choose to call "friction". All the elements in the last column contribute to the grand total of this friction: the stronger they are; the more friction is created. And with more friction comes less flexibility. To put it like this: if all countries could implement a new HSE regulation without friction, then we argue that all the countries would have mimicked the seemingly best system – but they don't. The remainder of this subchapter is explaining in more details the three dimensions and their respective elements, and why these are so important.

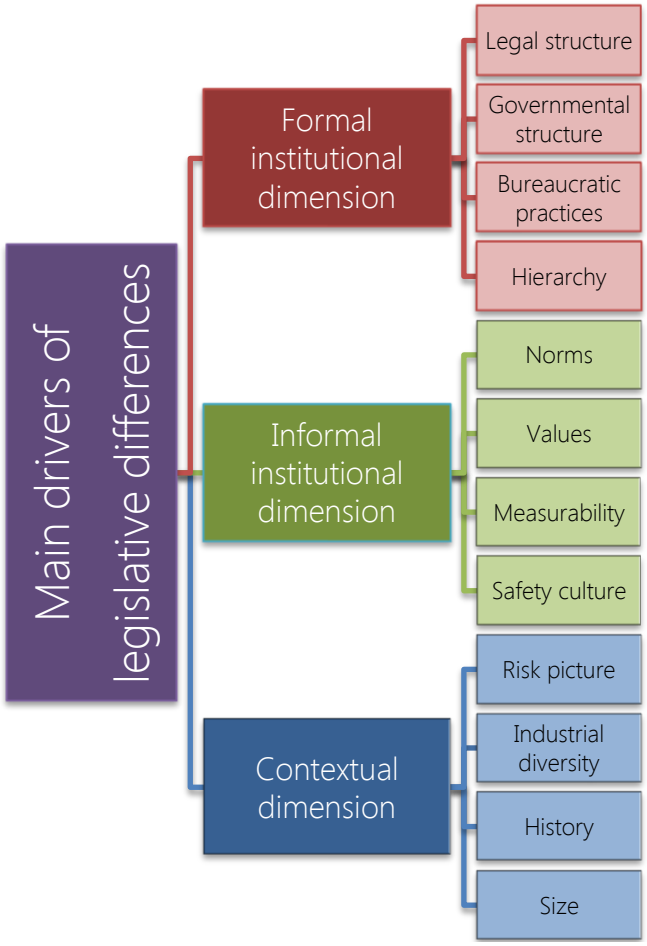


**Figure 19:** Contingency model of regulative differences

### *4.5.2.1 Formal institutional dimension*

The first dimension is the *formal institutional dimension*. The formal institutional dimension encompasses the items that are concerned with the structural differences surrounding the legislations, and is therefore mainly concerned with formal institutions related to the regulations: the structure of legal documents; the structure of the government; the bureaucratic practices; and the formal hierarchy of the industry.

The first element is the *legal structure*. This refers to the structure of the legislations making up the regulations. In Norway and Russia, this varies greatly (ref. figures 5, 6 and 7). In Norway, the legislations are rather small and clearly address the topic of HSE in the oil and gas industry. In Russia, the legislations are very many, and highly spread. They are generalized, in the sense that their topic applies to all industries in Russia, not just specifically the oil and gas industry. Therefore, there

is a fundamental difference in the approach on how to address the regulations. Our argument is that the choice of path – a specifically tailored regulation *vs.* a generalized regulation – will determine the extent of which the law-giving authority is able to influence or reform the regulations.

The second item is *governmental structure*. This is essentially the other side of the coin, as far as institutional theorization goes. This directly refers to how the regulatory authorities and the relevant governmental bodies in charge of- and supporting the HSE regulations are structured. Once again, we can observe that the Russian system is more complex, as there are more supervisory and regulatory bodies present in the industry, and their allocated tasks are sometimes clear, and occasionally overlapping. Our argument is that the more complex the institutional structure around the regulation is, the less flexible the legislation becomes.

The third formal institution is *bureaucratic practices*. Conceptually tied with *tradition,* the bureaucratic practices are often the product of past history – thoroughly incorporated in the real mechanics of the regulations. We argue that bureaucracy is a formal institution because it is formalized in the legal frameworks of the industry – the regulations determine to which extent there should be bureaucracy. Bureaucracy encompasses all routines and procedures in relation to documentation and reporting, which has already been extensively covered by this study. It is therefore no surprise to reveal that the level of bureaucracy may very will differ greatly among the countries, and we would also argue that the existing level of bureaucracy is a friction to the country's ability to adapt their legal framework. The higher degree of bureaucracy the regulation facilitates, the more rigid the legal framework becomes – and by extent, it also partakes in explaining why the frameworks are different.

The fourth and last item of the formal institutional dimension is *hierarchy*. The hierarchy maintains a clear linkage with the neighboring item *bureaucratic practices*. The bureaucracy is at least happening on two levels, and possibly even more. The vertical distance within the industry – from the workers until the top management of the companies – and from the government employees to the top politicians – is a determinant on the rigidity of the regulations. The hierarchy is a matter of structure, and it is formalized from an individual to a governmental level. It is not a well-kept secret that the hierarchies of Norwegian and Russian businesses are widely different, with the former one commonly preferring a flatter organizational structure, and the latter a steep vertical ladder with unequivocal chains of command. For example, we can see that the Russian HSE regulation involves

substantially more reporting and documentation; often given from one level to a higher one. The argument is therefore that the regulatory system to an extents aims to support the existing structure of hierarchy in the industry.

#### 4.5.2.2 Informal institutional dimension

The second dimension is the *informal institutional dimension*, i.e. encompassing the most important informal institutions of the industry. This corresponds to a deeper level; the very mentality of the people involved in the industry. Of course, this is all abstract, but the outcome is still a collective product of the mentalities of all the participants. The curious informal aspect of HSE, serving as no less than the very ignition for this thesis, as it appears in the preface, is heavily involved with some fundamental differences between countries that takes place at a higher level than merely HSE regulation.

The first informal institution is *norms*. Norms, as previously defined, are the behaviors that the individual consider to be normal in a society. In a sense, they are the "unwritten laws" of behavior, which in many cases are so taken-for-granted that they do not need to be transitioned into a formal institution (e.g. a written law). As with many cultural products, the norms can differ greatly depending on a location, and it is reasonable to guess that the norms of two countries may be significantly different – up to a point in which they also change the behaviors of the professionals within an industry. As norms can govern the way individuals treat safety routines, they may also impact the way the regulation gets formalized – simply because the existing norms must be both accepted and respected, or rejected and challenged. Even at that, the norms of a society may be difficult to change, even through legislation, and may therefore hamper the legislative flexibility mentioned above.

The second element is the *values*. If norms describe what is considered *normal,* then values may describe what is considered *right*. In broad terms, what are the community's values towards risk, regulation, bureaucracy, and safety altogether? We argue that it is hopeless to implement a regulatory system that is sharply contrasted to the values of its peers. The thought is almost banal, as for example a generally rigid value of HSE regulations would imply that also the ones creating the regulations would fall under the same mentality – and the implementation would never even be on

the agenda. Perchance we speak in polarized terms, but the principle is quite clear: the regulations must fit the users, and the users must fit the regulations.

The third informal institution herein is *measurability*. First things first: measurability is an informal institution because it is a particular state of mind: the participants' approaches and concerns towards the necessity of measurability in the regulations. In analyzing the legal frameworks, we found a fairly substantial amount of requirements in the Norwegian regulations that went unmatched by the Russian regulations. A common denominator for many of these contents was that they were fairly "loose" in nature, meaning that they were somewhat intangible or immeasurable for the authorities. On the other hand, the Russian regulations, especially through the use of standards, is readily controllable due to the black-and-white characteristic of a requirement being complied with or not. Our suggestion in this respect is therefore that the Russian informal institution of attitude towards the necessity of measurability makes vaguer requirements superfluous. Put more cynically; if the supervisory authority cannot measure the compliance towards these requirements, the companies simply will not abide to them. Once such a mentality is commonplace in the regulatory area, it is difficult to picture a change in the regulations to a widely different approach.

The fourth and last informal institution in this dimension is the *safety culture*. Specifically on the topic of HSE, this refers to the safety culture of the participants in the industry. The companies and their employees have different mentalities to the concept of safety, which in turn will affect the outcome of the regulations. Again, this is not a matter of whose country's safety culture is better, but we are rather just arguing that because there is a difference in the safety culture within the industries, the regulations will also be influenced and to a larger extent locked in a position where they are harmonizing with the existing culture.

#### 4.5.2.3 Contextual dimension

The *contextual dimension* refers to the preconditions of the industry in the countries. The inherent argument is that the two hydrocarbon industries are situated in two different settings, regardless if they have the same function – which is to produce oil and gas efficiently. While the formal and informal institutions may explain a great lot in general, they lack the contextual dimension necessary for such a specific application that his model has, i.e. differences in HSE regulations of oil and gas. In that respect, the contextual setting is made up from four items of particular importance: *risk*

*picture, diversity, tradition & size*. This kind of setting is very important for the context surrounding the regulation, and since the creation of the legislation is context-dependent, the setting will change the outcome of the regulation.

The first and arguably most important one is the *risk picture*. This means the actual risks involved in the production of hydrocarbons in the area the regulations encompass. We argue that the risk picture is significantly different in Norway and Russia: In Norway, there is one-sidedness, as the entire upstream industry is based on offshore production under relatively similar weather and climate conditions. While there are certainly different categories of offshore production facilities, there is also certain uniformity between these facilities, as they face the same risks related to underwater operations, and so on. In Russia, the risk picture is broader, as the oil and gas industry is made up from both onshore and offshore facilities – and even among these there are differences. Just to mention an obvious example: in Russia, the risk for a forest fire is of much greater concern than in the Norwegian offshore oil industry, and must therefore be incorporated better into the legislation.

The second item, *diversity*, is closely related to the reasoning behind *risk picture*. However, instead of looking directly at the risks involved in the production, the diversity item is a determinant of the inherent lack of uniformity within the business environment, which is primarily illustrated by the diversity between the companies operating in the area. Our argument is that the scope of companies operating in Russia's oil and gas industry is smaller – or more precisely, they appear to be somewhat uniform, even though there are many of them – and therefore the regulations can be more specific. If it was established a business environment of widely different oil companies, it would be very difficult to implement a highly detailed and complex legal framework, as these naturally requires more similarities between the companies.

The thought on "which business environment is already established" leads us on to the third item. *History* is the setting-based item of past practices. It is a supportive in nature, as traditions may very well be ignored in a system overhaul – but there is no denying that the current practices will influence how tomorrow's practices are formed. Here, there is no explicit argumentation as for Norway and Russia in comparison to each other. Rather so, we simply argue that since the two countries and their industries are used to a certain way of regulating HSE, they will to some extent also continue to follow that path.

The fourth, and by our reasoning least important item of the contextual dimension is the *size*. Size refers to the scope of it all: Russia is massive, and Norway is substantially smaller in most respects: size of country, size of population, size of production volume… size of legislation. We argue for this item with the past implementation of a risk/performance-based HSE system in Norway, which was pioneering at the time. Maybe this was possible because Norway's oil and gas industry is smaller than the one in Russia. A similar reform in Russia may involve a lot larger risk, due to the sheer scope of the oil and gas industry. So by this thought, experimenting with modernized solutions is easier under less complex preconditions.

#### 4.5.2.4 Summary

The above subsections systematically described the model, which seeks to explain the differences in HSE regulations by analyzing formal and informal institutions, as well as contextual factors. These three dimensions can be largely described by four different items that characterizes features of the countries and oil and gas industries that all have the potential to contribute a friction that will reduce legislative flexibility, which in turn impacts the countries' abilities to change the regulations. Simply put: these 12 items make up the main arguments why the law is what it is, and not something else. Through analyzing these 12 items, our argument is that the model can work to understand the differences and the reasoning behind such differences between two HSE regulations of any countries – but as for this thesis, only that of Norway and Russia is being examined. The model is further applied as part of the analysis in chapter 5 – the case study.

# 5 Chapter V Case study

Having analyzed the institutional differences of HSE management and regulation in the Norwegian and Russian oil and gas industries, this thesis will now commence a case study with the intent of analyzing how these differences are manifested on a company level. This is done by looking in depth on the practices of a single oil and gas company, FMC Eurasia, which is an oil and gas service company newly established in the Russian oil and gas sector – but with strong ties to the Norwegian oil and gas industry via the parent company, FMC Technologies. The two-level solution of the thesis as a whole (institution/company level) is sequential, which means that the order of the parts is not arbitrary. That is to say, the entire case study is conducted after analyzing the institutional differences: everything from the interview guide to the data analysis is affected by the findings and conclusions of chapter 4. Similarly to chapter 4, chapter 5 is structured in two main parts: first, the findings; second, the analysis. The findings mainly consist of the challenges the company is experiencing with HSE while establishing business in Russia, being already acquainted to the Norwegian regulations. The analysis correspondingly attempts to understand the reasons behind these challenges and whether there is a linkage with the results from chapter 4. However, in order for all of this to make sense, we will firstly have a look at the company under examination.

## 5.1 The case company: FMC Eurasia

Most of the information and discussion of this chapter revolves around the information gathered and refined from the interviews held with the informants from the case company. While not explicitly answering any of our research questions, there is still a lot of information about the company that provides some necessary clarity about the situation they are facing. Essentially, these are the assumptions under which the company operates in relation to HSE, i.e. the very framework of HSE in the organization as a whole. This is put in perspective on different levels: first, a review of how the company is organized globally; secondly, how the HSE is organized and structured globally; third, the scope, operation and HSE department of FMC Eurasia; and finally an overview of some of the organization's objectives, goals and vision.

### 5.1.1 The organization

This subchapter will briefly explain some structural assumptions for FMC Technologies. First, we elaborate on the top-level, global structure of the entire corporation. Second, we explain how the HSE and Quality functions of the corporations is generally managed within the entire corporation, and how they are usually organizing these at smaller levels. Last, we examine the organization of HSE within FMC Eurasia, which is the specific organizational branch or segment of FMC Technologies analyzed by this study.

FMC Technologies is an American oil service company specializing in sophisticated subsea systems and technology. It is not to be confused with FMC Corporation, in which FMC Technologies was incorporated until 2000, when the Corporation divested parts of their business, and FMC Technologies emerged as a separate entity. FMC Technologies' headquarters are located in Houston, Texas, but their operations extents across the globe – in total employing 19.000 people. Its ties with Norway can be linked to their purchase of the Norwegian oil service company Kongsberg Offshore from Siemens in 1993 (then as FMC Corporation). Their presence in Norway is quite large, having a rather broad portfolio of 33 ongoing projects, most of which are in cooperation with Statoil. In 2009, the corporation formed a new company in Russia, named FMC Eurasia, which is headquartered in Moscow. In terms of functional and operational areas, FMC Eurasia is mostly linked with the Norwegian branch of FMC Technologies, especially with respect to subsea technology systems (Informant 1, 2015a, interview). It is also reporting to France with respect to surface technology systems, which is a lesser part of their operations (Ibid).

In order to make sense of how the company and by extent the HSE is organized, the remainder of this subchapter will briefly clarify the way the corporation is structured, at three distinctive levels: Global level (FMC Technologies); regional level (FMC Eurasia); functional level (HSEQ of FMC Eurasia). Because of some rather intricate features of the way reporting is organized in FMC Technologies, it is important to understand how all these branches are intertwined, even though they are technically separated.

**Global structure**

The global structure of FMC Technologies must be understood from both a geographical and a functional point of view. This is because the organization is structured in a matrix with respect to the physical and functional dimension.

In geographic terms, FMC Technologies is structured in five main regions: Western Region (USA, Canada and Latin America); Brazil; Africa; Asia-Pacific (Malaysia, Singapore and Australia); and the Eastern Region, which covers Europe and Eurasia. FMC Eurasia is therefore a firm in its own right, but it is allocated to the European Region of FMC Technologies.

In functional terms, FMC Technologies is structured with respect to different business units. These business units are showcased in figure 20. "Business units" thus refers to a certain type of operation, process or product the company delivers. These six business units are therefore scattered around in various locations. However, those five locations are not at all covering all the physical locations by which the corporation is present: it simply states the headquarters for each functional business unit. These locations therefore possess the leading expertise on their allocated functional business unit within the organization. They are called *Centers of Excellence* (Informant 1, 2015b, interview). However, these locations are not necessarily exclusively working with their particular business unit – rather on the contrary.

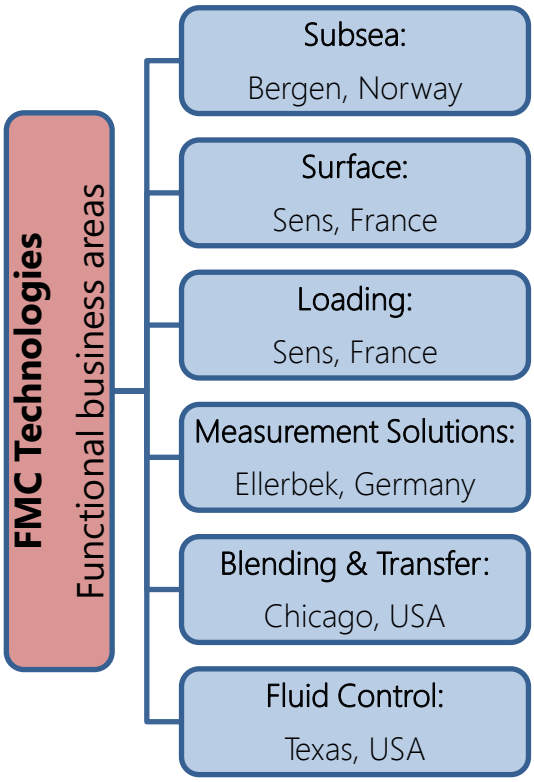


**Figure 20:** Functional business structure of FMC Technologies (Informant 1, 2015a, interview)

The corporation is organized geographically and functionally. A facility (office, workshop, production facility, etc.) is assigned to a subdivision based on its physical location. All functional business units have headquarters with focused expertise. A facility's physical location is not

necessarily tied with any particular business units – it depends on the location and the business opportunities. If a facility is working primarily with a certain business units, they will also have a special organizational tie with the HQ of such business unit. Therefore, all facilities usually report to two different locations: for the St. Petersburg office, this would be Moscow (geographical) and Bergen (Subsea). This is extended to a management level as well, as all employees have a physical and functional authority to report to (Informant 1, 2015a, interview). For example, the HSE engineer in the Sakhalin Island reports to the Head of the Facility in Sakhalin (geographical) as well as the regional HSEQ Director in Moscow (functional) (Ibid). This matrix structure allows the corporation to efficiently allocate different specialists in different locations, because they are not only going to report to the physical manager of the facility, but also the one that is more tied to their particular set of skills.

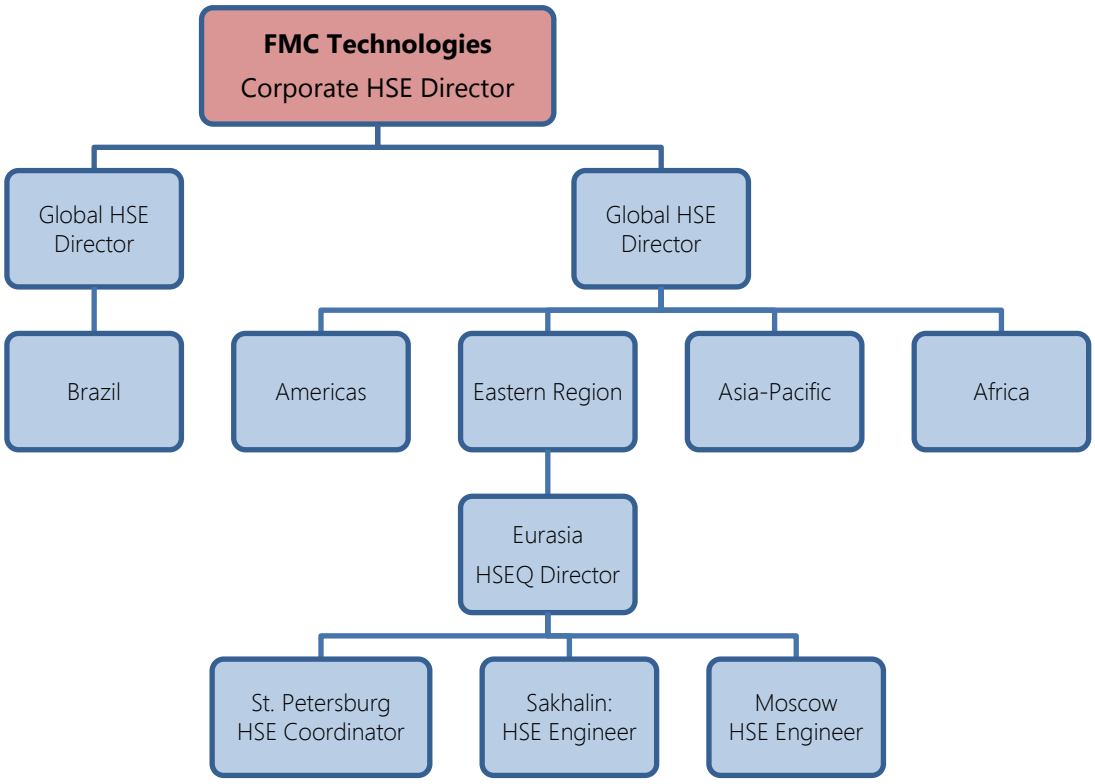


**Figure 21:** Global structure of HSE in FMC Technologies (Informant 1, 2015a, interview)

### Structure of FMC Eurasia

FMC Eurasia is covering Russia and the Commonwealth of Independent States (CIS), with projects currently taking place in Russia and Kazakhstan. Their activity centers are located in Moscow, St.

Petersburg & Kaliningrad (Offices), as well as on Sakhalin in the Far East (Production facility) and in Surgut (Warehouse and Fluid Control workshop under construction). Currently, the company is experiencing a period of growth (Informant 1, 2015a, interview). While the company itself isn't huge, the area it covers is immense: The distance from Kaliningrad to the Sakhalin Islands is over 8000 kilometers[7]. FMC Eurasia employs about 170 people. The biggest project currently in operation is the Kirenskoye field in the Sakhalin III project. This is a gas and gas condensate field located slightly east of the Sakhalin Island. The project as a whole is in an early phase.

