Climate Change Mitigation and the Shipping Industry

An Investigation into the External and Internal Pressures Promoting Beyond-Compliance Emission Reductions by Shipowners in the Netherlands.

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Disclaimer: The data collected during this research study is, potentially, to be used by the SSHRC partnership grant entitled “Green Shipping: Governance and Innovation for a Sustainable Maritime Supply Chain” coordinated by the University of British Columbia of which the Wageningen University & Research Environmental Policy Group, through dr. Judith van Leeuwen, is a partner. The raw data of this study will be stored at the research department’s database, but this is not to be used beyond the SSHRC project. Disclaimers have been added to the interview transcripts to reflect anonymity.
Foreword & Acknowledgements

Most of the world population recognises that the way society currently operates needs to be changed, this is not a new fact. Rather it is the basis of my Master Climate Studies here at Wageningen University & Research. This research study has investigated what factors led to the adoption of additional mitigation measures in the shipping industry to see if and how these can be promoted. The shipping industry is perhaps the most ‘environmentally friendly option’ to transport goods when comparing with other transporting industries. But this does not take away that the industry releases about 2.2% of the global CO₂ emissions and that there are only limited regulations in place to change its emission practices. There is already an international regulation body that is globally responsible for the industry, but perhaps policy not effective or strict enough. That conclusion is beyond my research scope, but beyond-compliance practices of the investigated case studies indicate that a higher standard is possible. It is evident there are not enough incentives or too many consequences that restrict others to follow the lead of the early adopters investigated in this thesis.

The world is changing, and it is time that the shipping industry changed along with it.

I am very proud of this MSc thesis research; however, I could not have gotten here without so many people in my life. But a few I would like to highlight particularly. Firstly, my supervisor dr. Judith van Leeuwen who has guided me through the longest seven months of my life. Secondly, I have to thank the interviewees at the case study corporations that have been investigated and the two shipping industry experts for their time and interest in my research. Finally, I have to thank the people that have read my thesis drafts and contributed suggestions of improvement: Rietje van Wijlen, Simon van Wijlen, Maartje van Wijlen, Jaap van Touw, Fabian Verhage, and Koosje. You all were able to make sense of the madness when I couldn’t.

And most importantly, I have to thank my family at home for their support and patience.
Research Abstract

The shipping industry is anticipated to keep growing, as are the greenhouse gas emissions released by its practices. Currently, the norm of operations in the industry has been to only comply with law and regulation. Yet, one must recognise the benefits of voluntary emission reductions in the context of climate change mitigation. In the reviewed literature, there are only a few examples of corporations operating beyond the industry norm. However, there is no known research investigating specifically what pressures actually lead to the voluntary beyond-compliance emission reductions by shipowners in the industry. The objective of this research was to begin to fill this gap. Having a better understanding of the pressures and motivations behind corporations voluntarily reducing the release of greenhouse gas (GHG) emissions is critical. For example, a better understanding of behaviours can allow for more effective policy to be established.

The following research question was posed: What are the key internal and external pressures in place for four case study corporations in the shipping industry to move from a crisis-oriented strategy towards voluntary beyond-compliance emission reduction practices in the Netherlands? Through a literature review, based upon institutional theory, external and internal theoretical pressures were identified. These were then tested with four Dutch shipowner companies as case studies through utilising semi-structured interviews. Three of the investigated case studies have been classified as transitioning into a beyond-compliance environmental strategy. And the fourth as operating under a full environmental sustainability strategy, as per the four-stage model by Van Leeuwen and Van Koppen (2016). Based upon the interview outcomes, and subsequent analysis, the following external pressures have been found to be key: international law and regulation, suppliers, customers, and recognising the state of the world. The first three external pressures help to build the key internal pressure of economic opportunities for the investigated corporations. Furthermore, the pressure of the state of the world builds corporate ambition which builds the key internal pressure given by management. Finally, the internal pressure of poor environmental record is key to promote beyond-compliance practices, also through building ambition.