Keeping in mind the matrix structure of FMC Technologies, one must also understand that all even though the offices in Russia all belong to FMC Eurasia due to their physical location, they may also work with different types of products and processes. Subsea and surface wellhead systems are the main specialties of FMC Eurasia, and therefore, they are also usually keeping direct contact with the offices in Bergen, Norway and Sens, France. As the Surgut facility is a workshop for fluid control, this facility is instead maintaining connection with Texas. Overall, the business of FMC Eurasia is not excessively spread over many different functional business units: the main focus remains clearly on subsea systems. This puts FMC Eurasia in a more simple position, as uniformity of functions leaves less uncertainty to handle among the employees. By extent, this may also help HSE, as this reduces the variety of operations by which employees must be trained in; reduces the variety of hazardous equipment to maintain; and so on.

**Structure of HSE & Quality**

For FMC Technologies as a corporation, there is an HSE director (Informant 1, 2015a, interview). The corporate HSE director covers all the functional business units mentioned above. Beneath the Corporate HSE Director, there are two Global HSE Directors – one for the functional business unit Subsea, and one for Surface. Smaller business units – the remainders of the six mentioned in figure 20 – are too small to justify having their own global HSE director, which is why these are somehow allocated to one of the two Global HSE Directors (Ibid). Beneath these Global HSE Directors are the Regional HSE Directors, wherein all the five major regions (Brazil, Northern and Latin America, Africa, Asia-Pacific and the Eastern regions) have their own (Ibid). FMC Eurasia is a separate business within the Eastern Region, and has its own HSE management.

[7] 8000 km is roughly 20% of the Earth's circumference.

In FMC Eurasia, the HSE department is merged with the Quality department, headed by the HSEQ Director (Informant 1, 2015a, interview). *Quality management* is a semi-related managerial component important in advanced technical and industrial production companies, as it aims to ensure a high quality of standard of the products delivered. Merging these two functions is not ideal, but necessary due to the relatively sparse size of the Russian branch (Ibid). Additionally to the HSEQ manager, the company employs HSE engineers in Moscow and Sakhalin, as well as a Quality engineer in St. Petersburg. Due to the lack of HSE engineers in St. Petersburg, the HSE responsibility for this 100-man office is shared by the HSEQ Director and HSE engineer in Moscow (Ibid). However, the Quality engineer is currently adapting to the function as an HSE coordinator to relieve the Moscow office of this duty in the future. This means that in total, FMC Eurasia employs 4 people in the sphere of HSE.

### 5.1.2 Objectives, goals and strategy

The HSE department of FMC Technologies works with a clearly defined system for objectives and goals. Each year, they define a set of objectives that are applied to a certain area, process or person within the organization (Informant 1, 2015a, interview). The scope for these objectives can last up to five years. Just to name two examples of such objectives they have:

1. *FMC Eurasia shall have zero recordable incidents in 2015.*
   This is a typical and real objective for the HSE department in FMC Eurasia. It is also fitting the SMART-criteria for good objectives: Specific ("Recordable incidents" is a well-defined term); Measureable (Zero); Attainable (They had zero recordable incidents last year); Relevant (HSE is all about mitigating accidents and hazards); Time-bound (2015).
2. *Each employee should fill out at least five observation cards per month.*
   The management is not happy with the employee participation with HSE (Informant 2, 2015a, interview), and wants to involve them more by using observation cards for reporting minor incidents. This objective also fits the SMART-criteria mentioned above.

Objectives are therefore the main tool for improving the HSE management piece by piece. As seen above, they can reflect the overall efficiency of the system (1st example), or correspond to a certain process (2nd example). They can also be assigned to individual employees, as they aim to create such

personalized objectives for all their employees (Ibid). These goals are followed up every year, and their degree of fulfillment will determine whether the employees are applicable for certain bonuses.

The objectives are structured in a certain fashion: Safety – Quality – Delivery – Cost – People (Informant 2, 2015a, interview). In a sense, this implies that safety is the first priority in terms of their objectives: "Safety first" – and thereafter come all others. The HSE managers believe that this way of structuring the objectives gives legitimacy and authority to the HSE, essentially facilitating its presence in a way that makes their slogan "Safety first" correspond to something real. It is truly the top of the agenda (Ibid). The structure above is the *topical* sequencing of objectives (sorted by theme). However, one must also consider the sequencing of levels of objectives: The HSE department in Moscow will create their objectives based on the objectives they receive from the top management of FMC Eurasia, which in turn is directed by the long-term strategy of FMC Technologies globally (Informant 1, 2015a, interview). Therefore, the objectives are trickling down the organization in a top-to-bottom fashion.

Their objectives are also intertwined with the general business objectives from the Norwegian branch (Informant 1, 2015a, interview). This is because the majority of FMC Eurasia's business is in the field of subsea technology, which in turn is largely run from Norway. This means that the HSE management tries to draw up HSE objectives that are relevant and predictive and thus proactive in advance of the general business objectives the Norwegian branch attempts to steer the business with. For example, if the Norwegian branch aims to increase activity by winning a bid for a delivery to a production facility, then the HSE department in Moscow must anticipate this and make sure that they have enough trained and qualified people in terms of HSE.

Whereas objectives are relatively small, the network of objectives must correspond to something larger; a broader picture of the direction they aim to develop the organization. Let us call this the strategy of their HSE. Being a relatively new HSE department in a relatively new business altogether, the development of the HSE system is still currently in a relatively early phase. The rough system is constructed, but it is not completed. In the longer term, the HSE department needs to expand in both Moscow and St. Petersburg. Informant 1 in bound for Houston, Texas, and a replacement must be found. St. Petersburg is now employing over 100 people, and the amount of HSE workers is disproportionate to the amount of employees – even by law (Ibid). However, the possible expansion in St. Petersburg is a determinant of the political situation in Russia. Due to

mutual economic sanctions, their main customer in the St. Petersburg office, Total SA, is withdrawing their business from Russia. This may also signify a loss of activity for the FMC Eurasia office, and therefore an unfortunate downsizing of the staff. If such is the case, then the proposed expansion of the HSE staff is uncalled for.

## 5.2 Challenges for the international company

The company experiences a set of challenges with respect to HSE management. Their role as a newly established, international company implies, as expected, a certain degree of struggle with compliance with the legal HSE framework. Moreover, the pattern of challenges seems to be fairly on target with the seven concepts we have previously underlined as particularly descriptive of the legislative differences between the frameworks. This subchapter will examine how all these differences pose challenges for the company in terms of HSE management. Before all that, the subchapter will start off with generalized challenges the HSE managers face, unrelated to the HSE framework.

### 5.2.1 Non-legislative challenges with HSE management in Russia

There is a set of particular challenges with respect to HSE management that FMC Eurasia highlights as important – but they are not interlinked with any differences in law per se. We call these challenges *non-legislative* challenges for that exact reason. Due to the HSE management's concern with these challenges, they cannot be ignored by this study, as they will play an integral part of the successful development of well-functioning HSE management. Within these non-legislative challenges, we choose to further classify whether these are *generalized* challenges with HSE, i.e. challenges they would experience in any region; as well as *regional* challenges that apply specifically to their Russian venture due to Russia's special (non-legislative) features.

#### *5.2.1.1 Non-legislative challenges with HSE in general*

Three areas that were highlighted as particularly problematic for FMC Eurasia were designing the HSE system itself; training of employees; as well as corporate synchronicity.

**HSE management system**

The corporation, FMC Technologies, decided that FMC Eurasia must have a fully functional HSE department and corresponding HSE management system. In that respect, they assigned the HSEQ director from Houston to Moscow with one task in mind: to create such a department and system. Creating such a system was, however, not a task of simplicity. There are many issues with creating such a system, including but not limited to (Informant 1, 2015a, interview):

- Compatibility with risk management system;
- Finding capable staff to execute the system;
- Communicating the system to the company at large;
- Proving its efficacy;
- Merging the HSE and Quality functions efficiently;
- Successfully balancing the rewards of the system (better HSE management) with the cost of the system (predominantly the work hour spent in designing and executing the system) at a reasonable trade-off;
- Accounting for all corporate interests, strategies and objectives; as well as facilitating compliance with the HSE regulations of Russia

While there is no ambiguity as for whether the system is being developed or not, the informants are contradictive in assessing the progress of such:

> "*No, I do not have a [HSE management system], and that is my biggest problem"*
>
> Informant 1 (2015b, interview)

> "*…And when I came, I started to make HSE system. […] The major topic of my work was to make an HSE system. Not to manage separate activities, but to make a complete system. This was the major idea – and this is most of what I have done these years."*
> Informant 2 (2015a, interview)

In any case, the HSE management system is in place, even if it's still being developed. On the difficulty of designing and establishing such an HSE management system, Informant 2 (2015a, interview) further stresses the issues with gaining the acceptance from the employees subjected to the system. If the changes are rapid or significant – or both – then the employees will be unhappy with

the system, and lose the trust required to successfully implement it. The employees must believe in the system, and therefore it must be credible (Ibid). And a system in its developing phases is bound to be changed to be optimized, which adversely weakens its credibility among the users. On the flip-side, Informant 2 (2015a, interview) believes that because of the young average age of the staff in FMC Eurasia, they have a more flexible mentality, and are not as rigidly sticking to the traditions of the past.

**Training of employees**

The second major general non-legislative issue in HSE management is training the employees in better HSE practice (Informant 2, 2015b, interview). Training the employees is indeed a crucial part of effective HSE management. One must keep in mind that in the end, it is the behavior of every employee that will ultimately affect how well HSE is being managed in a company. It is no use for the company to have excellent HSE personnel if they cannot communicate their procedures to the other employees in a way that changes their behavior. It should be mentioned that the practice in company is that all the employees receive general HSE training, as well as specialized HSE training for the particular equipment they are going to use in their work. There are several problem areas when it comes to effective training of the employees, including:

*Training of the company's own employees*: generalized HSE training for the employees is time-consuming and takes up a large part of the yearly work hours of the HSE staff. When there is more than one new employee being hired, the HSE staff should time the training so more can receive it at the same time. This is rarely possible when hiring technical specialists, whose training is specialized (Ibid). Because training is time-consuming, it is also expensive. To offload the dedicated HSE personnel – or in the event that these are not qualified to provide certain kinds of training – the company may also implement external training, i.e. hiring a third party to conduct the training. As expected, this is more expensive than internal training, i.e. doing it themselves (Informant 2, 2015a, interview).

*Training of external employees:* the company may occasionally temporarily hire personnel external to FMC Eurasia – either from the FMC Technologies' other branches, or from an agency. For instance, it happens quite often that FMC Eurasia hire Norwegian technical specialists temporarily

on projects in Russia (Informant 1, 2015b, interview). These employees must also be trained according to FMC Eurasia's high standards – with the same implications as above: time and money is being spent.

*Training of own employees in other companies:* when FMC Eurasia is awarded a delivery on an oil and gas production facility, they must send their own employees to install the equipment they have sold. This means that the responsibility of their employees is being handed over to the operator of the facility. An implication of this is that the operator of the platform is required to provide the employees with induction training, i.e. necessary training to safely live and work on the facility. There is not really a lot FMC Eurasia can do about this, but they must be able to trust that the operator can provide a sufficient training for their employees. While the legal responsibility lies in the operator, the ethical responsibility of the safety of the employees also remains in FMC Eurasia. Therefore, FMC Eurasia must be certain that the facilities to which their employees are being sent provide sufficient training (Ibid).

*Legally required training*: In Russia, there are essentially two forms of HSE training: *official* and *unofficial*. The forms of training mentioned in the paragraphs above are all "unofficial training", in the sense that they are not formally required by law. The official HSE training in Russia consists of training programs executed by third-party companies licensed by the Russian authorities, as well as an examination of knowledge. Informant 1 (2015b, interview) regards the official HSE training as farce:

> *"The Government says: "I will be giving training" and since Government does not do it itself, it certifies certain companies to do it and they start making money. Execution is done in bad way; it is only about making money. Practically, the Government is milking organizations on the HSE subject. Does it improve safety? No, it does not. It is all about a piece of paper"*

Being legally required, the company has no choice but to send their employees to this sort of training. However, since the managers cannot accept that this provides sufficient safety for their employees, they must also proceed with their own costly training procedures, as mentioned earlier.

*Training as a determinant of business opportunities:* FMC Eurasia's business is revolving around a few, big projects. A single sale can lead to big opportunities and involve expansion in terms of human resources. And by extent, an expansion of human resources implies an expansion in amount

of training. The amount of training thus reflects the business opportunities for the company as a whole, but the resources allocated to training of employees is irreversible. It is not a physical product, as it is the gaining of knowledge among the employees. If a planned project is cancelled, then all the employees allocated to that project may be out of a job – but the training they have received will remain with them, and the costs associated with this training are sunk. An unfortunate temptation from this is that the companies may want to delay their training routines up until project start-up (Ibid).

**Corporate synchronicity**

A third problem area can be called *corporate synchronicity:* the company's ability to remain synchronized with the interests and strategies of the parent company; avoiding structural frictions; as well as using the global HSE governance as a support. There are some experienced and potential issues with this, considering the structure of FMC Eurasia in the global network of FMC Technologies, as well as the contextual implications of being located in the Russian oil and gas industry.

| HSE Strategy, FMC Technologies | |
|---|---|
| | Conducting business in a manner that protects public and occupational health, the environment and employee safety. |
| | Striving to eliminate all accidents and environmental incidents. |
| | Making HSE considerations a priority in manufacturing existing products and planning for new products, facilities and processes. |
| | Complying with all HSE laws and regulations. |
| | Reducing emissions and waste and using energy and natural resources efficiently and intelligently. |
| | Working with our employees, suppliers, customers, contractors and partners to promote responsible management of products and processes. |
| | Encouraging constructive communication with our employees, suppliers, customers, neighbors and stockholders about managing health, safety, and environmental issues. |

**Figure 22:** HSE strategy in FMC Technologies globally (FMC Technologies, 2015)

*Strategic alignment:* The HSE department has their own strategy, vision and goals (see chapter 5.1.2 on *objectives, goals and strategy).* This strategy must be based on the corporate strategy for HSE,

which is found in figure 22. Being on corporate-level, this strategy is very general and not necessarily tailored to the Russian context. As we can see from the corporate HSE strategy, it does not delve into specifics, but it provides some overall direction for the HSE departments to follow. The question is whether this strategy is entire appropriate for companies operating in the Russian oil and gas industry. We argue that only one of the strategic aims is unreasonable for Russia, which is the fourth: *Complying with all HSE laws and regulations*. This, however, is discussed in the next part of this subchapter (see chapter 5.2.2 on *Legislative challenges; Holistic HSE integration)*. Other than that, the other strategic aims are not unreasonable, but at least two of them are simply not very applicable: The third aim is irrelevant because FMC Eurasia is not manufacturing or designing new products; the fifth is irrelevant because FMC Eurasia's operations don't involve much generation of waste and emission.

*Structural/capacity issues:* As elaborated in subchapter 5.1.1 on the structure of FMC Technologies, the way the organization is built is fairly intricate. By distributing specialized competence to *Centers of Excellence*, the company creates hubs that all the branches must connect with in situations where their competence is needed. We agree that it is beneficial to have specialized competence gathered in a single location when designing a product. However, FMC Technologies is not only about design and manufacturing of equipment: it is also installation, and this installation requires specialized competence by the technicians (Informant 1, 2015b, interview). Because the local branches cannot have a full set of specialists, they must summon these from the centers of excellence, or other places by which specialists are stationed. With the branches of FMC Technologies globally (and especially FMC Eurasia) working fairly independently, this coordinative effort becomes a challenge. Suppose if two branches or separate facilities need the same specialist at the same time, there would be unforeseen capacity issues on this "resource". Battling this, Informant 1 (2015b, interview) elaborated on the corporate means to overcome this problem by ensuring that specialized competence indeed should also be available elsewhere:

> *"Singapore is a center of excellence for gate wells, and this means that Singapore does it the best. Suppose if this office doesn't have the capacity, then we may consult with Scotland instead, which is a secondary base for gate wells, and they will help."*

So by establishing secondary bases of competence, the corporation mitigates the risk of not having capacity for all its branches.

*Internal auditing:* It is an internal requirement within FMC Technologies that all offices and facilities shall undergo internal auditing at least once every three years. This internal auditing is holistic, but pays special attention to HSE (Informant 2, 2015a, interview). FMC Eurasia and the Moscow office is in the time of writing six years of age – with the other offices and facilities in Russia being established slightly later. However, in all of these six years, there has still not been a single internal audit from the corporation. We understand that one of the reasons for this is that the HSE department in FMC Eurasia is younger than the office itself, being established two years later than its inception:

> *"Nobody from FMC Technologies came to us. […] We attended a quite interesting global HSE meeting, and discussed with them there. I think that they understand that we are quite young, and can't have knowledge of all procedures in Russia. So, I think that for now, they are satisfied with our level based on our current situation in Russia…"*
>
> Informant 2, 2015a, interview

However, this seems like an easy way out: a requirement is a requirement. In the lifecycle of FMC Eurasia, they should have had – according to their own rules – at least two internal audits. The fact that the HSE department is young and inexperienced only ever calls for the supportive function an internal audit can have: they would have HSE experts providing input on where the HSE department is insufficient, and can therefore fix the problems. This, in turn, would be a more delicate solution than having the Russian authorities over for an external audit, by which the uncovered insufficiencies could be punishable. Therefore, we argue that FMC Technologies as a global corporation fails to implement their own procedures efficiently, which in turn hints off that there is a structural friction within their HSE departments.

#### 5.2.1.2 Non-legislative challenges with HSE in Russia

There are at least three particular challenges the company experiences that are non-legislative, but are perhaps more unique to the Russian oil and gas industry than most other locations: Corporate cooperation, Arctic conditions & economic sanctions.

**Corporate cooperation**

Oil and gas companies rarely work alone on a hydrocarbon field, especially those that are offshore. For FMC Eurasia, whose activity consists of delivering and installing equipment and oil production technologies, operatorship of an oil field is out of the question: it is not their domain. Therefore, in all their on-facility operations, they are to some extent cooperating with another company. This cooperation is mostly with their customer, but also other companies on the facility. This cooperation also encompasses HSE-related work. In all the projects, the procedures and plans for HSE are being accurately coordinated through cooperation between all the actors. This is not always frictionless in Russia.

> *"What I like in the West, is that when I go to BP, Total, Statoil or ExxonMobil, they all have different business philosophies, but when we are talking about HSE everybody is on the same page. We all work together, we are in the same boat – and if we sink, we sink together. That is our philosophy. On a project in [an oil field], everyone who was discussing HSE shared this philosophy, but unfortunately, the operator, [National Oil Company][8], thought differently. They like to be in control, and they have the legal right to make the big decisions.*
>
> Informant 1, 2015b, interview

The quote above refers to a story where FMC Eurasia, along with many other suppliers and oil companies were making such a plan for HSE in a project. They all agreed on a certain kind of procedure using observation cards, to the aim of safer and more cost-efficient HSE management, as had been proven efficient from past projects (Ibid). However, the operator of the field, [National Oil Company], which is a subsidiary company of [National Parent Company], cancelled the ordinance a week after its inception, and therefore the procedure was shut down. HSE management was eventually executed as [National Oil Company] preferred it. Requesting the reason why they cancelled the procedure, [National Oil Company] explained that they would not allow other companies to indulge into a position where they felt free to criticize [National Oil Company]'s routines. They would either abide by them, or leave the project (Ibid).

The problem of uncooperative collaborating companies is a recurring one for FMC Eurasia, and arguably most international oil and gas companies whose philosophy in the question of HSE is

[8] The uncooperative national oil company and its parent company are made anonymous to protect the informants

indeed to cooperate for greater mutual benefit. This is clearly a serious problem for the companies – one could question the necessity of sophisticated and efficient HSE procedures if they are never put to life (Ibid). These problems are also centered on a certain group of companies: the traditional national Russian oil and gas companies. The latter, in particular, is problematic due to its structure. As [National Parent Company] is the parent company of several other, smaller companies, cooperation with one may involve the cooperation with many, without them necessarily sharing a philosophy amongst themselves:

> "*We work with [National Subsidiary 1] on the Dobycha Shelf, [National Subsidiary 2], [National Subsidiary 3] – all three of them report to "big papa [National Parent Company]", even though they are all independent with different philosophies and different managers. It is very difficult for us to work with them because they are fundamentally different from us – in the way that they think, and the way that they behave."*
>
> Informant 1, 2015a, interview

So not only is there an uncooperative [National Parent Company] – there are several of them – and they do not even cooperate with themselves. Their history of arguing about HSE with [National Parent Company] and its subsidiaries has left a small trace in the relationship between the companies, but this doesn't affect their future cooperation. Being awarded contracts for oil and gas facilities ultimately ends up being a question larger than something decided by a "minor dispute". The only thing which is ever hampered by this whole ordeal would be the efficiency and effectiveness of the HSE management on the facility, which – as argued above – may take a blow.

**Arctic conditions**

Oil and gas production in Arctic and Arctic-esque conditions involves some uncomfortable characteristics, which sharpens the oil and gas companies to elevate their efforts to increase security. On one side, the likelihood of accidents increases due to unfortunate climatic and natural conditions, as for instance extended periods of darkness, blizzards, presence of ice, and so on (Zolotukhin, 2014). On the other side, the consequences of an occurred accident can be much more dramatic, at least as far as environmental disasters such as oil spill and blowouts go (Ibid). It is clear that the risk picture is elevated in Arctic conditions.

As stated above, subsea technology is the primary business area of FMC Eurasia. Subsea technology is only applicable for offshore oil and gas production. Therefore, subsea technology in Russia and the CIS is mostly limited to the Caspian Sea, but even more so in the areas on the Russian Continental Shelf, north of the Russian mainland. Thus, subsea in Russia usually involves Arctic drilling (Informant 1, 2015a, interview). One of FMC Eurasia's primary engagements is on Kirinskoye, which is near the Sakhalin Islands. It is technically not in the Arctic (as defined by the Polar Circle), but the natural conditions resembles those of the Arctic. While working on such fields, the company recognizes that the need for sharpened HSE procedures is indeed there. However, it is not only challenging from a technological and operational point of view: also in the perspective of HSE management, there is some challenges associated with production in the Arctic. The source of the problem is that the areas for the majority of the year are covered in ice, which renders drilling useless. In the moment of writing this, Sakhalin is still covered in ice, and there is no drilling happening until the ice thaws. Such is also the case for their past project in the Kara Sea in 2013, while drilling exploration wells with Exxon in what would lead up to become the Universitetskaya-1 project, which is currently put on ice due to economic sanctions.

> *"…it was actually the first subsea well drilled within the Polar Circle. We started drilling in August, so you can imagine, up until the 1st of August the Kara Sea was covered by ice, and in September it was covered by ice again. So we had only about 50 days of work. Arctic drilling is different since it is seasonal. It does not make sense to hire many technical people in Russia. Training and maintenance is expensive and there is nothing for them to do in the rest 9 months of the year when it is cold."*
>
> Informant 1, 2015a, interview

…and therein lies the problem for the HSE manager. Training of personnel appears to be even more complicated than already examined above under chapter 5.2.1.1 on *non-legislative challenges with HSE in general.* Because of the icy conditions in Russia, it is very difficult for FMC Eurasia to maintain personnel on a permanent, year-round basis, because it is simply too costly to train them for mere 50 days of work throughout the year. Moreover, technical specialists needed for offshore oil production are not in excess, and they are in a position to bargain for fairly attractive contracts. Temporary engagements for 50 days do not provide a lot of security for the employee, and therefore it is not an attractive place to work (Ibid). FMC Technologies solve this by having a large network of specialists made available for hiring across borders between the various branches of the corporation. FMC

Eurasia commonly hires technical specialists from Norway while doing projects in Arctic conditions (Ibid).

**Economic sanctions**

In 2014, a series of mutual economic sanctions were initiated. The initial sanctions were placed on Russia by various countries in Europe, including Norway, as well as the United States as a protest to Russia's involvement in Crimea. These sanctions involved a ban on imports of certain goods and services from Russia. These sanctions were met by Russia, who answered by initiating a similar ban on products and services from these countries. This affected the oil and gas industry, whose cross-border trade of goods and services in Russia was completely hampered. Loopholes and ways around these sanctions exist – mind you, FMC Eurasia is fully owned by their American parent company, but is still technically a Russian enterprise, and may therefore operate as usual within Russia. However, for the most part, the international activity in the Russian oil and gas industry has suffered a significant downsizing. For FMC Eurasia, this is no exception: The Kara Sea project, as elaborated above, is currently on-ice due to sanctions; South Kirinskoye is a doubtful prospect due to the sanctions; proposed Black Sea cooperation with Exxon was cancelled due to sanctions (Ibid). Clearly, this is a big problem for the management of the oil company altogether, as it dramatically limits their business opportunities. It is also a problem with respect to HSE management, as this limits the predictability of their operations: it doesn't make their operations more unsafe, but it makes it more difficult to manage training of the staff and maintenance of the facility (Ibid).

### 5.2.2 Legislative challenges with HSE management in Russia

The six areas mentioned in the former subchapter are for the most part something we assess to be *non-legislative*, in the sense that the problems aren't directly anchored in the legal differences between Russia and internationally. However, in our sessions with the HSE staff of FMC Eurasia, it was evident that a large proportion of the problems they experience while doing HSE management can be tied to characteristics of the law itself, or even the *de facto* execution of the law. This subchapter will lay out the most important of these challenges. Because the case study is based on the findings

from chapter 4, the challenges will be structured as they were examined: by the 7 different conceptual areas.

**Risk-based approach**

We found in our analysis of the legislations, that the Russian oil and gas industry to some extent requires the companies to perform a continuous risk analysis – of sorts. The requirement is that the company must identify the risks associated with production in certain kinds of platforms, and that these risks must be minimized. The regulations do not speak of some holistic risk management system that should encompass all elements of the company's operations (including, for example, non-hazardous facilities, like the office spaces). These differences can be found in table 7. So without a doubt: risk analysis is required, but it is more like a by-product of something else rather than a big procedure in its own right. While inquiring about this requirement, the HSE engineer would have it differently:

> *"Risk management… In Russia, we don't have such requirement, so we should use international procedures when managing risk. Maybe it's mentioned briefly, but just in a sentence. That's it. It's only one sentence. And nobody thinks about it. It's not very important."*
>
> Informant 2, 2015b, interview

Whether the law claims to require risk management or, is one question – but it is all but relevant once we know how risk management is practiced in reality among the oil and gas companies in Russia: not at all. To be fair, most companies – at the very least the international ones – actually practice risk management due to its seemingly solid effectiveness (Ibid). However, as far as the law and the authorities are concerned, there is absolutely and with utmost certainty no formal requirement to practice a risk management system with respect to HSE in oil and gas. They simply do not care if such a system is in place (Ibid).

As mentioned, the international oil companies have a tendency to incorporate HSE management within their established ERM framework and procedures. This is not the case for many national or all-Russian oil companies, whose procedures are more aligned with the requirements of the legislations. Therefore, the industry is fairly split consistently, as the international companies use

risk management, while the Russian companies do not. Of course, that is the overall impression the informants had, but it not necessarily so that *all* the Russian oil companies persistently refused to perform enterprise risk management, but nevertheless, the opinion on the matter is unambiguous:

> *"Unfortunately, if you would come to any Russian company they tell you: "Risk analysis? No, we don't do that. Forget about risks. We should only ever follow requirements." That's it: all requirements. It doesn't matter that there are risks, etc. So this is a very important difference."*
>
> Informant 2, 2015b, interview

The informant also elaborated on a past work experience with such a Russian oil company which were blatantly disregarding everything about risk and risk management correspondingly with the picture painted above. The question remains, however, how all this in the end turns out to be a challenge for FMC Eurasia. Of course, a legal framework imploring risk management would leave the company with little choice but to implement such a system. However, when these requirements elude the legislation, the company stands free to decide whether they want to implement ERM. Some do, some don't – and that's the challenge. Enterprise risk management is a complex matter, and it would be easier to optimize such a system under the Russian context if all the companies would be on the same page (Ibid). In a sense, this would create a milieu for improved risk management: one in which the best and brightest could gather to discuss; one in which the better practices gains foothold and flawed methods fail. With the lack of widespread usage, or even acceptance, of ERM, FMC Eurasia fails to capitalize on such opportunities.

This, of course, does not hamper FMC Eurasia from developing and implementing an enterprise risk management system for HSE. While not a common procedure in Russia, the companies are still free to use it as they wish. FMC Eurasia, in line with their parent company, has therefore implemented an enterprise risk management system to overcome HSE challenges. At the most basic level, the ERM framework FMC Eurasia uses is not any different from the usual one, see figure 5. After identifying the risk factors, the HSE manager decides its level of probability and consequence, which in turn is submitted to a matrix.

This matrix is 4-by-4, which means that all risk factors have a probability/consequence between 1 (virtually impossible/low impact) and 4 (happens frequently/fatal impact) (Informant 2, 2015b, interview). Among the companies using risk management in Russia, there is an unfortunate

lack of uniformity for the approach of risk management, as some companies use 3x3 grids (Bashneft), some 4x4 (FMC Eurasia), some 6x6 (Total), and some even 8x8 (BP), which in turn leads to ambiguity for how these levels could be compared (Chernoplekov, 2015, presentation). The informant agrees, but finding a common platform isn't always a smooth procedure: you had 5 different interpretations; someone proposes a new one – a standard for everyone to use; you end up with 6 different interpretations instead. Perchance a greater concern than the size of the matrix is to find a good methodology for assessing the risk and thereby assigning them to the matrix. In lieu of a scientific computational approach, the contemporary practice is to use "expert evaluations", i.e. educated guesswork (Ibid). This is also the case with FMC Eurasia (Informant 2, 2015b, interview).

The HSE department is the one responsible for the use of the risk management system, as the company does not have a designated team or person responsible for risk management alone. It is therefore used as the primary tool to manage risks that are concerned with HSE and therefore limited to only operational and hazard risks (see chapter 2.3.2 on *classification of risks).* Since they are not considering strategic or financial risks, which are speculative risks, there are no possible upsides from the risk factors: they are all to an extent negative; complete elimination is in principle the ideal solution.

A final challenge related to risk management is the limitations of the current practice. Informant 1 (2015b, interview) believes that the sole focus on *likelihood* and *consequence* of risk is not enough, as there are other important factors to consider. First, *detectability:* if something occurs, how easily will it be picked up by the people working on the facility? Events such as fires is easily detected by the facility's systems, but other factors may be building up unnoticed, such as a worker's back injury from prolonged strain from poor lifting technique; or more acutely, a small gas leakage accumulating the risk of an explosion (Ibid). Second, *communicability:* if something occurs, how easily can it be communicated within the organization? Suppose something should happen on a remote part of the facility in Sakhalin – is the person involved (if any) able to make notice to someone on the facility about the incident, and will the facility be able to communicate this efficiently to FMC Eurasia centrally, as well as emergency initiatives? Not all risk factors are so easily communicable, and this only ever adds to the risk (Ibid). Both of these factors do not fit in to the risk matrix, and are in a sense ignored. This is something the HSE managers aim to improve, and this may also involve going away from the conventional risk matrix they use today (Ibid).

**Standards**

The company experiences several problems with respect to the use of standards, and the main cause of these problems is due to the legislation; or more so the *de facto* interpretation of the legislation among the Russian authorities.

*Involuntary voluntarism:* The law clearly states that the use of national standards has become voluntary, i.e. as opposed to what it traditionally was – all the national standards (GOSTs) were mandatory to use. This freedom of voluntarism comes with a set of clauses and assumptions; see chapter 4.3.3 on *regulatory principles*. If fulfilled, the company may use an international standard in lieu of the national standard. FMC Eurasia's HSE managers are under the impression that this is all a farce, and not at all anchored in the real practices in the oil and gas regulation:

> *"I remember 7-8 years ago, there was a change in the legislations that made GOST standards voluntary. But if somebody would come to inspect us now, and we tell them that we are not following GOST because it's voluntary, they would give us a penalty. They changed the legislation, but they are not following it. So all the national standards are mandatory, unfortunately"*
>
> Informant 2, 2015b, interview

This is possibly unreasonable by the authorities, but FMC Eurasia, as a rather small company in the Russian oil and gas industry, have no intentions to challenge the current practices by defying the usage of national standards. A "penalty", as mentioned in the quote, is relatively modest, but conscious opposition to the current practice has larger implications: it attracts attention to the company from the authorities. Such attention is not desirable, and is something most oil companies strive to avoid (Informant 2, 2015a, interview). Therefore, FMC Eurasia feels as if they do not have any choice but to accept and adopt the national HSE standards.

*Using international standards:* As argued above, the international standards, contrary to what the law says, may not replace the national standards. However, they may still be used as long as they do not explicitly contradict the national standards. Therefore, the international standards may be used voluntarily on top of the national standards. This is problematic: a standard gives guidance to how a process or product should be designed in high detail. There should not be much room for

interpretation, and it should be ridden of ambiguity. If you already have a national standard for a type of product or process, then chances are that another standard would contradict certain elements of the national standard. Therefore, the international standards would in many cases be difficult to implement fully. Even though FMC Technologies on a corporate level recommends the use of certain international standards, FMC Eurasia finds that these are not viable for use in Russia (Ibid). Almost all the standards they use are *de facto* mandatory standards of the Russian Federation.

*OHSAS 18001:* Although almost all standards they use are national standards, FMC Eurasia still use a select few standards that are seemingly acceptable to use. The most significant is the OHSAS 18001 (Occupational Health and Safety Management Systems-Requirements), which is a standard within the British Standards system. Its purpose is to provide guidance to create an efficient HSE management system. It is widely used, and does not only apply to the oil and gas industry. While detailed and occasionally difficult to use, it is not detailed in the sense that it will contradict any of the oil and gas-related standards of Russia (Ibid). FMC Eurasia is pursuing to fulfill all the requirements of this standard, but they have yet to be rewarded a certificate of conformity[9]. They will attempt to get this certification within a year, but the first and foremost priority is to use the OHSAS standard as an instrument to create a better managerial system for HSE in lieu of something similar in the Russian requirements:

> *"It is voluntary, but we understand that without this standard [OHSAS 18001], it's not possible to develop a real HSE system based on Russian requirements, because there is no system in Russia, at all."*
>
> Informant 2, 2015b, interview

However, fully implementing OHSAS is not only challenging in its own right, as the amount of requirement is almost staggering, but it is also particularly difficult in Russia (Ibid). The main reason for this is that the standard, to some extent, may be in conflict with national standards on certain levels (Ibid).

*Amount of standards:* The problem with the use of standards is not only that they are mandatory, but also that they are many. For a company like FMC Eurasia, whose activity span is relatively modest, there are still a lot of standards that must be maintained at all times. They are

[9] Licensed organizations may award companies a certificate for acceptable conformity to the OSHAS standard. This involves a preliminary audit, as well as annual audits for the three years of duration of the certificate. Companies often pursue this certification to boost their reputation, gain trust, become a more attractive workplace, and most importantly reduce the risk of hazards and accidents.

unsure of the exact amount of standards they use, but it is certainly "hundreds of them" (Ibid). Extrapolated, this figure may be in the "thousands" for vertically integrated oil and gas companies, whose activity span is much broader than in FMC Eurasia. Because of the large amount of standards necessary, the company must dedicate a lot of time upon the successful implementation of these. Of course, dedicating a lot of time on something that is inherently good for the safety of the workers and the environment can't be said to be a waste – but this leads us to the central question: do the standards even work?

*Value added from standards:* The standards all share a purpose, which is to ensure safety in the operations. And in principle, the standards imply input factors: the company invests time and money into implementing the standards. As with any investment, they hope to receive a net increase of value. This value refers to the sum of the contribution to the HSE, so we speak now in abstract terms, not dollars and cents. We asked the HSE managers if they feel as if the investment pays off – do the national standards add more value than they diminish from implementing them? The answer is two-fold: in the first level, the standards *do* contribute to safety occasionally. But the level of detail and work associated with them makes it questionable whether they are "value-efficient":

> *"But I would say in most cases the national standards make our work worse and more difficult. Of course, in these standards, there are explanations of how to work safely, but as I told before, there are too many details."*
>
> Informant 2, 2015b, interview

However, the answer above only compares the use of national standards with using nothing at all. If we consider relying on international standards as the "alternative costs", then the assessment of the efficiency of national standards decreases. A lot of this can be explained by the difference between the national and international standards and how they generally function. National standards are often richly detailed and states both *what* should be done and *how* it should be done. International standards, in principle, are mostly just concerned with *what* should be done, but leaves the *how*-part to the company (Ibid). For example on the topic of training: an international standard would say "the employees must be properly trained in the operations they do on a daily basis"; the national standard, on the contrary, would say "all the employees must pass this and that training exam every year; they must sign all the necessary forms; these forms must be stored for 5 years; and so on" (Ibid). In principle, it makes it less ambiguous, but the HSE managers believe that it is value-detrimental simply because it is not context-appreciative. The international standards recognize that all

organizations are different, and must therefore apply their unique solution to meet a uniform goal, but the national standards seek to implore uniform solutions to uniform goals: no flexibility.

**Holistic HSE integration**

In the legislative analysis, we did not discover overwhelmingly large differences with respect to the concept we dubbed *Holistic HSE integration*[10]. With few differences from how the international company is used to manage HSE, there would arguably also be few challenges in meeting the requirements. The company experiences five such challenges that we assign to this category.

*HSE department:* Due to uncertainty of business prospects as a result of economic sanctions, the company is unsure whether to expand the HSE function or not (Informant 1, 2015b, interview). Only if the business will be established, the company will expand the HSE department to fit with the requirements. Notably, this would be the same problem in Norway, where establishment of an HSE department is also required for the companies. There is therefore a constant dilemma whether the legal obligation to implement an HSE department is considered more important than the net value such a department adds to the company.

*Full compliance:* Operating under a set of laws, one would think that the company aims to ensure absolute compliance with the requirements of said laws. This is not the case for FMC Eurasia and supposedly many other companies in the Russian oil and gas industry (Informant 2, 2015b, interview). The reason is quite simple: it's impossible. Not only because there is ambiguity in the laws, as there may be mutually exclusive requirements from different laws, but only because of the sheer amount of laws and detailed requirements (Ibid):

> *"I would say it's unreal. Each company has their specific context, but the legislations don't care about that. If you're an oil company, you need to follow all the procedures, no matter how big or small you are, not matter which activities you have. And to follow all the procedures… Let's just say there is not even a single company in Russia who fully complies with HSE legislation. It's really not possible."*

Of course, even though none of the companies have full compliance of the regulation, it doesn't mean that the companies are all getting punished far and wide. Rather on the contrary, the

[10] Content that is related to the management of HSE via manifesting its importance as an integral part of the overall project management, or via specifying methods of HSE management.

companies seem to find a way of discovering which parts of the law that matters and which don't. This is particularly difficult for international oil companies lacking experience from the Russian HSE system. Such was also the case for FMC Eurasia, whose first HSE manager had only experience from the US, and not from the Russian oil industry. Only the HSE engineer, who's hiring took place two years after the startup, had such experience, and knew which laws were important to follow, and which could be ignored. Another implication of this "semi-obligation" to follow the law is that the companies must be able to argue well with the authorities in the event of an inspection. If they are noncompliant, they must be able to convince the inspector that they're still managing HSE well (Ibid). Certain companies are more experiences with this way of dealing with HSE, and allegedly have the ability to be strangely persuasive when inspectors are afoot.

*Observation:* As mentioned in chapter 5.1.2 on *objectives, goals and strategy*, the company wishes to increase the level of observation in the company, i.e. the reporting of minor incidents by the employees. This is made possible by having observation cards that the employees can fill in and submit. See figure 23 for a scan of the observation cards used by FMC Eurasia. Unfortunately, this is not something that is covered by the Russian legislations, and it is not legally required to have observation cards per se. Even at that, as already mentioned, the [National Oil Company] flat-out rejected the idea of having observation cards on their platforms and boats. FMC Eurasia experiences that the unfortunate ill will towards observation cards can be a derivative of what they describe as the Russian mentality. The employees would rather ignore and avoid reporting near-misses and minor incidents for reasons they cannot comprehend (Ibid). Whereas on the contrary, the company constantly seeks to motivate the employees into submitting observation cards, so that the HSE management can know everything that is going on with respect to HSE (Ibid).

*Involvement:* Related to the observation issue is the employees' involvement in the sphere of HSE. As we found in the comparative analysis, the participation of employees was not a major topic in the HSE regulations of Russia, and the employees' rights and duties are different than in Norway. However, in order to make their efforts more potent, the HSE managers seeks to include the employees more proactively, engaging them in discussions and involve them in the decision-making process (Ibid). This is lacking at the moment, and something they are trying to work on. The reason why it lacks is thought to be the same as above: simply the Russian mentality. The employees do not want to be a part of the HSE management – "the HSE management is the job of the HSE managers" (Ibid).

*Cross-border engagements:* As we found in the legislative analysis, the companies operating in Russia may use employees from other countries – and as elaborated earlier in chapter 5, FMC Technologies internationally tries to facilitate this practice. However, for this issue, the laws of other countries are the source of the problem, and not the Russian laws. When the company uses foreign employees, most often they have to comply with the working environment laws of the other country as well as the Russian one. This has occasionally proven to be difficult for FMC Eurasia:

> *"We had a case with a Norwegian guy; he got an SMS from his girlfriend who was very upset that he left without kissing her goodbye. He said that he had to go back and resolve the issue. The Norwegian law says that no matter the reason, a person can leave the platform at any time. What if he commits suicide? In Norway they would fly a helicopter and save his ass. FMC had to pay for the boat to come and fetch him. And we had to lie to [National Oil Company]. Because we will never be able to explain that he left because of his love drama. The distance from Norway to Sakhalin is 10 000 km and it takes 4-5 days to send the replacement guy."*
>
> Informant 1, 2015b, interview

In overcoming this challenge, however, FMC Eurasia almost exclusively uses technical specialists from Norway when they need to hire someone from abroad. This is not because they are so appreciative of the Norwegian labor code, but rather that they only need to have knowledge about one foreign law. Therefore, the company is interested in both the Russian and Norwegian HSE regulations.

**HSE Culture**

The legislative differences we found related to HSE Culture[11] were centered on the formal requirements for establishing sound HSE cultures, health care service, safety measures to prevent accidents on people, as well as competence and training. The input the company offers differs slightly from the findings in the legislative comparison.

*Establishing HSE culture:* As there is no formal requirement to establish a sound HSE culture in Russia, there is also no standard for how this is supposed to be done. With the lack of a standard,

[11] Content that is related to the safety and well-being of human lives through better interpersonal practices, healthcare services and security measures against hazards not necessarily negatively impacting the natural environment

the company is free to interpret their solution – if any – the way they see it fit. Informant 2 (2015b, interview) regards it as utmost important that there is a sound HSE culture in the company in order for the HSE efforts to work as intended. In a sense, they believe that the HSE culture is somehow the fundament of everything that involves humans with respect to HSE, making many of the other issues derivatives of the HSE culture: no culture, no success (Ibid). However, to create a culture for HSE, even in a relatively small organization, is easier said than done, as the company struggles to see any real involvement from the employees (Ibid). However, this is something that depends on the position of the employee: office workers generally tend to care a lot less about HSE than the technicians and on-facility workers. This is because the latter group is exposed to a lot more danger in their daily routine, and knows that the consequences of sloppiness can be fatal (Ibid). The office workers, however, believe that they are just like any other office workers, but because they work in an oil and gas company, there is an over-the-top obsession with HSE that also they are required to follow – but they do not truly believe in its legitimacy (Ibid). Therefore, establishing a sound HSE culture throughout the organization is challenging, but FMC Eurasia still ranks theirs as among the best in Russia (Ibid). However, they have not used any particular methodology of making this assessment (Ibid). There are services to review and improve HSE culture, as for example DuPont's digital evaluation of HSE culture[12]

*Categorization:* The Russian law is not categorized, which is problematic for a company of the stature of FMC Eurasia. By categorization, we mean a more refined specification of for which kinds of activities and which types of companies certain elements of the law is applicable towards. Considering that FMC Eurasia is a relatively small company with relatively few activities, they would hope that some parts of the law could be disregarded. Example: the Russian standards define work with monitors as hazardous due to the traditionally large sizes and intensities of production monitors in oil and gas (Informant 2, 2015a, interview). And since monitors (including all types of computers and tablets) are "hazardous", then working more than three hours on a monitor is considered "harmful condition", and therefore warrants a medical check-up. So everyone in the office working for more than three hours on a computer must be submitted to a medical check-up, which the HSE manager considers unnecessary (Ibid). They wish that the law would be updated, and for our

[12] The DuPont method is a complex digital system based on ten principles. The three most important: 1) All accidents can be prevented; 2) People are in the center of focus; 3) Compliance in anchored in good recruitment and training. Using the algorithm, the company receives a score determined by the three main blocks: 1) leadership; 2) organization; 3) efficiency of key business functions. From there, the company knows if and how they need to improve (Myasnikov, 2015, presentation)

example with the monitors, it would mean that the monitors that are actually harmful (as opposed to modern computer monitors) would warrant this requirement.

*Medical insurance:* The medical care requirements of the Russian oil and gas industry are, as we found in the legislative analysis, similar to the Norwegian practice. These aspects of the HSE management do not make up a major challenge for the company. However, there is one experienced particularity related to the health care – more specifically the health insurance of the employees. If there is an accident on a facility operated by another company, then the FMC Eurasia employee wounded will receive treatment on the medical center on the facility at the expense of the operator, because the operator is the responsible party in this respect (Informant 2, 2015b, interview). However, should an accident occur, the question isn't only about treatment, but also compensation. There are two forms of compensations for the employees of FMC Eurasia. First, they have their own, global compensation program for workplace accidents. All the injuries on the workplace will be compensated depending on severity. Additionally, if the accident happens on Russian soil, the government Russian government provides compensation to the injured person – or in the event of death, the deceased person's next of kin (Ibid). This compensation is due only if the person isn't to blame for his own accident, which leads to an interesting dilemma;

*Employee security:* Negligence of HSE procedures can be dangerous; not only for the neglector, but also for his peers. Therefore, conscious negligence of HSE procedures in FMC Eurasia is struck down on with an iron hand. As a matter of fact, the HSE managers state that noncompliance to HSE routines is the only way a person can get fired from FMC Technologies (Ibid). In the event of an incident, the company would always investigate what caused the issue, and it should be easy enough to determine whether the necessary HSE measures were performed or not. However, person's lack of performing a certain task must also be included in the notification sent to the authorities after an incident (all recordable incidents must be passed on to the authorities) (Ibid). FMC Eurasia, in respect of the employees, will only do this with incidents with minor harm to the neglector's life. If a person is responsible for an accident, but still severely injured himself, and FMC Eurasia goes on to tell the authorities that he is to blame, he will not receive the governmental compensation mentioned above. Therefore, in serious cases, FMC Eurasia will not give blame to the person responsible, so that he will still get his compensation from the authorities (Ibid).

**Security**

The company does not experience a lot of challenges within the concept we have chosen to call Security[13]. The two most important problem areas related to this category are stop-clauses and maintenance.

*Stop-clause:* The stop-clause of the Norwegian oil and gas industry – as well as in many other countries – allows for the employees to stop all work on the facility, or a part of the facility, if they believe it is not safe to continue production. In Russia, no such rights exist, but the company may allow for it if they please. FMC Technologies globally usually operate with this policy, but FMC Eurasia is conflicted by it. Not only because they do not fully agree with the reasoning, but also because it would be difficult to implement. The problem is that the employee may not necessarily understand all the implications of stopping a process. In a complex chain of events, like for instance in a refining facility, then stopping one part of the process may lead to unforeseen and possibly dangerous consequences for another part (Ibid). Even if FMC Eurasia would let their employees have this stop-clause, they wouldn't get support from companies they are cooperating with:

> *"Teresa from FMC Technologies in Norway gave a presentation about the stop-clause. The [National Oil Company]'s HSE boss attended, and interrupted: "wait, what, are you telling me that your people will come to work on my platform and any employee can stop the process if he thinks it is unsafe? Is that right?" He then said that he will never let FMC people to step on his platform."*
>
> Informant 1, 2015b, interview

Considering that most of the scenarios where the stop-clause actually involves any serious implications, i.e. on the production facilities, FMC Eurasia will be in cooperation with other companies, and may therefore not implement such a policy among their employees, whether they want it or not. In the offices, it's a whole different question, and the stop-clause is already implemented – as evident on the observation card in figure 23.

*Maintenance:* Unexpectedly, equipment and machinery must be maintained regularly. Maintenance is quite costly for FMC Eurasia (Informant 2, 2015a, interview), but this isn't a problem in its own right – maintenance is of course an expected expense. However, the fairly rigid procedures

[13] Content that is related to the safety of human lives as well as the environment through implementing specific practices aimed to mitigate risks of hazards and accidents possibly impacting the safety of humans and the environment.

required in the Russian regulations are making maintenance more costly than the company thinks it needs to be (Ibid). The regulations say (see chapter 4.3.4.5 on *security*) that all the equipment must be registered with a serial number, and absolutely everything must be inspected and maintained within a cycle of 10 days. This has three negative implications for the company. First, this means that the company must undergo a lot of maintenance they would otherwise consider unnecessary. While they appreciate that sensitive equipment certainly must be kept a keen eye upon, they don't believe that absolutely everything necessarily must be inspected regularly – and certainly not as often as every 10 days. This just adds to the amount of hours needed to complete the inspection and maintenance, and therefore increases the company's costs (Informant 1, 2015b, interview). Second, it can lead to sloppiness from the inspectors. When the inspectors have a huge list of items they must inspect – knowing that almost all of it will be in good condition – they can occasionally lose focus of what they are doing. The amount is overwhelming, and they fall for the temptation of "letting things slide" – crossing off an item as "inspected and in good condition" – unchecked, which is a slippery slope in terms of work mentality. Suddenly developing a subjective assessment of what is and what isn't important to inspect, the inspector may eventually ignore a fault potentially leading to an accident (Ibid). The HSE managers reason that it is more sensible to make the inspectors go through fewer items, so they will appreciate the importance of everything they are supposed to inspect, but there is nothing to be done but to accept the law for what it is: law (Ibid). Third, having all the items on a 10-day rolling deadline routine completely ignores some of the "real deadlines" relating to the actual lifespan of the items. Two types of items should be prioritized: the ones that have low *durability* and the ones who have high *sensitivity*. The low-durability items break more often, and the high-sensitivity items are more prone to lead to accidents upon failure (Ibid). However, any such prioritization is impossible to consider when everything is on a rigid 10-day scheme.

**Documentation**

The sphere of documentation[14] contributed to some of the major findings and conclusions from chapter 4, and as expected, there are a few problems associated with documentation for the company.

[14] Content that implores, recommends or suggests efforts to document a situation or a process, as well as to maintain formal relations with an external entity; either a governmental authority or the public.

*Paperwork & bureaucracy:* FMC Eurasia is severely burdened by the HSE managers describe as excessive bureaucracy in the Russian oil and gas industry. The regulatory framework calls for a lot of reporting, applications for approval, inspections, and so on – all leading up to a massive necessity of paperwork. As a rule, most of the aspects of the HSE management must be documented somehow, especially with respect to controlling measures such as the incident investigation elaborated on below. Generally speaking, the entire concept of paperwork and bureaucracy is considered the greatest challenge for the international oil company establishing business in Russia:

> *"The biggest challenge in Russia is the amount of unnecessary paperwork and requirements thereof, and everything seems to be done so that they can identify somebody who is responsible for an incident in order to punish them. It is all about punishment, and that does not improve HSE."*
>
> Informant 1, 2015a, interview

Among the reasons why the paperwork and bureaucracy pose such a challenge for the company is that it is time-consuming, but not value-adding, as it does not make the company manage HSE better – it only makes the authorities able to keep tighter control of their management. It is also quite little the company can do in order to prevent this challenge: the paperwork must be done in order to operate. There are no shortcuts. The remainder of this section will elaborate on some of the more specific issues within documentation.

*Prikaz:* A curious feature is the prikaz (see chapter 4.3.4.6 on *documentation*), i.e. the document all the employees must have, explaining their position and responsibilities. This is the document that facilitates the punishment scheme Informant 1 referred to in the quote above. Without it, the authorities would not know who is responsible for the various aspects of the operation. Supposedly, this is the whole purpose of the prikaz. The HSE managers must also at all times ensure that the prikaz system of the company is adequate: not only must all the employees have a prikaz – but all elements of the operation must have someone with a prikaz assuming responsibility for said element (Informant 1, 2015a, interview).

> *"The prikaz creates bureaucracy because a state representative is going to walk in and say: "Show me the prikaz for this, show me the prikaz for that". If a sling breaks and somebody gets killed he will ask who was responsible for the slings, and we must show him the prikaz and find the one in charge in order to punish"*
>
> Informant 1, 2015a, interview

*Incident investigation and reporting:* The quote above is also related to a third component of the documentation concept. Whenever an accident occurs, an investigation commences. This is initiated by the initial reporting of the company towards the authorities. Giving notice of an accident isn't necessarily easy: Informant 2 states that they do not accept mails or e-mails, and it is rather unfortunate to contact them by phone. On the contrary, it is better to go to their office and explain to someone there face-to-face what happened. The main goals of this process is to get a signature from someone in the authority (Rostekhnadzor) who can verified that they have been informed about the incident. If such a signature has been given, then the formal requirement for the company is fulfilled, as far as incident reporting goes (Informant 2, 2015b, interview). The Labor Authority must also be notified, as well as the Russian Insurance Fund for incidents where a governmental compensation may be appropriate. The deadline for this is 24 hours after the incident, so it is quite urgent (Ibid). From there, the company hopes that the authorities do not commence a formal investigation of the incident. The incident investigation is a drawn-out and resource-consuming, and just explaining its way of unfolding would, in the words of Informant 2 (2015b, interview), "take two full days". It is important to make notice that this sort of "incident investigation" refers to the authorities' investigations of the company – and not the company's internal investigation procedures, which are more recurrent.

*Agency relations:* In chapter 4, we discovered not only differences in the legislations themselves, but also some of the institutions above them. We found that there were quite a lot of ministries and agencies involved in the HSE question of Russia, and this turns out to be problematic for the company. The problem is perchance not so much related to the *amount* of ministries and agencies. With some experience, one quickly learns who is responsible for what, so the question of where to address their messages isn't big (Ibid). However, what constitutes a more serious problem is the seeming lack of communication between the governmental authorities. As the ministries and agencies seem to be incapable of cooperating on a common topic, HSE managers feel as if the company itself is in the center, having to organize and coordinate everything between the various agencies in order to keep the wheels rolling (Ibid). These wheels are rolling on a road with many spikes and bumps – and a single mistake in a piece of paper can ruin everything (Ibid). Therefore, the company must be scientifically accurate when filling out the paperwork, so that no typing errors will render the form inadequate.

**Sanctions**

The seventh and last concept analyzed in chapter four is sanctions[15]. FMC Eurasia only considers one particular problem with the sanctioning of the Russian oil and gas industry.

*Punishment as indulgence:* It's no secret by now that the HSE of a production facility is a determinant of the collective efforts of all the participants. In the contemporary oil and gas industry, there are usually several participants involved – especially for FMC Eurasia, whose role is inherently a participant: a support company, and not one that runs the show. Effective HSE management for FMC Eurasia is therefore largely influenced by the effective HSE management of their peers. Unfortunately, their peers are not always as interested in running a solid HSE management, as measured by degree of compliance. The legislative comparison found that the punishment levels for serious offenses are more or less the same for Norway and Russia – albeit a bit higher in the latter. Those were punishment levels for serious offenses leading to environmental damage through pollution, or injuries or death in people. However, none of the regulations were clear on how the minor offenses are being punished. According to Informant 2 (2015a, interview), violations of formal requirements (e.g. a missing prikaz) result in fines between RUB 20.000[16] – 30.000[17], which is a very modest sum for the oil and gas companies. The informants previously told that they believed the punishing mentality of the Russian authorities was ineffective in improving HSE. However, in order for the punishment mentality to have any potency at all, they believe that the punishment levels could have been higher (Ibid). The situation now is that they find their competitors and cooperators knowingly neglect required HSE routines because they do not believe they pay off – and the punishment if they get caught is too mild to make an impact. Due to this "cheap indulgence" from HSE, their contemporaries skip the HSE formalities altogether – and therein lies the problem for FMC Eurasia. Firstly, they get competitive advantages from not having to spend resources on HSE compliance (after all, they believe in monetary terms that it is cheaper to accept the fines than to do all the necessities). Secondly, they worsen the HSE situation for FMC Eurasia: as explained above, HSE is the sum of the collective efforts of all their cooperators. If their cooperators neglect HSE, then it decreases the safety of the facility FMC Eurasia is working on (Ibid).

[15] Content that is related to the effects of unsatisfactory compliance and punishment thereof.
[16] Exchanges into NOK 3137 and USD 386 on April 14th 2015
[17] Exchanges into NOK 4706 and USD 579 on April 14th 2015

### 5.2.3 Track record

With all this challenges in mind, one would perchance suppose that FMC Eurasia is constantly troubled by accidents, hazards and legal repercussions. Fortunately, this is far from reality. While the challenges are indeed challenging, that does not mean that the HSE is managed poorly in FMC Eurasia. On the contrary, we find that the HSE managers' clarity of which challenges they are working with aids them in handling them adequately. In its six years of operating, the company has only experienced two serious recordable incidents[18] on their territory:

1) Sakhalin, Russia: A Norwegian technical specialist sent from the Bergen office was injured as the technical equipment he used failed. A shard of metal was ushered from the machinery he was working on and shot into his skin. The shard had to be surgically removed by the doctor at the facility, and therefore the incident was labeled "recordable incident".
2) Sakhalin, Russia: The same Norwegian technical specialist was doing maintenance work on the platform. His task was to wash a piece of machinery. On the machinery was a small cavity he did not see. While using the high-pressure cleaning equipment, he accidentally sprayed the cavity as well. Inside the cavity, a large amount of a greasy substance had amassed, and this substance was quickly pressured out of the cavity and onto the employee's face. Even though the employee allegedly wore protective glasses, the greasy substance got into his eyes. Therefore, he had to visit the doctor a second time. Again, "recordable incident".

Fortunately, the person involved in these two incidents was not seriously injured on either of the occasions, and the medical treatment proved successful. In terms of FMC Eurasia's track record, these were the worst examples of accidents, which can't be said to be all too bad. Even at that, none of the incidents were technically assigned to FMC Eurasia, as both the incidents involved persons not employed in FMC Eurasia – as his place of employment is in FMC Technologies, Bergen, these incidents were both recorded thereafter. The company has never experienced lost time[19], but has experienced several near-misses[20]. These are not kept track of in their registers, and thus not available

[18] A recordable incident is an international industry term that means that a person had to stop his work to seek medical assistance.
[19] An incident that involves the person involved having to take time off from work following an accident or injury. This is the third degree of incidents, after "recordable incident".
[20] Incidents that under other circumstances could've been recordable incidents: nothing happened, but it could have with a slightly different chain of events

for analysis. The company has also never been inspected by the authorities, and in that respect never received fines for lacking compliance with the HSE regulations.

## 5.3 1st order of analysis: systematization of HSE challenges

The 1st order of analysis, similarly to that of chapter 4, is a rendering of the empirical data – a basic understanding derived from the data alone, not yet in light of theory. The previous two subchapters have reviewed some of the major challenges the company experiences with managing HSE, respectively divided into two sub-categories; non-legislative and legislative challenges. The non-legislative challenges cannot be blamed on the legal framework per se, but is still made up from challenges that cannot be ignored. The legislative challenges are based on issues the company experiences that are somehow related to the Russian regulatory framework; with special emphasis on how this differs from the regulatory frameworks the corporation is more experienced with, i.e. the Norwegian regulations. The structure from there on is based on the findings from chapter 4, and therefore also the 7 recurring concepts. In that respect, the company's HSE-related challenges can be assigned to a system based on whether they are non-legislative or legislatives, as well as the legislative concept they belong to. This is illustrated in figure 24.

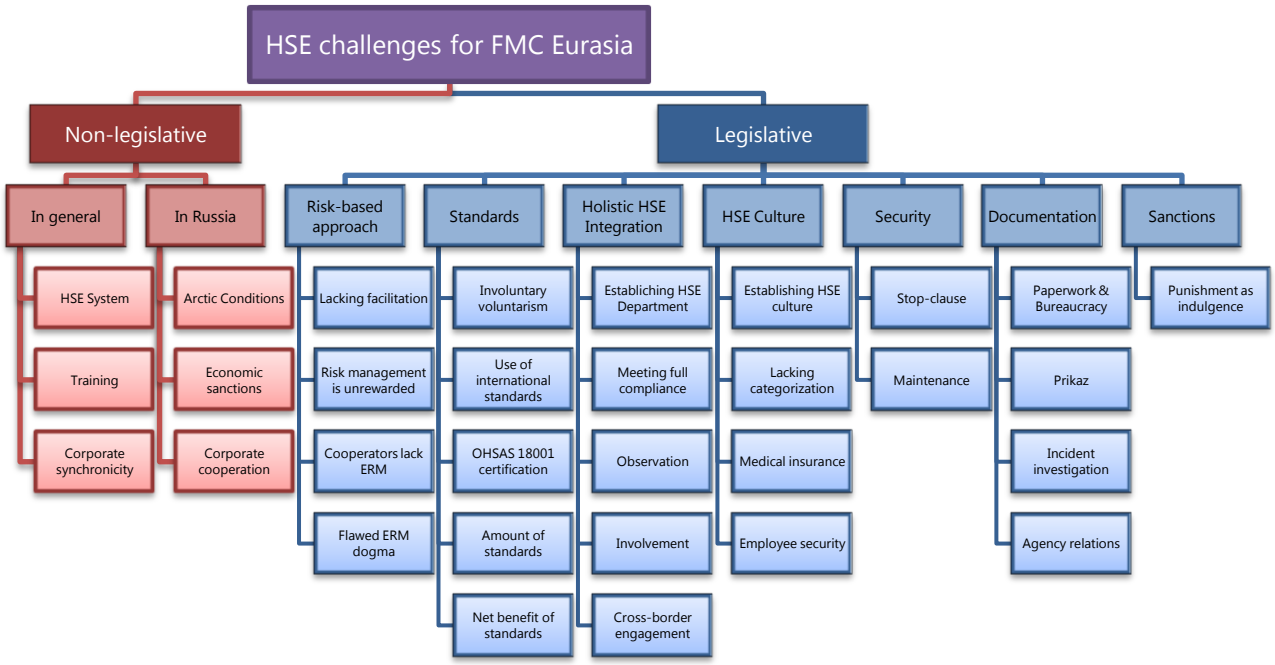


**Figure 24:** Main challenges in the HSE management of FMC Eurasia

One of the ideas behind doing the comparative analysis of legislations was that the main differences between the legal frameworks would also be evident as the main challenges of HSE management. This is because the company is experienced with one of the legal frameworks, but not the other. And therefore, the more different the legal frameworks are – the more difficult establishing compliant business becomes. Now that we know the differences and the challenges, it is interesting to examine this linkage. First things first: the non-legislative challenges have, per definition, nothing to do with the differences in legislation. In that respect, they can safely be disregarded. The legislative challenges may at a glance appear to be very similar to the pattern of the legal differences. However, most of that can be explained by the fact that they are structured in the same way – and that is a matter of presentation, not substance.

Even though the correlation is not perfect, there was very few of the challenges who were genuinely surprising, having already analyzed the legal differences. Among the less obvious challenges were everything related to the troublesome cooperation with Russian oil companies; that the risk-based HSE management is so poorly received in Russia; that the proposed voluntarism in the use of national standards is not practiced in reality; and that some of the oil companies regards the punishment for violations as reasonable trade-offs for neglecting HSE requirements. All of these were not evident from the text of the law, and just come to show the importance of understanding the discrepancy of *theoretical* (normative) differences and the *practical* (descriptive) differences. Most of the other challenges could, however, be easily detected in advance just by analyzing the law. For example, by reading the legal framework, the establishing company would quickly learn that ERM is neither encouraged nor discouraged by the law; that the amount of standards is staggering; that meeting every single requirement is nearly impossible; that the Russian state compensates for injuries; that there is an overwhelming amount of paperwork required to operate; and so on. These should therefore not come as a big surprise for the companies who prepare well before attempting to enter the market – but they are challenges nevertheless.

## 5.4 2nd order of analysis: institutional analysis

Chapter 2 on *Theory* presented two theoretical fields used in this thesis. First, there was a review of HSE as an academic and managerial field, and some fundamental concepts and ideas leading up to what can loosely be coined as theory of HSE. Secondly, there was a review of the already established

theory of institutionalization, with special emphasis on three different ideas: mechanisms of isomorphism; ceremony/myth; and formal/informal institutions. The first idea was applied to examine the legislative differences in Norway and Russia by looking at the underlying drivers of isomorphism, and we found support for the Norwegian regulations being normatively pressured as opposed to Russia's coercively and partially mimetically pressured regulations. The second idea (myth & ceremony) will be used to examine the role of the companies in the following subchapter. The third idea (formal/informal institutions) was paired with a contextual dimension and applied to the HSE regulations to create a model that aims to explain why HSE regulations differ between two countries (figure 19). This model will applied for the case study, as it will be used as a base to examine the company in question.

### 5.4.1 Formal structure as ceremony and myth

Chapter 2.2.1 on *Institutionalism from Berger to Powell* recited the fundaments of Meyer and Rowan's (1977) theory of formal organization as explained by myth and ceremony. Here, it is important to distinguish the *myths* that are a part of the environment, and the *ceremony* that the organizational structure eventually maintains. This subchapter will analyze whether the myths in FMC Eurasia's organizational environment ultimately leads them to a ceremonial formal structure, and whether this is significant in managing the challenges uncovered in the 1st order of analysis. Whereas the previous analysis simply laid out the empirics, this 2nd-order analysis will try to illuminate the findings in a theoretical light as well.

#### *5.4.1.1 The myths*

There are many myths in a society that could ultimately influence the formal structure of a company. Among the most strongly rationalized institutional myths are public opinions, the opinions of the constituents of the society, educational and academic knowledge, prestige, legal definitions and the laws themselves (Meyer and Rowan, 1977). It would seem that the highly rationalized institutional myths mentioned here have varying degrees of impact for FMC Eurasia's formal structure.

The public opinion is perchance not of foremost importance. FMC Eurasia is purely operating in the business-to-business market, as all their customers are larger oil companies. Unlike

the oil and gas majors as for example Rosneft or Gazprom, which are supplying the consumer market, the FMC Eurasia is unknown to the general population. The opinions of the participants of the other oil companies, especially their customers, may matter more, but as elaborated above – not decisive (Informant 1, 2015b, interview).

The views of the constituents can be quite important depending on which constituents that are considered. "Constituents", as in the legislative or legal/supervisory authorities of a society would of course have the influence to leave a mark on the formal structure of the organization. The oil and gas industry of Russia, as previously illuminated, is both heavily regulated and supervised. The views of the participants imposing regulatory influence over FMC Eurasia have an effect on their structure: for example, the company is still conforming to the procedures of the GOST standards of Russia, even though they on paper may be voluntary. As argued in chapter 5.2.2 on *legislative challenges,* the company still conforms to the standards because the supervisory authority expects it of them.

Knowledge legitimated through educational systems is a highly rationalized institution, especially in the sphere of HSE, which has maintained prime importance in the educational and academic branches of the Russian oil and gas industry in the last years (Muradyan, 2015, presentation). The influence of the educational conventions of the Russian industry is also apparent, as the HSE managers and coordinators in FMC Eurasia all have been educated in Russian universities, having the safety dogma of Russia in their mindset as they entered their positions.

Whether social prestige has any influence on FMC Eurasia can be tied the same answer as the importance of public opinion. In a sense, the prestige is nothing more than a special type of public opinion – appearance of excellence; taking on the projects of grandeur; displaying groundbreaking results, and so on. Prestige projects have been known to happen in the oil and gas industry – even within the field of HSE. For example, Kværner is advertising their impressive feat of "0, 0, 0" (zero health, safety or environmental recordable incidents) in their Sakhalin projects and no lost time in their Hebron project (Bruheim, 2015, presentation). As for FMC Eurasia, there was no evidence of such occurrences.

Definitions of negligence and prudence used by the courts are the definitions that determine whether the actor is compliant with the legislations. Prudency is clearly defined in the Norwegian regulations, but the Russian regulations lack such a counterpart. In lieu of such, the company must understand the *de facto* interpretations of the laws by the courts and the regulators. The company

seemed quite concerned with understanding the realities of how the inspectors and the supervisors behave, as for instance knowing which parts of the law that is more important than others; which requirements can and cannot be ignored.

The law as a rationalized institution has already been discussed in chapter 2.2.2 on *the law as an institution*. The subchapter reviewed three particular features of the law as an institution: how to understand a law using institutional terms; how to compare legal frameworks; and how the law is not derived from a universal moral. First, the legal framework can be accepted as a formal institution, and therefore be analyzed in institutional terms rather than traditional juridical terms – essentially, this is what we did in the analyses in chapter 4. Using such terms as isomorphic pressure and formal/informal institutions can lead to an increased insight in the realities of the law; understanding the drivers and pressure leading up to the law, whereas a legal interpretation is more literal. FMC Eurasia, as an international actor, is also in need of understanding legislative differences between the legal frameworks of the countries in which they operate. MacCormick (2007) emphasized the necessity of being unbiased while comparing legal frameworks. While trying to understand how the other legal frameworks differ, they should not assume that it is inferior to their native framework. Rather on the contrary, the company should not try to judge the law at all – as the only aim is to understand it, not appreciate it. Third, something that perchance is particularly evident in the case of HSE regulation is that analyzing the law with the mindset of legal positivism is appropriate. Legal positivism implies that there is no universal morality determining the law. Safety in oil and gas is certainly tied with ethics and morality, as the regulators and the companies being regulated share a responsibility for the lives of people and animals, as well as the nature in general. But the widely different interpretations of how this safety must be met mean one or the other: either the laws are not based on morality; or one of the laws is immoral. As per the second argument of non-existing inferiority of legal systems, it can only mean that the laws are indeed not based on universal morality. Whether they are or not, still does not make the companies question the legality of the law, which ultimately makes the law become one of the strongest rationalized institutions.

The rationalized institutional myths above are several of many different myths that will influence the formal structure of the organization. These myths often share two key features that are prevalent in the myths of a modern society. First, the myths are rational and impersonal/objective (Meyer & Rowan, 1977). They are based on a social purpose which in turn leads to a technical purpose – which is operationalized into a technical requirement the myth in some way or another

promotes or implores. This property strengthens the credibility of the myth, which in turn makes it seem more probably that conforming to them is necessary to ensure legitimacy. This leads us on to the second property. The modern myths are often highly institutionalized, and they hold a strong presence in a society, ranging beyond the discretion of individuals or organizations (Ibid). This means that the legitimacy of the myth is taken for granted. Rationalization and institutionalization ultimately strengthens the myths, and the result is that the organizations conform to them in order to seek legitimacy. The next subsection analyzes how FMC Eurasia conforms to these myths by altering their formal structure into a ceremonial façade.

#### 5.4.1.2 The ceremony

The argument is that the rationalized institutionalized myths change the formal structure of FMC Eurasia. The focus of this thesis is not the organization at large, but the HSE management. This subsection will therefore examine the ceremony of the HSE management of FMC Eurasia, keeping in mind the myths above and the findings from the first half of chapter 5. In that respect, three different aspects are discussed.

*Value of legitimacy:* It is strongly assumed that legitimacy is decisively important for the company. However, how important is legitimacy for FMC Eurasia? We argued earlier that their function as an oil and gas company possibly even strengthens their need for legitimacy. Three stakeholders are particularly important for FMC Eurasia: their owners (FMC Technologies), their customers (oil and gas producing companies in Russia and Central Asia), and their regulators (HSE authorities of Russia). Legitimacy should be perceived by all their stakeholders, but perhaps these three the most. The owners have the power to disband the entire operation if they believe it can be value-detrimental for the company at large. FMC Technologies would for example hardly want to be associated as "the company that caused an oil spill in the Arctic, destroying an entire eco-system", and therefore they must perceive the HSE management of FMC Eurasia as legitimate. The customers may think similarly: they are buying sensitive technical equipment for their platform. They're in it together, and they cannot cooperate with a partner or supplier by which they cannot trust the HSE management. One example of FMC Eurasia failing to be ceremonial was when they suggested having a stop-clause in their operations in Russia, which is completely non-conforming to the Russian acceptance that stop-clauses are dangerous – in turn characteristic as a rationalized,

institutional myth. This ultimately led to a potential customer claiming he would never let FMC Eurasia work on their platforms. After this incident, they conformed to the Russian requirement to disallow stop-clauses. The regulators also maintain a solid influence on the company, as they are operating with the power of the law. The authorities may under normal conditions only inspect FMC Eurasia once a year. It is a fairly sizable procedure, which involves a lot of work also from FMC Eurasia's side. However, under special circumstances, as for instance if someone reports the company or the authorities have good reason to believe the HSE is managed poorly, then the authorities may commence extraordinary inspections as they please. Thus, appearing illegitimate will result in nosiness from the authorities, which in the worst case can result in a shut-down of the operation. Just from these three stakeholder perspectives, one can safety assume that legitimacy is absolutely and unequivocally important for FMC Eurasia to ensure long-term survival of the organization.

*Efficiency criteria:* Meyer and Rowan's (1977) main argument was that organizations adopt ceremonial procedures, processes and policies to meet with the technical criteria of myths to gain legitimacy – even if it means at a loss of economic efficiency. And more often, increasing efficiency versus adopting ceremonies becomes a dilemma for the organization. The importance of efficiency can be discussed also locally in the sphere of HSE management in FMC Eurasia – how important is economic efficiency for them? Some of the challenges FMC Eurasia explained (as summarized in figure 24; e.g. training and maintenance) are directly tied with their associated costs, meaning the monetary aspect is what makes them problematic. There are ways in which the company could become more cost-efficient – for instance by only submitting their employees to the Russian governmental training program, which is the only obligatory HSE training. But the widespread lack of trust towards the quality of this program facilitated a rationalized institutional myth that the companies need to implement additional, internal training programs to ensure safe operations. It would be cheaper not to, but the company still conformed to the myth, making internal training programs as part of their procedures. So herein, efficiency was triumphed by ceremony. Even at that, it is questionable that the HSE department of FMC Eurasia truly concerns themselves with efficiency. Certainly, they are attempting to avoid wasted resources, but the number one aim for the department is safety – not cost efficiency. Their purpose is therefore not to add value to the company in the same sense as most other departments – their purpose is to ensure safety. If we consider thus their efficiency as determined by "efficiency in ensuring safety", the situation becomes

more difficult. Safety is allegedly their first priority, and they have a vision of how safety is achieved. If the myths of society would have the company to break their vision of safety, problems would arise. One such example can be their problem with implementing OHSAS 18001 – an international standard of safety the company believes in and has attempted to implement globally, but the Russian regulatory system makes this highly problematic to do successfully. The legitimating course of action is to follow the Russian HSE regulations, which in turn implies that they may not fully implement the conflicting OHSAS 18001, and to their understanding, efficiency in ensuring safety is compromised.

*Rules & effects:* Ceremonies more often resemble categorical rules than concrete effects. This is theorized to be the particular reason why there is a compromise between efficiency and ceremony. The myths are highly rationalized and institutionalized, with the effect that they often become highly standardized as well (Ibid). If the necessary ceremonial procedures involve a high degree of technical standardization, then it implicitly implies that there is a lack of flexibility. Being generalized to fit the social purpose, the procedures may not be tailored to the specific issues of the organizations utilizing them, and thus inefficiency arises, and the costs associated with maintaining the ceremony are indeed just that – pure costs (Ibid). That is, however, in the point of view of efficiency. "Investing" in legitimacy is at a reasonable trade-off for the organizations, which explains why their behaviors are ceremonial rather than purely efficiency-maximizing. It could be argued that the standards of the Russian legislations are rationalized, institutionalized myths. After all, they are standardized – non-flexible and uniform, imploring a set of behavior that is not tailored to the unique context of each individual organization's operations. As we found, adopting the standards, to a large extent, goes against the company's philosophy of efficient HSE management. There are many standards; they are overly complicated; and they do not add much value in terms of added safety (as per the company's own assessment). Yet they are used. Clearly, they are necessary to use in order to behave in compliance with the law – an institution – and they trade efficient HSE management (e.g. a risk-based approach) for compliant HSE management, which is thus characteristic as ceremonial. This is not only the biggest legislative challenge between Norway and Russia, but it is also the root of many of the company's most prevalent HSE-related challenges – and it is all explainable by mythical/ceremonial reasoning.

#### 5.4.1.3 Six propositions for FMC Eurasia

Meyer & Rowan (1977) made six different propositions with respect to the topics above, which by their own account is largely explanatory for the reasoning and implications of myth and ceremony (see chapter 2.2.1 on *Institutionalism from Berger to Powell)*. This subsection challenges these propositions for the case of FMC Eurasia, which will determine to which extent myth and ceremony is explanatory of their formal structure.

> **Proposition 1:** *"As rationalized institutional rules arise in given domains of work activity, formal organizations form and expand by incorporating these rules as structural elements."*
>
> Meyer & Rowan, 1977, p. 345.

There are two implications from this: institutional myths create new domains of activity in which organizations emerge; and institutional myths are created in existing domains of activity, by which the organizations adopt ceremonially. The latter is more relevant, as HSE is an existing domain of activity, in which rationalized, institutionalized myths emerge and occasionally dissolves. This is true for the case of FMC Eurasia, which is an organization in an environment of institutions undergoing certain changes. Especially among the formal legal institutions, there is emergence of new myths in Russia. The myths are not only limited to the law, but also other innovated practices in the milieu of other oil companies' HSE practices. In simple terms, the proposition states that myths emerge – and there is no doubt that these myths emerge in the Russian oil and gas industry, and that they are visible to FMC Eurasia.

> **Proposition 2:** *"The more modernized the society, the more extended the rationalized institutional structure in given domains and the greater the number of domains containing rationalized institutions."*
>
> Meyer & Rowan, 1977, p. 345.

Again, two implications: the emergence of formal organizations is more likely in modern societies; and formal organizations within a certain domain are more likely to have elaborate formal structures (Ibid). The oil and gas industry, with its many rationalized, institutional myths, has many organizations with elaborate formal structures. The companies are often highly developed in an organizational sense, having sophisticated formal structures to conform to the myths of their environment. FMC Eurasia is no exception, as evident from the formal structure explained in chapter 5.1 on *the case company: FMC Eurasia.* We argue that there are predominantly myths that drove

FMC Eurasia to structure their HSE function to what it is now. As it is difficult to get a solid grasp of all the myths in the environment, one could consider the alternative. Assuming the alternative is a cost-minimizing or efficiency-maximizing structure, FMC Eurasia would be irrational. There are several features of their HSE management that are cost-increasing and whose abandonment could cause an increase in economic efficiency: added training initiatives; implementation of international standards atop national standards; complying with labor codes of foreign workers home countries; implementing economic incentives for observation among the employees; and so on. They could all be argued to be ceremonial. Their purpose is both to increase safety, as well as to gain legitimacy. In the rare incidents in which they do not conform, the safety was not the concern, but rather the lack of legitimacy. One such example is that the St. Petersburg office per law is large enough to require a dedicated HSE manager. Due to uncertainty of future activity, they made an efficiency-based decision to postpone employing such a manager until the prospects become more certain. They have no concerns for the safety of the office under these conditions, but would not be too comfortable explaining this to the authorities in the event of an inspection.

> **Proposition 3:** *"Organizations that incorporate societally legitimated rationalized elements in their formal structures maximize their legitimacy and increase their resources and survival capabilities."*
>
> Meyer & Rowan, 1977, p. 352

The proposition's focus is on the aim of the organization, which is to gain legitimacy. This was already discussed in chapter 5.4.1.2 on *the ceremony*. There is no doubt that the need for legitimacy: (1) is present; and (2) explains their rationale for conforming to myths at the expense of economic efficiency. The survival of the organization is imperative, and legitimacy is perceived as necessary to ensure long-term survival. Meyer and Rowan (1977) are clear on the point that not all organizations' survival is determined by legitimacy and facilitated by ceremony – only those in highly institutionalized environments – which is the case for FMC Eurasia. The proposition is also concerned about the organization's resources. Those organizations that are not operating in highly institutional environments and thus needs to rely on organizational efficiency gain resources from the inherent property of such efficiency. On the flip-side, the ones located in institutionalized environments may also increase their resources through ceremony, as opposed to efficiency. A general example of this is the trust needed by banks to raise debt; only the ceremonially adequate organizations will get loans. Another example specific to the oil and gas industry is the awarding of

production licenses, which under some jurisdiction is determined by a set of factors, by which legitimacy (especially with respect to safety) is part of the decision-making process of the authorities. As resources are also needed for the long-term survival of the organization (Ibid), FMC Eurasia must ensure that these are acquired accordingly. Being part of a highly institutionalized environment, this is done through ceremony, which we argue is explanatory for the formal structure of FMC Eurasia as far as HSE goes.

> **Proposition 4:** *"Because attempts to control and coordinate activities in institutionalized organizations lead to conflicts and loss of legitimacy, elements of structure are decoupled from activities and from each other."*
>
> Meyer & Rowan, 1977, p. 357

Ceremony triumphs over efficiency to gain legitimacy. However, ceremony appeals to the organization's appearance – it is something they advertise somehow. Just as such, legitimacy is more often derived from what the organization *appears* do to, and not what it actually does. In that sense, many organizations deal with the dilemma of efficiency and legitimacy through decoupling (Ibid). Decoupling is when there is a gap between the formal policies, practices or procedures and their actual counterparts – what the company really does, and not what it tries to display. By advertising what would be conformist behavior as a ceremonial façade, but in reality doing what is economically efficient, the company could try to solve both issues. There is no evidence of such behavior in FMC Eurasia.

> **Proposition 5:** *"The more an organization's structure is derived from institutionalized myths, the more it maintains elaborate displays of confidence, satisfaction, and good faith, internally and externally."*
>
> Meyer & Rowan, 1977, p. 358

The ceremony's primary purpose is, as stated above, to ensure legitimacy and resources for long-term survival. Additionally, the ceremony may have a positive effect on the members of the organization. When being asked to participate in maintaining the ceremonial façade, the employees can also commit themselves more to the mission of the organization – making things work both in support of the façade and the internal processes (Ibid). It is a bit ambiguous whether this is the effect FMC Eurasia experiences. While the HSE managers are mostly happy with the commitment, determination and adaptability of their employees in relation to HSE, the picture isn't perfect. For example, the company struggles to successfully implement a functional observation program, and

even though the employees are told to report more incidents (the managers assume there are more incidents than being reported), they neglect this requirement. Another example is that the employees have a general aversion towards newly adopted practices, such as increased HSE involvement, discourse and decision-making with the employees. However, it must be specified that these are all office employees. The employees on the production facilities are all genuinely concerned with safety, and respects the internal requirement and thus also the ceremony. This is perhaps because they are the ones who are exposed to the largest hazards, while the working environment for the office employees is significantly more controllable. Being safe, perhaps the office employees simply do not believe in the myths the company wants to conform to – which could be evident that the myths are not rationalized or institutionalized – and therefore do not break with Meyer and Rowan's (1977) fifth proposition.

> **Proposition 6:** *"Institutionalized organizations seek to minimize inspection and evaluation by both internal managers and external constituents."*
>
> Meyer & Rowan, 1977, p. 359

The last proposition is even more valid for organizations that are exercising decoupling. Not having found significant evidence of decoupling in FMC Eurasia, it is still clear that internal and external inspections are not entirely appreciated by the HSE managers. They have not undergone a proper inspection during the six years of the company's existence. Internal inspections are not perceived as a major problem by the managers, but it is not something they actively encourage or request. During a global HSE conference for the entire FMC Technologies Corporation, the managers discussed in details their work with their corporate superiors, which seemed to be satisfactory for the corporation. The corporate internal requirement is one inspection every three years, which means that FMC Eurasia is short of at least two inspections. Perhaps the proposition goes both ways – the HSE department does not wish to be inspected; the corporation does not want to inspect. External inspections are a different case entirely. It is not a matter of choice – if the authorities intends to inspect, they will inspect. Even though the company is confident in its compliance with the regulations, it still appreciates the fact that it has somehow managed to keep out of the authorities' inspection routines.

#### 5.4.1.4 Summary

Meyer and Rowan's (1977) theory of ceremony and myth as explanatory of the formal structure of the organization can to a reasonably high extent explain specific factors and issues for FMC Eurasia. This theory is relevant because the company works in an organizational environment with a high degree of institutionalization, and which offers many important rationalized, institutionalized myths. In such respect, we argue that a lot of the formal behavior of the company can be explained by ceremonial reasoning; seeking resources and legitimacy for long-term survival by putting on a ceremonial façade to conform to the myths surrounding them. It also offers insight into why it chose to implement certain procedures that would otherwise be cost-inefficient; how the behaviors of their employees reflects the myths of their organizational environment; as well as why they are aversive of inspections and control. Commonly, organizations operating with ceremonial formal structures are also decoupling to ensure organizational efficiency. Such behavior is not visible in our findings from the interviews with the HSE managers. In the end, we support that the theory of ceremony and myth is explanatory of certain aspects of the company's behavior. However, the results are broad strokes, and not dwelling on the specifics. A more detailed analysis would require a more detailed research on the myths of the organizational environment. The data gathered is focused on the company internally, and not to a large extent its environment, and thus the analytical potential is limited. In pursuit of a theoretical analysis that is suitable of explaining a more direct linkage between theory and the behavior/issues of the company, the following subchapter builds on the second 2$^{nd}$-order analysis from chapter 4 (Contingent institutional analysis).

### 5.4.2 Contingent institutional analysis

The contingent institutional analysis is building on the results of the analysis of the same name in chapter 4. In order for the analysis to make sense, we propose the following sequence of arguments:

1) The organization maintains a set of HSE-related challenges (figure 24). These challenges are either non-legislative (6) or legislative (25);
2) Legislative challenges occur either directly from the HSE-legislations (for all companies) or as a result of differences in native and foreign HSE-legislations (for international companies);
3) The HSE legislations are formal institutions, and therefore all legislative challenges are primarily determined by formal institutions;
4) The Russian HSE legislations are determined by three different dimensions (figure 19), i.e. existing formal institutions, informal institutions and contextual factors;

5) The topic of interest is the relationship between the challenges (argument 1) and the drivers of the HSE-legislation (argument 4), because;
6) The HSE-related challenges are secondarily determined by the elements of the three dimensions.

Consider figure 25: we have already analyzed the relationship between the institution and the result. The next step is looking one step further, by examining the relationship between the institutional dimensions and the result. In essence, the culmination of this analysis is to merge figure 19 and 20 into a single figure depicting the 2nd-order relationship between institutional dimensions and the legislative HSE-challenges the company experiences.

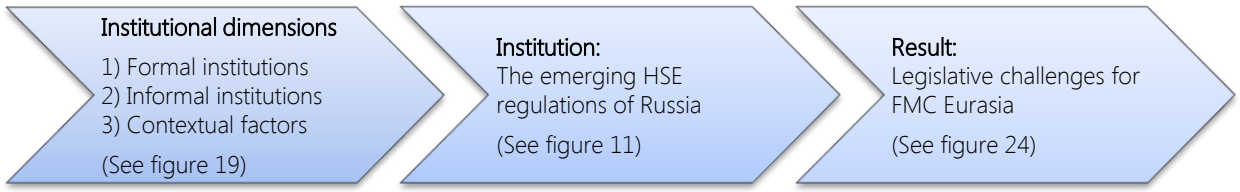


**Figure 25:** Sequence of influence

Three figures are vital for this analysis: figures 11, 19 and 24. Figure 19 illustrates why legislative differences occur from country to country; figure 11 illustrates the most important differences between Norway and Russia; figure 24 illustrates the main challenges an international oil company experiences with respect to HSE while establishing business in Russia. The latter two of these figures are almost written in stone: the high-level differences between Norway and Russia are unequivocally clear; and the challenges the company experiences are a direct testament of their own statements – and not a matter of the researcher's own opinion. Both figures are therefore attempts to make order from chaos and to paint a coherent picture of the reality of the industry and the company respectively.

As intended, the model in figure 19 should be able to predict the main legislative differences by analyzing the components of the model for two different countries. Therefore, a way to apply the model is to establish a relationship between figures 11, 19 and 24 as explained above. After all, one of the initiating assumptions was that bigger legislative differences imply bigger challenges for the company. Suppose if we find the model viable through this manner of analysis, then the outcome

would be that the model would be used not only to understand the legislative differences, but by extent also gain insight to the managerial implications of such.

It should also be noted that in order to avoid repetition, we will to the best of our ability avoid reciting what the different elements and challenges constitute. If it is unclear what the challenges mentioned imply, please find the challenge in figure 24 to locate where in the text it is described. The same applies to the elements of the model in figure 19, by which descriptions can be found in chapter 4.5.2 on *Contextual institutional analysis*.

#### 5.4.2.1 Practical application of the model

**Formal institutional dimension**

To recapitulate, the formal institutional dimension covers features of the formal institutions in the country and/or industry which in turn impact the legislative flexibility of the regulations. A lot of FMC Eurasia's main challenges can be said to stem from the features of the formal institutional dimension. This subchapter will review these challenges and proposed origins thereof with respect to the four main elements comprising the formal institutional dimension.

*Legal structure*: Some of the most important challenges FMC Eurasia experiences can be tied to the formal structure of the legislations. Not only because of the complexity that is derived from its size and scope, but also due to some inherent problems with the legislations themselves. As the company highlighted, they struggle with handling the amount of standards that is required for compliance. In lieu of unified standards, such as OHSAS 18001 – which was also problematic to implement due to the complexity of the standards – the legislation boasts a massive array of standards the company has no choice but to follow (Informant 2, 2015b interview). The company also considers the problem of recognizing the net benefit of standards[21] an issue connected to the legal structure of the standards. Additionally, the legal structure of the regulations is considered the cause for more problems for the company. Because of the lack of a specialized HSE regulation due to the spread of the legislations, there cannot be any reasonable way of categorizing[22] the legislation,

[21] Net benefit of standards is positive when the company assesses the value from increased HSE by using the standards is greater than the input costs necessary to use them, especially when contrasted to other ways of managing HSE, e.g. ERM
[22] "Categorizing" involves making certain parts of the regulation valid only if a condition is met. For example, this can facilitate that smaller companies can be saved from having to fulfill all the same requirements as larger companies.

since many of the legislations are not only targeted towards oil and gas companies[23] (Ibid). The hampered possibility of successfully using international standards is also a by-product of a complex web of national standards all falling under the legal structure (Ibid). The legal structure, as per the statements of the case company, is certainly one of the main drivers of FMC Eurasia's challenges. Because we are assuming that its challenges are anchored in the legislative differences between Norway and Russia, the legal structure's place in the model is implicitly supported.

*Governmental structure:* The "other side of the regulative coin", i.e. the structure of the government, ministries, agencies and other authorities is also a cause for a set of challenges for FMC Eurasia. Explicitly, the governmental structure, via its complexity, creates the problem of agency relations. The authority to supervise and support the oil and gas industry, also on matters on HSE, is largely divided into different agencies, and the exact responsibilities of all these seem unclear for the company (Ibid). This is particularly relevant on the topic of incident investigation, which is a complex matter messily coordinated by several different agencies. There is also support that the governmental structure of Russia drives the challenge of medical insurance, as the issues related to this is also one of coordinating reporting and getting support from the company. The company recognizes that both the legal and governmental structures are very rigid, and major reforms would be necessary to make a significant impact (Ibid). Their roles in the formation of the regulations remain unchallenged, and it is evident that the HSE regulations and some of its problems are rooted in these two elements.

*Bureaucratic practices:* A country's level of bureaucracy can differ for better or worse, but its manifestation in the Russian oil and gas sector regulation is unequivocal, and certainly the root of many of FMC Eurasia's daily problems. The problems related to bureaucracy and paperwork have been merged into one in this thesis; but it is a big challenge (Ibid). We assume that the bureaucratic practices are also manifested as formal institutions, due to written requirements in the law implicitly requiring bureaucracy. The linkage is unequivocal – but the question remains if the bureaucratic practices are so rigid that they hamper Russia's ability to change their HSE regulation. Not as much as the former two elements mentioned in this subsection, but its impact on the legislative flexibility is still there (Ibid).

[23] i.e. "…on Hazardous Production Facilities" also applies to chemical plants and other hazardous industries.

*Hierarchy:* The last element of the formal institutional dimension is the formal hierarchy in place in the oil and gas industry, both in the public and private sectors. We argued that a flatter hierarchy implies more flexibility for change, and we also found that the Norwegian and Russian hierarchies are significantly different, which in turn sparked some issues for FMC Eurasia. One could argue that the challenges related to the use of prikaz[24] are traceable to the influence of Russia's hierarchy. This is because the prikaz is a decisive tool in order for the hierarchy of responsibility to be formalized in practice. An individual's place in the organization, his or her responsibilities, staff and superiors are being explicitly described in the prikaz, and therefore the hierarchy can be proven (Ibid). Additionally, the HSE managers believe that the hassles of establishing an HSE department are present because of the hierarchal distance that is common in Russia. While not so in FMC Eurasia, which boasts a flatter structure, it is possible that HSE departments may be difficult to establish simply because it would not be in harmony with the present hierarchal structure: HSE necessarily needs to be on top, whereas HSE engineers are not top managers (Informant 1, 2015b, interview).

The four elements under the formal institutional dimension are all implicitly or explicitly leading to or facilitating legislative challenges for the case company. Similarly, they all contribute to different extents to rigidness in the regulatory framework of Russia. Therefore, on both levels, the first dimension of the model is strongly supported by the empirical data from the company in question. Another assumption of the model was that the elements, as they descent down the model, are less and less important – this was partially supported. The former two were unequivocally more impactful on the legislative flexibility of Russian than the latter two – but the bureaucratic practices caused more of a concern for FMC Eurasia than the governmental structure.

**Informal institutional dimension**

The informal institutional dimension proposes to cover the most important informal institutions with respect to HSE regulation via examining the norms, values, measurability and safety culture of the oil and gas industry within a country. This subsection will analyze how these informal institutions may lead to challenges for FMC Eurasia.

[24] A prikaz is a document describing the function and responsibility of every single employee in the company. It is required to have, and must be showed upon inspection. While investigating incidents, the authorities tend to with the person at fault through the prikaz.

*Norms:* As the norms correspond to the generally acceptable way of behavior among the individuals of the society, the potential for trouble can be big in areas with a large cultural distance than that of the mother country of the company. FMC Eurasia highlighted two such problems that arguably are tied with the norms of behavior in Russia contra Norway. First, the problems of initiating a stop-clause[25] were tied to the norms of the HSE managers, and to a certain extent also the people who were supposed to use it. It is simply not the norm to accept that everyone should have such responsibilities and duties. The second problem originating in peoples' norms were the issues with getting the employees to partake in observation (Informant 2, 2015b, interview). Simply put, the employees of FMC Eurasia were not convinced by the value professed by contributing to observation for HSE, as this was an unusual practice to adapt to. However, it seemed that monetary incentives aided in changing their minds (Ibid). The company strongly supports that the influence of the collective norms of the members of the industry is strong and potentially decisive while formulating the legal framework.

*Values:* Similarly to the "behaviors" of the *norms*, the "beliefs" of the *values* may impact the way HSE is being treated on the company level. For FMC Eurasia, there is only one such problem to arise that they allocate to the values of their employees; their involvement. As described in the last subchapter, the company struggled to have the employees involved in matter relating to HSE – "it's not their job to do – HSE is for HSE managers and engineers" – and they were more inclined towards compliance rather than contributing to decision-making (Ibid). Coined with the fairly similar element of *norms*, these two elements are largely contributing to the more mental assumptions of HSE regulation – there is a certain mentality to respect when formulating the law.

*Measurability:* The attitude towards measurability[26] is a particular feature of the informal aspect that needs to be specifically addressed. In Russia, the level of measurability is higher than in Norway, and this causes some two problematic implications for the company. First, it is an issue with respect to maintenance, as the focus tends to be on the inspection of all the items on the check-list[27]. This problem is a matter of measurability, because a high degree of measurability leads to a focus that FMC Eurasia does not agree with (Informant 1, 2015b, interview). Instead of focusing on the importance of maintaining critical equipment, the legislation remains focused on maintaining

[25] Other Russian HSE managers thought the notion of stop-clauses were completely unacceptable (Informant 1, 2015a, interview)
[26] Measurability means that everything in a regulation should be able to be controlled and measured. High measurability implies a high degree of inspections and stringent control routines.
[27] …this refers to the infamous 10-day deadline check-list of all the items on the facility.

everything, even though most of the equipment hardly ever needs maintenance. The second issue is connected to enterprise risk management. ERM is normally not something that is easily controllable. Compared to standards, which are all either "complied with" or "not complied with", the ERM system is more abstract and it is difficult for the inspectors to assess whether the system is genuinely being implemented or if it's just a farce (Ibid). Because it is non-controllable in that sense, the authorities do not care whether the companies utilize ERM – and this affects the legislation, whose mentioning of ERM is sparse at best. These two problem areas that FMC Eurasia experiences are both the result of a single aspect of the mentality of the Russian people leading up to the formulation of the legislation. The HSE managers believe that it is certainly among the main influences of the legislation in Russia, and thinks a comparable element could be relevant also when analyzing other countries (Ibid).

*Safety culture:* We have previously defined *safety culture* as an informal institution within companies; an abstract size that in some ways can be measured or reviewed[28]. If we consider the safety culture as measurable on a linear scale, then the average safety culture score of an industry or a country gives an impression on the contemporary role of HSE. Without having used any particular methodology for assessing safety culture, Informant 2 (2015b, interview) implied that the safety culture in Russia on average is below average, which makes it difficult to establish a sound culture for HSE in the company. However, this depends on the company in question, as the international oil companies are generally better at developing a fruitful safety culture than their national counterparts (Ibid). In any case, the safety culture of the country must be considered when creating the HSE regulation: when the safety culture is weak, the law should be more stringent and coercive (Ibid).

The model covers four informal institutions – two general (norms and values) and two specific (measurability and safety culture). The general institutions have a broader scope and therefore a broader impact, and these two in combination explains a lot about the mentality of the people within a country. The specific institutions are more tailored to the question of HSE in oil and gas, and characterize two particular features that is claimed to have an especially strong influence on the HSE regulation. The case company's representatives strongly support the idea that the informal institutions influence and impact the formation of the HSE regulation, which in turn also causes issues for the company considering the differences that arise from this.

[28] Safety culture can for example be measured using the DuPont method (Myasnikov, 2015, presentation)

**Contextual dimension**

As seen above, the formal and informal institutions are both major influences on the HSE regulation, as well as considered to be the causes of some of the problems FMC Eurasia experiences in their management of HSE. However, it is clear at this point that they cannot on their own account explain the whole picture of why the legislation turns out to be what it is – there is still something important missing. Our argument was that this final dimension can only be one that adds contextual factors in the question of HSE. Essentially, these are the four most important elements that make the model consider the area of which the legislation is created.

*Risk picture:* The first element professed a simple idea: because the industries of the two countries have different risk pictures following different production methods and –locations, the legislations must treat the risk question accordingly. Russia, having a broader risk picture due to a bigger variety of production areas, as well as fielding both onshore and offshore production, face a more complex risk picture. This impacts the legislation, and drives a set of issues for FMC Eurasia. First of all, the legislations simply lack a proper facilitation for risk management. Whether this is due to a preference for standards or because of excessive variety of risk factors is unbeknownst, but the fact remains that the legislations do not field a proper facilitation of sound risk management, which is experienced as problematic for the companies that prefer such a way of managing HSE (Informant 2, 2015b, interview). Another issue also emerges, and is considered to derive from this issue. The lacking facilitation of ERM makes the ERM dogma/approach of Russia somewhat vague – the companies follow their own interpretations of what is considered the best way of managing risks, while FMC Eurasia would wish that there should be more uniformity in the way of managing risk (Ibid). As for whether the risk picture of the country impacts the legislation, the assessment couldn't be clearer: unequivocally so, the risk picture will influence the legal framework.

*Industrial diversity:* Previously defined as the variety of the companies present in the industry, the industrial diversity paves way for a couple of challenges for FMC Eurasia. First, there is a challenge related to cooperation with other companies. Also tied with the lacking facilitation of ERM management, the company finds it challenging that some cooperators use ERM and some do not. It is difficult to continue using their own practices of ERM when their cooperators do not have a matching system – and the diversity of the companies makes it apparent that some have a tendency

towards risk management, while others do not (Ibid). Second, the fact that some cooperators have a different attitude towards compliance is particularly troublesome, seeing as some companies would rather pay fines for noncompliance than attempting to comply with all the requirements (Ibid). Of course, being on the same production field, all the companies are in the same boat. To have a bad egg in its midst is unfortunate.

*History:* The historical component considers the past practices of the country in question, which in turn gives resilience to the legislations, which tend to build on what's already there and what's already being done. This is considered to be the cause of two problems for FMC Eurasia. First, there is the problem of the proposed voluntarism to standards[29], which is consider nothing more than empty words by the company, and not executed in reality. This is therefore rooted in the long history of rigidly required national GOST-standards in Russia, and the practice of inspecting these remains the primary concern for the supervisory authority (Ibid). Second, there is the issue of employee security[30], wherein the primary reason to fire employees of FMC Technologies/FMC Eurasia is negligence of HSE procedures. The employees anchoring in historical procedures may occasionally triumph over newly emerging procedures, resulting in discontent for the change and eventual negligence of the requirements. Therefore, the argument is that if the country has a long history of faulty and outdates HSE procedures, this will affect its participants' willingness to adapt to a new and improved system. Via these two problems we can understand why the historical component adds an important contextual factor to how the legislation can be influenced. The traditions of the past have a tendency to lock things up, and the longer they go on, the more rigid they become, making change proportionately more difficult.

*Size:* The final contextual component considers the geographical size of the area of the HSE regulation in question. While perhaps not explicitly at fault for any particular problem, the size of the country is proposed to lead to features of the legislation, which in turn are difficult for the company to handle. First, the size of the country makes it difficult for smaller companies to have the necessary amount of people trained in HSE procedures on all facilities permanently. This drives them to employ people on temporary engagement from other countries; in turn leading to a challenge of meeting compliance from meeting HSE and working environment laws across jurisdictions, having to respect both the local regulations as well as those native to the employee's permanent workplace.

[29] Referring to the law On Technical Regulation, which claims national standards are voluntary.
[30] Referring to the security of the workplace position of the individual employee, i.e. how easily employees can be dismissed.

Lastly, it can be argued that the size of it all also may determine the size of the legislations – a sizable country like Russia boasts a sizable regulation (Ibid). And the larger the regulation, the more difficult it becomes to meet full compliance with everything required by the regulations.

The contextual dimension considers two pairs of contextual input; the former two being related to the risk picture and the companies involved in the oil and gas industry; the latter two attempting to capture the influence of time & space on the regulations. The contextual dimension is considered to contribute to the changes leading to several of the challenges the company experiences, and the HSE managers support for the importance of contextual factors as an explanatory dimension is unchallenged (Informant 2, 2015b, interview).

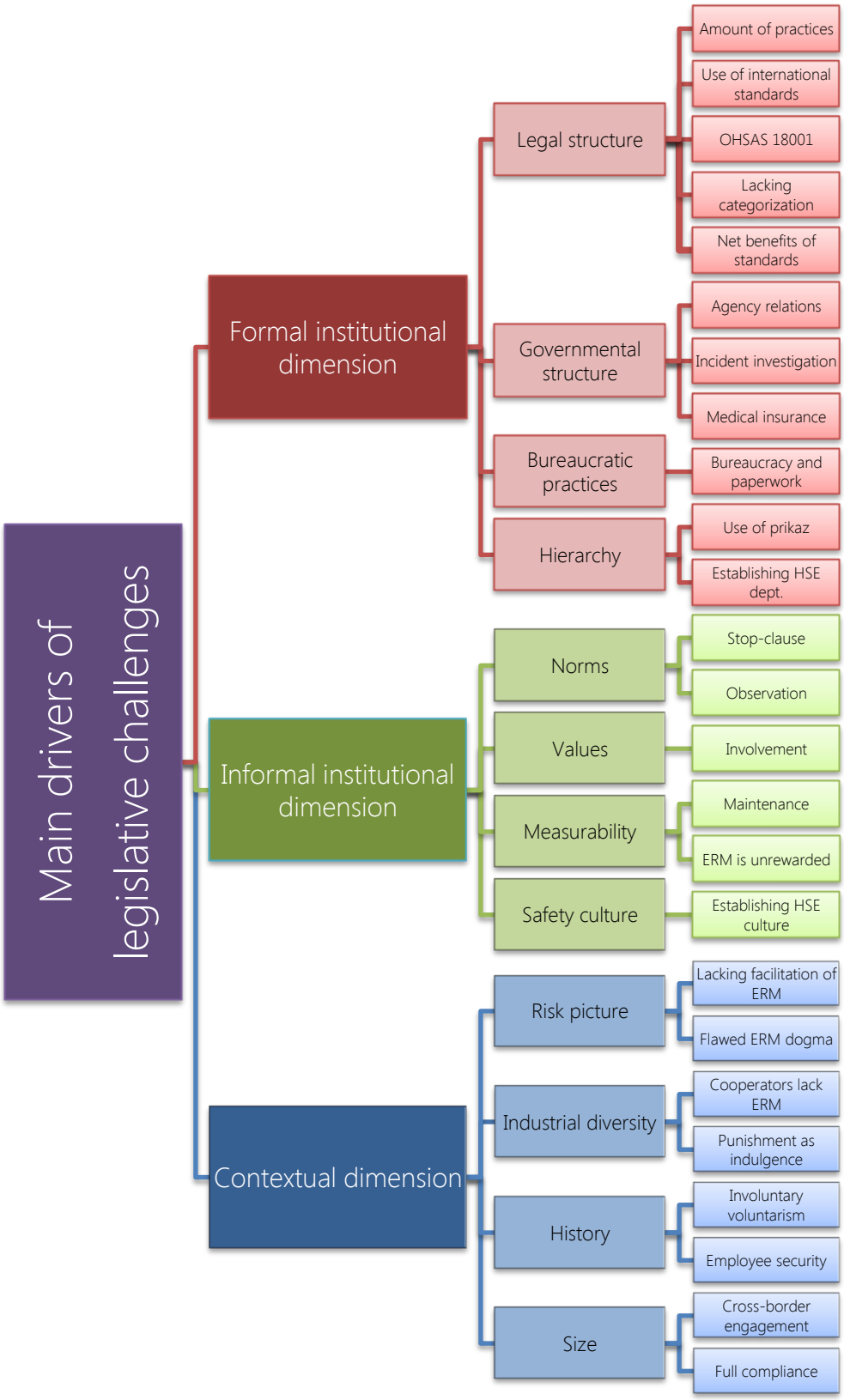


**Figure 26:** Main drivers of legislative problems for FMC Eurasia

#### 5.4.2.2 Summary and critique

In chapter 5.2.2 on *legislative challenges with HSE management in Russia* we highlighted 25 different challenges FMC Eurasia experienced, which were all argued to be based in the legislative differences between Norway and Russia. These 25 challenges, along with 6 non-legislative challenges, were summarized in figure 24. Our argument was that the legislative differences led to challenges for the company – but does that mean that the drivers of legislative differences were the 2nd order causes of the company's challenges? Our analysis above shows a clear pattern that the 12 drivers we have highlighted all contribute to the emergence of one or more problem for FMC Eurasia. Some clearly more explicit than others, but the empirical data shows an unquestionable support for the model as a whole. Figure 26 summarizes the company's interpretations of which elements of the model in figure 19 drives the 25 legislative challenges they experience.

This strengthens the model, and has three main implications. First, the model seems to fulfill its function of being able to determine the main causes of legislative differences as seen in light of formal and informal institutions, as well as contextual factors. The second implication is that it seems that the relationship between legislative challenges and HSE challenges for an internationalizing oil company is strong – the bigger the differences, the bigger the challenges. Even at that, the majority of their challenges seem to be concerned with the fact that the legislations they operate under are different than what they are used to from their native bases of operation. The third implication is that the main findings from an institutional level and the company level are strikingly similar: the legislative differences can be explained using a model based in institutional theory plus a necessary contextual dimension – and the HSE challenges of FMC Eurasia can thereby also be explained by using the model.

However, some critique or caution must be warranted. First of all, the model has only been derived from legal differences between two countries, i.e. Norway and Russia, and analyzing other countries could potentially uncover flaws with the model. It should therefore be applied similarly for two entirely separate jurisdictions. Secondly, given the qualitative nature of the study and the possibility of suggestiveness in the questions asked toward the informants, it is difficult to safely assume that there is a strong relationship between the challenges from figure 24 and their allocation to a single driver in figure 26. We tried to identify the strongest possible linkages – if any – between either one of the elements, but it is not unreasonable to assume that more than one element may drive the emergence of a single problem. Third, these are the problems experiences by a single

company, and its composition is unique. While all the challenges could be reasonable linked with a driver, it is also not unreasonable to assume that another company could experience a legislative challenge we would be unable to allocate correspondingly. Fourth, the principle of MECE[31] is not important for the challenges, but it is decisively important for the 12 drivers. To our understanding, the 12 drivers are mutually exclusive, but whether they are collectively exhaustive is hard to tell. Again, applying the model to different jurisdictions could quickly uncover whether there are other elements than the 12 that needs to be included in order for the model to demonstrate a high degree of explanatory ability.

The common factor of all the critique above is that the model requires additional application. However, given the evidence we have to work with – the empirical data, as well as the theoretical input – the support for the models efficacy is strong, and thus we can support our argument that the legislative differences between Norway and Russia can be: (1) better understood by their drivers; and (2) will have managerial implications for an oil and gas company opting to be compliant.

[31] MECE = Mutually Exclusive, Collectively Exhaustive. Everything relevant must be included, and no overlaps must be made.

# 6 Chapter VI Conclusion

The study set out to answer the research problem;

> *"What are the main differences and the practical implications of these differences in health, safety and environmental regulation and management in the Norwegian and Russian oil industries?"*

The above problem statement is formulated in a way that covers both the regulatory (institutional) and managerial (company-level) aspects of HSE – the regulators and the ones who are being regulated; the managers and what is being managed. Covering both these aspects, the thesis is essentially split in two halves, each providing answers building up under the same main question – but on two different levels. In respect of operationalizing the research problem, the study worked its way through four different aspects, ultimately shaping the structures of the two analytical parts.

The institutional differences between the HSE regulations of Norway and Russia are determined by four overarching factors.

First, there is a difference in approach to the regulations, wherein the Norwegian regulation is based on implementing a risk management system for managing HSE and the Russian regulation is based on a system of standards with technical requirements to products and processes.

Second, there is a difference in the main instrument of measuring the companies' degree of fulfillment to the requirements. Whereas the Norwegian regulation is performance-based in the sense that the end-of-year amount of accident is measured, the Russian regulation is compliance-based in the sense that the degree of meeting the technical requirements in the standards is the deciding factor.

Third, there is a difference in the way the regulations are being organized, wherein the Norwegian regulation is specialized and thus composed of a unified legislation that is fully relevant in the sphere of HSE in the oil and gas industry, and the Russian regulation is generalized and thus composed of a set of several different legislations by which certain parts may be relevant in the sphere of HSE in oil and gas.

Fourth, there is a difference in the role of bureaucracy, wherein the Norwegian regulation attempts to minimize the amount of bureaucracy to make HSE management more cost-efficient and

streamlined, and the Russian regulation operationalizes bureaucracy in order to ensure controllability and supervisory authority over the operators.

Under these four fundamental differences, exists also a set of more detailed and specific differences and similarities – some of which would often involve large implications for the companies, some of which are banalities. Their respective importance depends on the company in question.

…

The differences between the regulations were analyzed in light of institutional theory. In that respect, the study examined two different perspectives of institutionalism.

First, when seen in light of pressure mechanisms of isomorphism, the separate regulations seemed to follow each their patterns of driving mechanisms. The Norwegian regulations were strongly corresponding to being driven by normative pressure of isomorphism because of the pressure from the milieu of HSE professionals in Norway; whereas the Russian regulations bore resemblance of a product of coercive pressure due to firm control from the authorities and legal institutions – but also to an extent mimetic pressure in areas where the regulation lacks clarity.

Second, when seen in light of formal and informal institutions, the study recognized the possibility of constructing a theoretical, generalized model that can explain the main reasons behind the legislative differences of the regulations with respect to formal and informal institutions, as well as the contextual factors of the countries they belong to. Thereof, the model contains three dimensions: the formal institutional; the informal institutional and the contextual dimensions – all of which come with a set of four main explanatory elements that in combinations illuminate the 12 most important drivers of legislative differences. This is because these 12 elements contribute to an abstract friction that hampers legislative flexibility, whereas we assume that under no such friction, all HSE regulations would be more or less the same. This friction is present in both countries, leading to substantial differences between the legislations.

…

While examining main HSE-related challenges for FMC Eurasia, we found that the company experiences 31 different challenges or topics of problems in the sphere of HSE. 6 of these cannot be

tied with the legislative differences. The remaining 25 challenges can to some extent be tied with the legislative differences between Russia and the legislations the companies are used to operating under, which are predominantly the Norwegian legislations. These 25 challenges can be grouped into seven different conceptual areas based on the nature of their content.

These concepts include matters related to risk management; the use of standards; the holistic integration of an HSE system; HSE culture; security measures; documentation and sanctions – all corresponding to different features of the regulatory framework. The importance of these challenges is varying, but there is no overarching pattern as for which conceptual group or types of challenges that are considered the most important. The company considers the regulative distance from a Western HSE regulatory framework a deciding factor in the culmination of the amount and impact of the legislative challenges it experiences.

…

In light of the challenges identified for the company, the greater question was not how they chose to solve all of them individually – because there is no unified answer covering all 25 challenges. Rather so, the study examined the underlying reasons why these challenges occurred in the first place, keeping well in mind the notion of regulative distance between the frameworks. To better understand this, we applied two institutional analyses.

First, we made an analysis of the ceremony and myth in FMC Eurasia. This is because the myths of the organizational environment reflect the topic: their sphere is HSE management, and the milieu of HSE management in Russia comes with a set of myths that sets them off from the rest of the world. We found that the company behaves ceremonially to conform to the myths of the community because they are driven by the need for legitimacy. This can explain why certain types of HSE-related challenges occur for the company, because there is a mismatch of which actions lead to legitimacy, and which lead to organizational efficiency – but the imperative for the company is legitimacy.

Second, we applied the model created in chapter 4, which allowed us to examine the efficacy of the model, as well as to gain a broader understanding of the causes of the company's challenges. We found three main causes of the legislative challenges: First, the formal institutional dimension, via the legal and governmental structures, as well as the bureaucratic practices and hierarchies of the

country, has a strong impact on the HSE regulation, and from these will in turn problems emerge for FMC Eurasia. Second, the informal institutional dimension, via the norms and values, as well as the attitude towards measurability and safety culture, has a strong impact on the HSE regulation, by which the elements are considered the cause of some of the company's problems with HSE. Third, the contextual dimension sets the characteristics of the countries' oil and gas industries apart, and the elements of risk picture, industrial diversity, history and size all contribute to a rigidity of the frameworks, ultimately leading to managerial challenges for the company.

In the end, the model does not provide any answers as for how FMC Eurasia should solve these problems, but helps in understanding their underlying causes. In the event of a future international expansion, the model could be used to examine the legislative distance between the HSE regulations of the countries – and as per our conclusion, they may assume that larger legislative differences will imply larger HSE-related challenges.

…

The above conclusions summarize the contributions of this thesis, which are hopefully valuable both for the universities they are written for, and the case company that supported the thesis. Having analyzed not only effects, but also proposed causes, the thesis offers insight and understanding to fundamental mechanisms of institutionalism, and how these drive the reality of oil and gas companies. The theoretical implication of the study is a reinforcement of institutional theory, as it is strongly supported as being explanatory of the research problem. Secondly, the thesis proposes a model of elements of formal, informal and contingent dimensions to examine the reasons for differences of HSE regulations in countries, which in turn can be valuable when analyzing other jurisdictions. The practical implication of the study is an increased understanding of HSE-related issues and how these can be explained by institutional factors. Knowing the institutional factors of a market, the company can to a greater extent predict the HSE-related challenges that may arise. This knowledge and understanding will hopefully lead to better HSE management – and safety.

# List of appendices

# Appendix 1: Tables and figures

All tables are included in this appendix, regardless if they are also included in the text.

All figures that are **not** included in the text can be found in this appendix.

All figures of particular importance can also be found in this appendix.

**Table 1**: References to the Norwegian regulatory framework on HSE

| **Regulations** | Ref. | **Guidelines** | Ref. |
|---|---|---|---|
| The Framework Regulations | PSAa | Guidelines to the Framework Regulations | PSAf |
| The Management Regulations | PSAb | Guidelines to the Management Regulations | PSAg |
| The Facilities Regulations | PSAc | Guidelines to the Facilities Regulations | PSAh |
| The Activities Regulations | PSAd | Guidelines to the Activities Regulations | PSAi |
| The Technical and Operational Regulations | PSAe | Guidelines to the Technical and Operational Regulations | PSAj |

**Table 3:** Concepts and content of the Framework Regulations

| **Concepts** | **Content** | **Description** | **Section** |
|---|---|---|---|
| **Risk-based approach** | Risk management as a key principle | Companies should deal with the hazards in a risk-based perspective | 11 |
| | Risk assessment | The company must identify and assess overall and individual risk factors in their operations. | 11 |
| | Risk reduction | The identified risks should be mitigated at a reasonable trade-off between costs and effect. | 11 |
| **Standards** | Obligatory standards | No standards are obligatory to utilize under the Norwegian regulations. | 24 |
| | Recommended standards | Recommended standards are normally sufficient to meet the legal requirements. | 24 |
| | Standard registry | Authorities maintain a database of recommended standards that will ensure compliance | 24 |
| | Voluntary standards | The company may use other non-recommended standards if they can document the effectiveness of these. | 24 |
| **Holistic HSE integration** | HSE as an inseparable part of the company | HSE must not be isolated from value-creating instances or processes of the company. | 15 |
| | HSE management system | The company must implement a holistic and continuous HSE management system. | 17 |
| | HSE department | The company must establish a functional branch to handle HSE-related matters. | 15, 17 |
| **HSE culture** | Ensure HSE culture | The company must develop a sound culture for HSE in the organization. | 15 |
| | Employee participation | Employee representatives can play an active role in HSE-related matters. | 13, 35 |
| | Health care | Health care must meet a certain standard, i.e. “as good as municipal service” | 16 |
| **Security** | Emergency preparedness | EP must fit public preparedness systems. System must be made available to other operators if needed. | 20-22 |
| | Stop-work clause | Employee safety delegates can stop all operations immediately if deemed unsafe. | 35 |
| | Language requirement | Norwegian is the primary language to be used. | 14 |
| | Safety zones | Safety zones must be established around surface infrastructures. | 52 |
| **Documentation** | Verification | Verifications are necessary if deemed so by the responsible party. | 19 |
| | Self-assessed documentation | Documentation necessary if deemed so by the responsible party | 23 |
| | Transparency | Anything related to HSE can be made public by the PSA. | 32 |
| **Sanctions** | Punishment for incompliance | Punishment of violation is coercive fines or other sanctions. | 72 |
| | Punishment for breaking labor | Minor offenses punishable by fines and up to three months | 72 |

| | | | |
|---|---|---|---|
| | code | imprisonment.<br>Major offenses may be punishable by two years of imprisonment.<br>Life-threatening offenses may be punishable by five years of imprisonment. | |
| | Punishment for pollution | The aforementioned punishment levels may also apply for offenses that involve illegal pollution. | 72 |
| | Punishment for waste | Illegal waste is punishable by fines and up to three months of imprisonment. | 72 |

**Table 4:** Concepts and content of the Management Regulations

| Concepts | Content | Description | Section |
|---|---|---|---|
| **Risk-based approach** | Risk analysis | The company must perform a risk analysis, which involves identifying and assessing all risk factors. | 16, 17 |
| | Risk register | Maintain a register of all the risk analyses | 16 |
| | Risk mitigation | The company must create barriers to reduce the likelihood or consequence of the identified risk factors. | 5 |
| | Risk control | The company must create objectives or goals for each risk factor, and internal requirements are representatives of the minimum degree of achievement. | 7, 8 |
| | Risk reviewing | The management process for mitigating risk must be continuously reviewed and followed-up. | 19 |
| **Holistic HSE integration** | Quality of risk management | HSE management is a product of the quality of all the components in the risk management process. | 11 |
| **Documentation** | Application for consent | Approval of activity prior to start-up must be given from the PSA. | 25, 26 |
| | Notification of accidents | Accidents and near-accidents must be notified via telephone and writing to the PSA immediately. | 20, 29 |
| | Reports of illness and injury | All personal injuries, illnesses and treatment must be reported to the PSA. | 31 |
| **HSE culture** | Employees' right to self-assessment | If the employees believe they have a work-related illness, the employer must treat it accordingly. | 32 |

**Table 5:** Concepts and content of the Facilities Regulations

| Concepts | Content | Description | Section |
|---|---|---|---|
| **Risk-based approach** | Risk thresholds | Risks of a certain annual probability are given as thresholds for acceptable risk factors. | 5, 11 |
| | Risk monitoring and recording | The facilities shall be outfitted with equipment for measuring and monitoring relevant conditions. | 17 |
| **Holistic HSE integration** | Development concept | Development concepts encompass a wide range of conditions, properties and scopes to be considered. | 4 |
| | Facility design | Facilities shall be designed with the most robust and simple design as possible. | 5, 6, 10 |
| | New technology & methods | Any new technology and methods shall be integrated to the HSE management in a manner that ensures compliance. | 9 |
| | Safety functions | All safety functions in the facility must be described for clearly for the management of HSE. | 7, 8 |
| **HSE culture** | Health department | Permanently manned facilities must have a health department of a sufficient quality for prudent health care. | 59 |
| | Emergency sickbay | Permanently manned facilities must have an emergency sickbay additional to the health department, equipped to handle medical emergencies. | 60 |

| | | | |
|---|---|---|---|
| | Ergonomic equipment | All manual work activity executed by the personnel must be ergonomically design to avoid physical or mental strain. | 20 |
| | Weather protection | Employees working outside must be sufficiently protected from the weather conditions. | 21 |
| | Noise pollution, vibration, radiation | Employees shall not suffer harm from excessive noise levels, vibrations or radiation exposure. | 22, 23, 24, 26 |
| | Emergency preparedness | The facilities shall be sufficiently equipped to rescue employees who fell in the sea, as well as handle other personnel emergencies, including evacuation. | 41, 41a, 44, 45 |
| | Safety signs | Descriptive signs to inform employees about relevant information for reducing risks shall be placed in the event that employee risk exposure is impossible. | 28 |
| **Security** | Well safety | Well installations must contain sufficient barriers to mitigate unwanted influx and outflow of matter. | 48 |
| | Loading and offloading systems | The facility must be designed to minimize risk of oil spills in on/offloading systems | 66 |
| | Waste management | The facility must be designed so that the waste generated on the facility can be collected safely. | 67 |
| | Exhaust management | The exhaust from the production machinery must be released where there is no risk of ignition, and no exposure of harm to employees. | 68 |
| | Communication systems | The facility must have a functional internal and external communication system with appropriate communication equipment corresponding to needs. This includes an internal alarm system. | 18, 19 |

**Table 6:** Concepts and content of the Activities Regulations

| Concepts | Content | Description | Section |
|---|---|---|---|
| **Risk-based approach** | Risk information | All employees must be aware of all work-related risk factors by the time of the execution of the work. | 44 |
| | Environmental monitoring | The company must partake and cooperate in monitoring the external environment around the production area. | 52-59 |
| | Environmental assessment | The company must assess the environmental impact of all potential chemical discharges. | 64 |
| **Holistic HSE integration** | Organization of activities | The work, including task allocation and workload, must be organized so that exposure to hazards and physical and mental strain is avoided. | 33 |
| | Working environment committees | A working environment committee with employer and employee representatives shall be established for all working areas. The members must receive HSE training. | 4 |
| | Critical activities | Critical activities must be identified and carried out under their pre-defined limitations. | 27 |
| | Simultaneous activities | When two activities are performed in combination, they are labeled *simultaneous activities*. The act of combining these activities must not lead to unacceptable risk. | 28 |
| **HSE culture** | Medical examination | Employees must be offered regular health examinations, and they are also entitled to know the results. Employees exposed to hazards shall be offered special treatment. | 6, 9, 11 |
| | Medical professionals | There must always be a nurse available on the facility. The facility shall have always have a physician on-call and available for immediate transport to the facility. | 8, 10 |
| | Competence & training | All personnel must undergo basic competence training. Some certification and special training is necessary for special tasks. The personnel must be trained in emergency drills. | 21, 22, 23 |
| | Stay on facilities | Only people working on the facility may stay there, unless a special permit is given. | 18 |

| | | | |
|---|---|---|---|
| **Security** | Maintenance | All equipment shall be classified by the impact of their potential failures and be maintained with respect to that. High-impact faults must be subjected to a tailored maintenance program. All maintenance must be planned by prioritization. | 45-51 |
| | Discharge | Oily water may be discharged to the sea, but must be cleaned and the oil content must be minimized. On average, the oil content must not exceed 30mg/liter. | 60 |
| | Waste | Waste generation should be minimized, but generated solid waste must never be discharged to nature, but instead collected. Oil waste may be injected to the machinery. | 72 |

**Table 7:** Comparative table of risk-based approach

| Norwegian content | Description | Presence in Russia | Comment |
|---|---|---|---|
| Risk management as a key principle | Companies should deal with the hazards in a risk-based perspective | No | It has been proposed, but not implemented. |
| Risk assessment | The company must identify and assess overall and individual risk factors in their operations. | Yes | Risk assessment is an important tool for HSE management. |
| Risk reduction | The identified risks should be mitigated at a reasonable trade-off between costs and effect. | Yes | The identified risks shall be reduced or minimized. |
| Risk analysis | The company must perform a risk analysis, which involves identifying and assessing all risk factors. | Yes | Implicitly tied with ordinary risk assessment. |
| Risk register | Maintain a register of all the risk analyses | No | Not mentioned in the legislations. |
| Risk mitigation | The company must create barriers to reduce the likelihood or consequence of the identified risk factors. | No | Not mentioned in the legislations. |
| Risk control | The company must create objectives or goals for each risk factor, and internal requirements are representatives of the minimum degree of achievement. | No | Not mentioned in the legislations. |
| Risk reviewing | The management process for mitigating risk must be continuously reviewed and followed-up. | Yes | |
| Risk thresholds | Risks of a certain annual probability are given as thresholds for acceptable risk factors. | No | Not mentioned in the legislations. |
| Risk monitoring and recording | The facilities shall be outfitted with equipment for measuring and monitoring relevant conditions. | No | Not mentioned in the legislations. |
| Risk information | All employees must be aware of all work-related risk factors by the time of the execution of the work. | No | Not mentioned in the legislations. |
| Environmental monitoring | The company must partake and cooperate in monitoring the external environment around the production area. | No | Not mentioned in the legislations. |
| Environmental assessment | The company must assess the environmental impact of all potential chemical discharges. | No | Not mentioned in the legislations. |

**Table 8:** Comparative table of standards-based approach

| Norwegian content | Description | Presence in Russia | Comment |
|---|---|---|---|
| Obligatory standards | No standards are obligatory to utilize under the Norwegian regulations. | No | Several national standards are obligatory to utilize. |

| | | | |
|---|---|---|---|
| Recommended standards | Recommended standards are normally sufficient to meet the legal requirements. | Yes | Correct utilization of national standards will ensure compliance with the legal framework. |
| Standard registry | Authorities maintain a database of recommended standards that will ensure compliance | Partially | Authorities maintain a database of national standards that will ensure compliance. They also maintain a database of disapproved international standards. |
| Voluntary standards | The company may use other non-recommended standards if they can document the effectiveness of these. | Yes | Operators may utilize international or other standards if they can document their effectiveness. |

**Table 9:** Comparative table of holistic HSE integration

| **Norwegian content** | **Description** | **Presence in Russia** | **Comment** |
|---|---|---|---|
| HSE as an inseparable part of the company | HSE must not be isolated from value-creating instances or processes of the company. | No | Not mentioned in the legislations. |
| HSE management system | The company must implement a holistic and continuous HSE management system. | No | The management system is only an implicit result of other requirements. |
| HSE department | The company must establish a functional branch to handle HSE-related matters. | Partially | The HSE department is established out of necessity, not legal obligation. |
| Quality of risk management | HSE management is a product of the quality of all the components in the risk management process. | No | Not mentioned in the legislations. |
| Development concept | Development concepts encompass a wide range of conditions, properties and scopes to be considered. | Yes | The legislation considers different phases and features of development of facilities both separately and holistically. |
| Facility design | Facilities shall be designed with the most robust and simple design as possible. | Yes | Not the same principles, but it is clearly understood under which conditions facilities must be designed. |
| New technology & methods | Any new technology and methods shall be integrated to the HSE management in a manner that ensures compliance. | Yes | All new technology and methods implies deviation from the design plan. All changes in design plan must be approved, and therefore integrated anew. |
| Organization of activities | The work, including task allocation and workload, must be organized so that exposure to hazards and physical and mental strain is avoided. | Partially | Activities must be classified, approved and organized in a manner that reduces overall risk. |
| Working environment committees | A working environment committee with employer and employee representatives shall be established for all working areas. The members must receive HSE training. | Yes | Working environment committees must be established in all organization, with the aim to protect the employees through reducing the risk of accidents and illness. |
| Critical activities | Critical activities must be identified and carried out under their pre-defined limitations. | No | Not mentioned in the legislations. |
| Simultaneous activities | When two activities are performed in combination, they are labeled *simultaneous activities*. The act of combining these activities must not lead to unacceptable risk. | No | Not mentioned in the legislations. |

**Table 10:** Comparative table of HSE culture

| Norwegian content | Description | Presence in Russia | Comment |
|---|---|---|---|
| Ensure HSE culture | The company must develop a sound culture for HSE in the organization. | No | Not mentioned in the legislations. |
| Health care | Health care must meet a certain standard, i.e. "as good as municipal service" | Partially | Health care service must be present; the quality of such is not specified. |
| Health department | Permanently manned facilities must have a health department of a sufficient quality for prudent health care. | Yes | Permanently manned facilities must be outfitted with a healthcare department |
| Emergency sickbay | Permanently manned facilities must have an emergency sickbay additional to the health department, equipped to handle medical emergencies. | Partially | The emergency sickbay and healthcare departments are implicitly understood as the same. |
| Employees' right to self-assessment | If the employees believe they have a work-related illness, the employer must treat it accordingly. | No | Not mentioned in the legislations. |
| Medical examination | Employees must be offered regular health examinations, and they are also entitled to know the results. Employees exposed to hazards shall be offered special treatment. | Yes | All employees must be examined before and during their engagement at the facility. |
| Medical professionals | There must always be a nurse available on the facility. The facility shall have always have a physician on-call and available for immediate transport to the facility. | Yes | The healthcare on the facility must consist of a medical professional of some respect, either nurses or doctors. |
| Noise pollution, vibration, radiation | Employees shall not suffer harm from excessive noise levels, vibrations or radiation exposure. | Yes | All industries are required to prevent and eliminate negative effects of noise, vibrations and radiation on the environment and people alike. |
| Emergency preparedness | The facilities shall be sufficiently equipped to rescue employees who fell in the sea, as well as handle other personnel emergencies. | Yes | The operator must establish measures to prevent and liquidate emergency situations on the facility. |
| Evacuation routes | The facility shall be designed so all personnel can be evacuated, regardless of weather conditions. | Yes | All personnel must be trained in emergency procedures, including evacuation. |
| Ergonomic equipment | All manual work activity executed by the personnel must be ergonomically design to avoid physical or mental strain. | Partially | Safety of production equipment is required, but must not necessarily be ergonomically made. Avoiding acute accidents is the aim. |
| Weather protection | Employees working outside must be sufficiently protected from the weather conditions. | No | Not mentioned in the legislations. |
| Competence & training | All personnel must undergo basic competence training. Certification is necessary for special tasks. The personnel must be trained in emergency drills. | Yes | Employees must be trained and all necessary certifications must be obtained by the employees working with hazardous equipment. |
| Stay on facilities | Only people working on the facility may stay there, unless a special permit is given. | No | Not mentioned in the legislations. |

**Table 11:** Comparative table of security

| Norwegian content | Description | Presence in Russia | Comment |
|---|---|---|---|
| Emergency preparedness | EP must fit public preparedness systems. System must be made available to other operators if needed. | No | EP systems must be established, but not under the same conditions. |
| Stop-work clause | Employee safety delegates can stop all operations immediately if deemed unsafe. | Partially | An employee is implored to stop all work in the appropriate way, but only after an accident has occurred. |
| Safety zones | Safety zones must be established around surface infrastructures. | No | Safety zones in Russia are completely sheltered from harm. |
| Communication systems | The facility must have a functional internal and external communication system. This includes an internal alarm system. | Yes | The facility must be equipped with a communication system, including monitoring and alarm systems. |
| Language requirement | Norwegian is the primary language to be used. | No | Russian language is not a requirement on the facilities. |
| Safety signs | Descriptive signs to inform employees about relevant information for reducing risks shall be placed in the event that employee risk exposure is impossible. | Yes | All production facilities must be outfitted with safety signs. |
| Maintenance | Equipment shall be classified by potential impact from failure. High-impact faults imply a tailored maintenance program. All maintenance must be planned by prioritization. | Partially | All equipment are given a serial number and subjected to regular inspection and maintenance. Not prioritized; everything must be inspected every 10 days. |
| Loading and offloading systems | The facility must be designed to minimize risk of oil spills in on/offloading systems | Yes | Loading systems are important parts of the national standards. |
| Well safety | Well installations must contain sufficient barriers to mitigate unwanted influx and outflow of matter. | Yes | Well safety is an important part of the national standards. |
| Exhaust management | The exhaust from the production machinery must be released where there is no risk of ignition, and no exposure of harm to employees. | No | Exhaust is considered pollution, and must therefore be compensated for. |
| Waste management | The facility must be designed so that the waste generated on the facility can be collected safely. | No | Not mentioned in the legislations. |
| Discharge | Oily water may be discharged to the sea, but must be cleaned and the oil content must be minimized. Oil content must not exceed 30mg/liter. | Yes | Oily water may be discharged to the sea, but monitoring and controlling systems must be installed. Oil content must not exceed 15mg/liter |
| Waste | Waste generation should be minimized, but generated solid waste must never be discharged to nature. Oil waste may be injected to the machinery. | No | Waste generation has an absolute limit, and all waste generated must be compensated for. Food waste may be thrown in the sea. |

**Table 12:** Comparative table of documentation

| Norwegian content | Description | Presence in Russia | Comment |
|---|---|---|---|
| Application for consent | Approval of activity prior to start-up must be given from the PSA. | Yes | A Safety Substantiation and Industrial Safety Declaration must be documented |
| Notification of accidents | Accidents and near-accidents must be notified via telephone and writing to the PSA immediately. | Yes | Accidents must be notified to the authorities, including a description of measures taken and the cause of the occurrence. |
| Reports of illness | All personal injuries, illnesses and | Yes | Accidents must be notified to the authorities, |

| | | | |
|---|---|---|---|
| and injury | treatment must be reported to the PSA. | | including a description of measures taken and the cause of the occurrence. |
| Verification | Verifications are necessary if deemed so by the responsible party. | Yes | Verifications are necessary. |
| Self-assessed documentation | Documentation necessary if deemed so by the responsible party | No | Voluntary documentation is not an occurring phenomenon: It is either necessary or not – most often necessary. |
| Transparency | Anything related to HSE can be made public by the PSA. | Partially | Operators must publicly inform their objectives and tasks on the facility. |

**Table 13:** Comparative table of sanctions

| **Norwegian content** | **Description** | **Presence in Russia** | **Comment** |
|---|---|---|---|
| Punishment for incompliance | Punishment of violation is coercive fines or other sanctions. | Yes | Punishment for noncompliance is clearly addressed in the legal frameworks |
| Punishment for breaking labor code | Minor offenses punishable by fines and up to three months imprisonment.<br>Major offenses may be punishable by two years of imprisonment.<br>Life-threatening offenses may be punishable by five years of imprisonment. | Yes | Breach on provision is punishable by fines and imprisonment, at a level that is determined by the severity of the offense. |
| Punishment for pollution | The aforementioned punishment levels may also apply for offenses that involve illegal pollution. | Yes | Pollution is punishable by fines or up to three years of imprisonment. |
| Punishment for waste | Illegal waste is punishable by fines and up to three months of imprisonment. | Yes | Illegally dumping waste is punishable by fines or up to three years of imprisonment. |

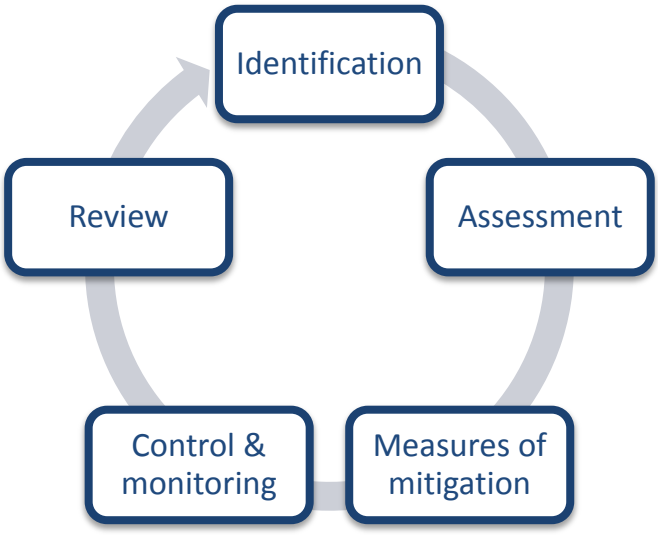


**Figure 8:** Conventional risk management model

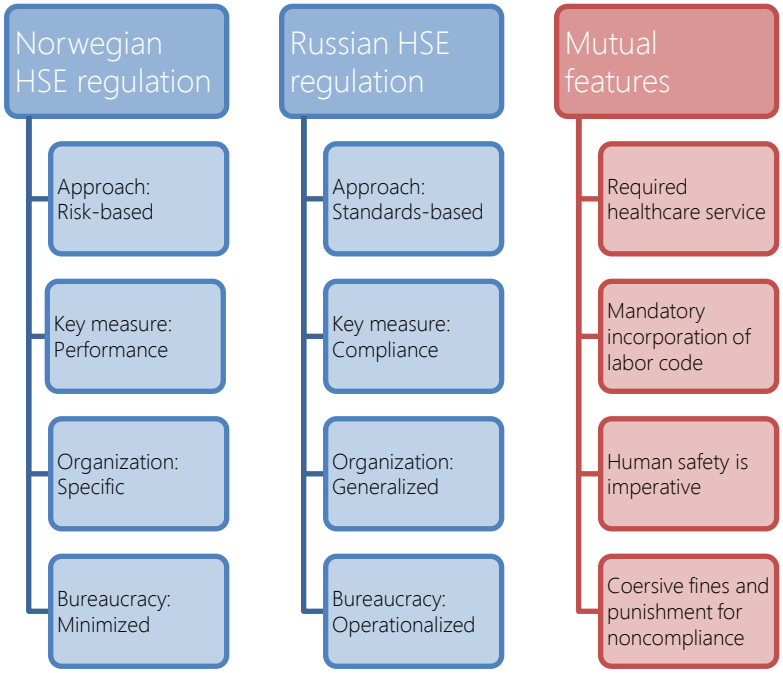


**Figure 11:** Overview of main differences and similarities between the legislations

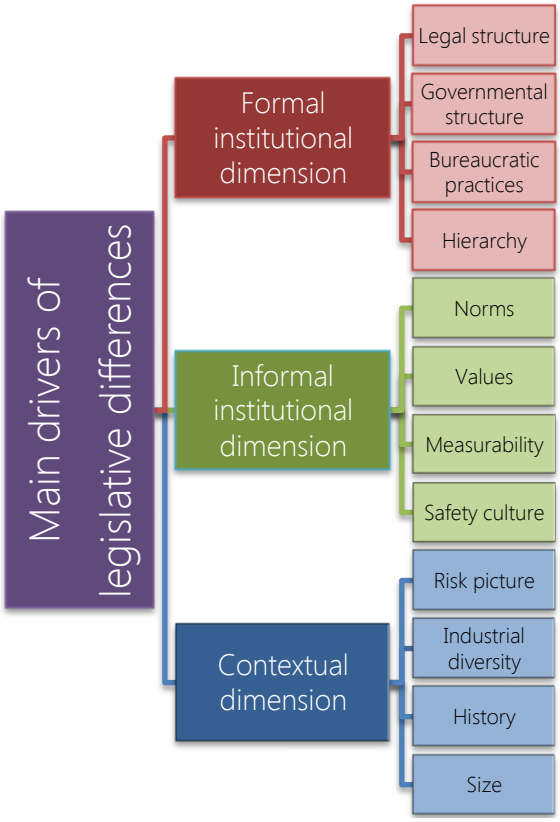


**Figure 19:** Contingency model of regulative differences

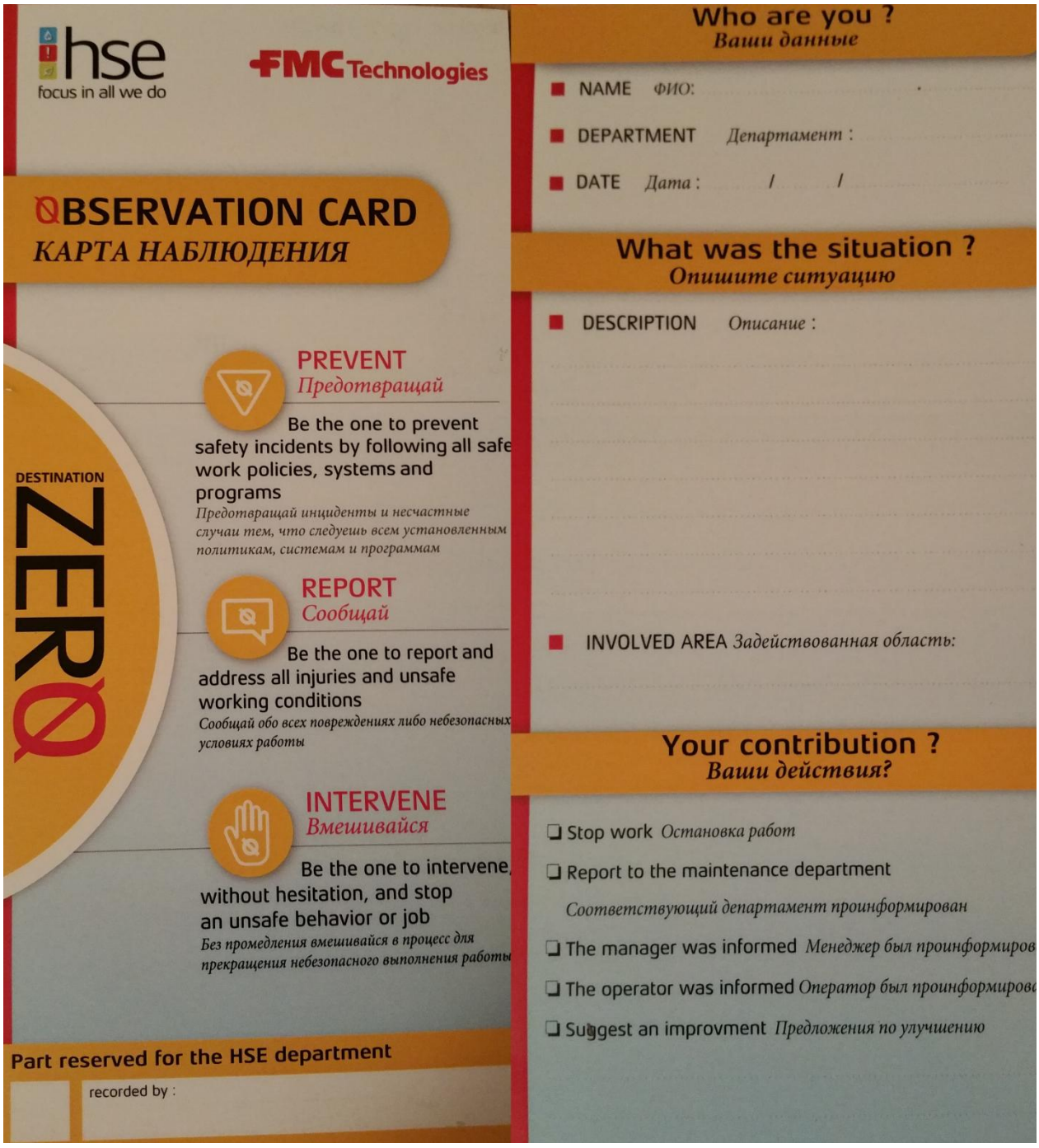


**Figure 23**: Observation cards in FMC Eurasia

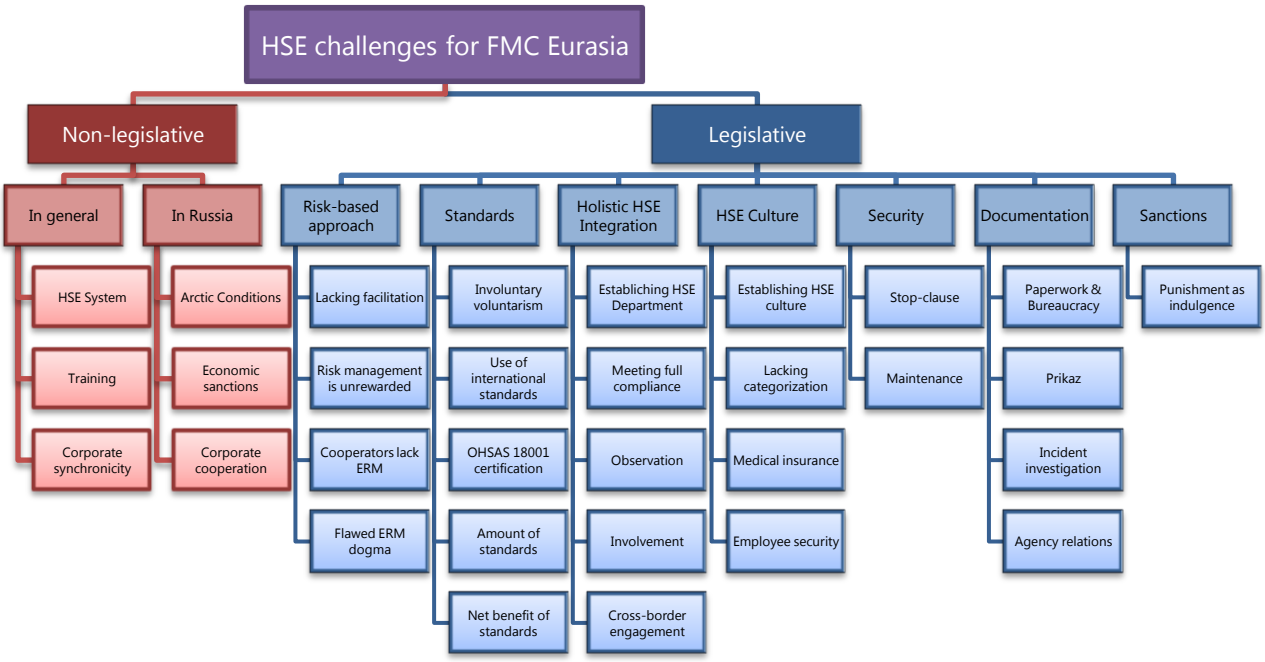


**Figure 24**: Main challenges of HSE management in FMC Eurasia

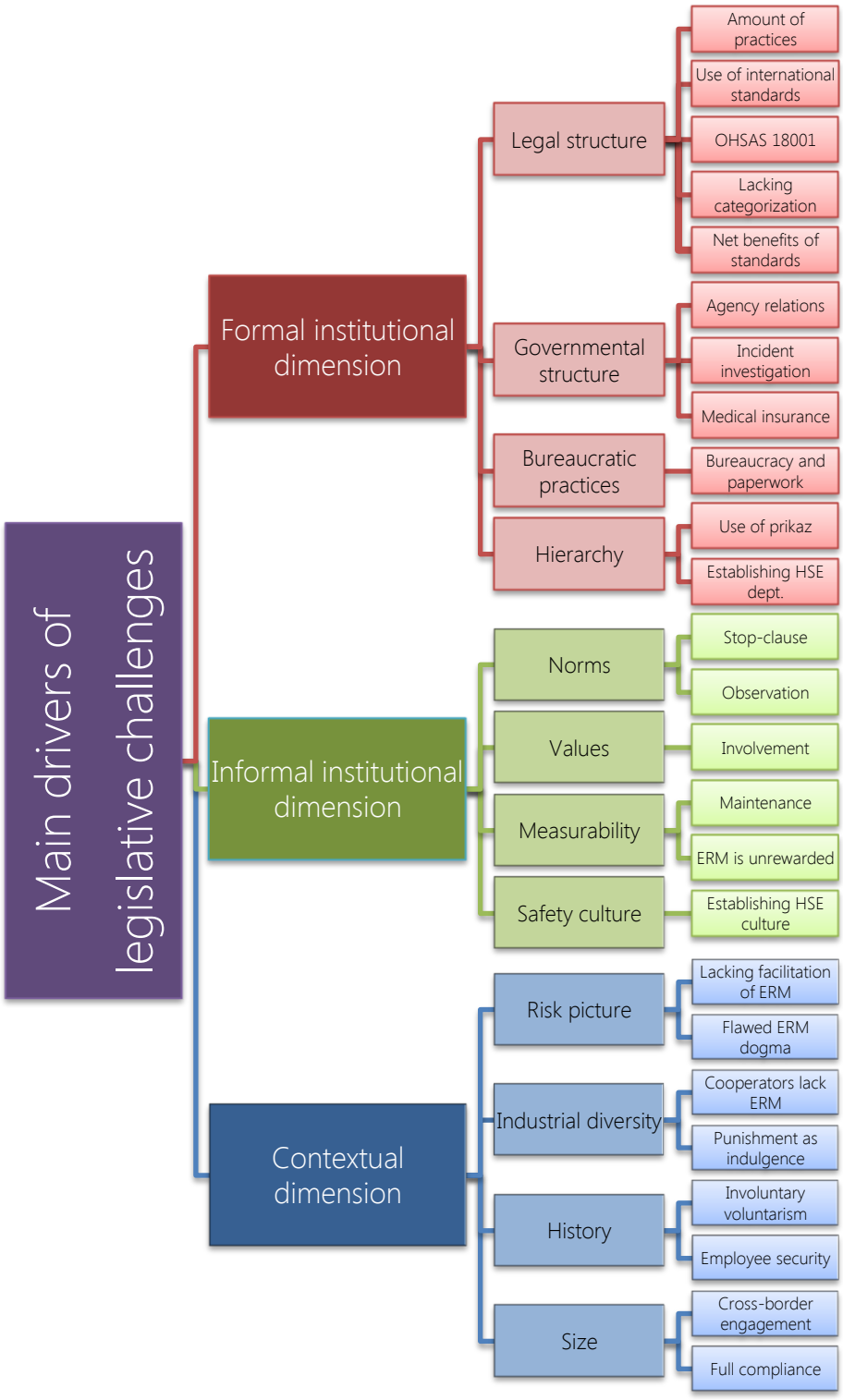


**Figure 26:** Main drivers of HSE challenges for FMC Eurasia

# Appendix 2: Interview guides

## Interview guide № 1

**Session 1 & 2** The HSE department of FMC Eurasia
**Informant:** 1

**Topic 1: FMC Eurasia & HSE department**

What can you tell us about the organizational structure about FMC Eurasia?
What can you tell us about the HSE department in Moscow?

How would you describe your day-to-day workflow? How does your work look on a daily basis?

How did the HSE department evolve over the time of the company's history?
What caused the changes in the HSE department?

How would you describe the work of FMC Eurasia's workers on the production facilities?

**Topic 2: Challenges of HSE management in Russia**

What would you say are the greatest challenges when it comes to managing HSE in Russia?

Do you have an adequate system or work process for managing HSE-related matters?

If yes, how would you describe this system or work process?

Has there ever been an unforeseen workplace accident in FMC Eurasia's operations?
If yes, do you think this could've been avoided by better safety routines in the company?

In Russia, a company may use international standards instead of national standards if they are approved and not in conflict with the legislations. Does FMC Eurasia normally try to rely on internationally benchmarked standards, rather than those created and promoted by the Russian authorities?

How is the healthcare for FMC Eurasia's employees (especially those who are working in the facilities) supported?

Are employees of FMC Eurasia being trained in HSE-related matters?

Being an oil service company, you do not normally have full control of the production facility. How would you assess your ability to cooperate with other companies operating on the same sites with respect to HSE?

In the Norwegian HSE regulations, you have something called a "stop clause", effectively allowing all workers to stop all production immediately if they think the risk of accident for some reason has become unreasonably high. Does a similar clause to your knowledge exist in Russia? Is that something your company could allow your employees?

**Topic 3: International HSE management**

Does FMC Technologies have a rigid system and internal guidelines for managing HSE globally?

The legislations for HSE management may vary greatly from country to country. While of course compliance is important, do you try to make the global HSE management as uniform as possible?

Do you often report HSE-related matters to the global headquarters?

Does the Moscow HSE branch have any kind of communication with the Norwegian HSE department? If yes, how would you describe this cooperation?

**Topic 4: Review of Russia's legislation**

Do you think the Russian legislations for regulating HSE are adequate?

Judging from what we've seen in the Russian legislation, there seems to be a substantial amount of reporting, licensing and approval from various authorities that are necessary to operate. Does this level of bureaucracy improve or reduce the chances of effective HSE management?

Which positive and negative aspects of the regulations would you like to highlight?

How could these regulations be improved?

Do the regulations to a good enough degree facilitate efficient cooperation between two or more companies working on the same production site? Is the allocation of responsibility on a work site clear?

Dmitry Medvedev once said that Russia should reform to adapt a system for "professional risk management" to avoid workplace accidents in Russian industries. While risk management is implicitly mentioned in some of the legislations, the overall system does not resemble that of a "risk-based approach", which is the case in Norway. One of the major differences therein is that the Norwegian system has less focus on use of standards, and more focus on facilitating an overall risk management system for HSE. Do you think this could benefit your company and/or the Russian oil industry?

# Interview guide № 2

**Session 3 & 4:** Uncovering challenges, differences and similarities
**Informant:** 2

**Topic 5: Challenges of HSE management in Russia**

What would you say are the greatest challenges when it comes to managing HSE in Russia?

What are in your opinion the most unnecessary and vain procedures and requirements in the Russian law that have to be followed and fulfilled?

It was mentioned that one of the main challenges of being an HSE manager is that the HSE sections of the company is not organized adequately – HSE management is not as well-organized as quality management. Have you been able to put this down to paper?

How would you rate FMC Technologies' performance with respect to HSE management in comparison with the rest of the oil and gas industry?
*Depending on the answer*; how, what and why?

Is the global HSE governance of FMC Technologies satisfied with the HSE management in FMC Eurasia? What are your goals and aims for development of the HSE management?

**Topic 6: Concepts**

*Risk-based approach:*
Would you say that the HSE regulations facilitate a good risk management system?
Does FMC Technologies use any such system for enterprise risk management?
If yes, do you think this system is beneficial for managing HSE better?

*Standards*
How many mandatory standards does FMC Technologies use in their operations?
Can such standards be replaced by international standards that the Russian authorities recognize?

*Holistic HSE integration*
Which Western HSE management practices have you adopted when creating the HSE management department in Russia?
What was the old HSE management system lacking that you had to improve in order to make it effective?

*HSE culture*
How is the health insurance for employees working on production facilities organized? Who pays for it? Is it a part of the labor contract? Who is fiscally responsible if an employee dies or suffers from a major work-related illness or accident?

*Security*
Is your department managing environmental safety as well? For example safety measures on place to prevent blowouts in subsea or surface systems.
If yes, which measures are in place to ensure environmental safety?
If your department are not in charge of it, then who is?
Has there been any accidents or issues that have negatively affected the environment, or anything related to environmental safety?

*Documentation*
Can you name which Russian authorities you remain in direct contact with?
How would you describe the routines with documenting various aspects HSE towards the authorities?
Do you feel that the technical authorities provide any support if you request it?

*Sanctions*
Noncompliance can in the worst case lead to imprisonment and fines for the offender. Do you feel that the potential punishment for poor HSE management has a preventative effect?

# Appendix 3: Literature & references

Order of literature:

1. *Scientific articles, books & webpages*
2. *Legislations*
3. *Presentations*
4. *Interviews*

**Scientific articles, books & webpages**

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