Based upon the study’s outcomes future research is suggested to focus upon building a better understanding of interactions between external and internal pressures but also how environmental strategies influence pressure experiences. Furthermore, a recommendation for future policy is to support the development of economic opportunities and to increase international law and regulation, based upon beyond-compliance practices of early adopters, to facilitate a level playing field in the industry.
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<td>4SM</td>
<td>Four-stage model</td>
</tr>
<tr>
<td>B-t-B</td>
<td>Business-to-business organisation</td>
</tr>
<tr>
<td>CO₂</td>
<td>Carbon dioxide</td>
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<tr>
<td>CO</td>
<td>Carbon monoxide</td>
</tr>
<tr>
<td>C-t-B</td>
<td>Consumer-to-business organisation</td>
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<tr>
<td>CSR</td>
<td>Corporate social responsibility</td>
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<td>EU</td>
<td>European Union</td>
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<td>GHG</td>
<td>Greenhouse gas</td>
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<td>GSP</td>
<td>Green shipping practices</td>
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<tr>
<td>HFO</td>
<td>Heavy fuel oil</td>
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<tr>
<td>ICS</td>
<td>International Chamber of Shipping</td>
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<td>IEA</td>
<td>International Energy Agency</td>
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<td>IMO</td>
<td>International Maritime Organisation</td>
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<td>IPCC</td>
<td>International Panel on Climate Change</td>
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<tr>
<td>IT</td>
<td>Institutional Theory</td>
</tr>
<tr>
<td>KNVR</td>
<td>Koninklijke Vereniging van Nederlandse Reders</td>
</tr>
<tr>
<td>LNG</td>
<td>Liquefied/liquid natural gas</td>
</tr>
<tr>
<td>MVR</td>
<td>Monitoring, verification, and reporting regulation</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-governmental organisation</td>
</tr>
<tr>
<td>NOₓ</td>
<td>Nitrous oxide</td>
</tr>
<tr>
<td>PM</td>
<td>Particulate matter</td>
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<tr>
<td>RF</td>
<td>Radiative forcing</td>
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<tr>
<td>SOₓ</td>
<td>Sulphur dioxide</td>
</tr>
<tr>
<td>TiSII</td>
<td>Transitioning into Stage II</td>
</tr>
<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
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1 Research Introduction

1.1 Background

The shipping industry has always been key in facilitating global trade. The industry of shipping transportation represents approximately 90% of the world’s trade (International Chamber of Shipping, 2015; Lister, Poulsen, & Ponte, 2015). The United Nations Conference on Trade and Development (UNCTAD) has estimated that in the year 2015, the world seaborne trade increased to surpassing 10 billion tons of cargo transported (Sirimanne et al., 2016). And with continued growth of global consumption, the trend of growth in the volume of transported goods across the globe is expected to continue for the shipping industry (e.g. IPCC, 2014, Höök & Tang, 2013, Sirimanne et al., 2016). Though only representing a relative small amount of the greenhouse gases (GHG) released by the combined transport industries (IPCC, 2014), shipping releases 2.2% of the global CO₂ emissions (International Chamber of Shipping, 2015), which has been recently recognised as being a significant part of global GHG emissions (Lack et al., 2011; Lun, Lai, Wong, & Cheng, 2016) in the context of climate change. Specifically, the shipping industry’s GHG emissions (Chapman, 2007) impacts the global climate through impacts on cloud formation and radiative forcing (RF) (Eyring et al., 2010).

The shipping industry is a crucial facilitator of global economic development (Lun et al., 2016). With growing shipping activities, the sector of maritime transport is expected to experience faster increases in released emissions as compared to other transport sectors (IPCC, 2014; Smith et al., 2014). The engines utilised in ships, such as in oil tankers and container ships, are the main culprits to the emissions released during transport (Smith et al., 2014). The shipping industry is considered to be more carbon efficient in comparison to other transport sectors (International Chamber of Shipping, 2015). However, with future industry growth there is significant potential for GHG emissions offsetting to occur through adopting sustainable practices or other mitigation options (IPCC, 2014). Green shipping practices (GSP) can include how cargoes are handled and distributed, where reducing waste (such as air emissions) and resource conservation are part of environmentally friendly shipping activities (Lai, Lun, Wong, & Cheng, 2011; Lun et al., 2016). Identified mitigation options that fit these practices in the literature include: changes in technology, alternative fuels, and ship modifications that can be utilised to reduce the volume of GHG emissions released (e.g. Eyring et al., 2010; International Energy Agency, 2009; Lun, Lai, Wong, & Cheng, 2016).

However, and despite the fact that there are a variety of mitigation strategies available to the shipping industry, a literature study conducted by Van Leeuwen and Van Koppen (2016) reveals that almost all sustainable practices in the shipping industry are performed based upon a crisis strategy. In this environmental strategy corporations utilise green practices only to meet requirements of imposed regulatory conditions (Van Leeuwen & Van Koppen, 2016). At the same time, Lun et al. (2016) and Van Leeuwen and Van Koppen (2016) identify that globally there a more instances of corporations in the maritime transport industry that utilise greener practices during operations. There are only a limited number of studies (Lai et al., 2011; Lun et al., 2016) investigating beyond the norm or “beyond regulatory compliance” practices (Delmas & Toffel, 2004, p. 209). However, no study has been found that specifically investigates the pressures behind the adoption of beyond-compliance practices in the shipping industry. Understanding the pressures and motivations behind corporations in the shipping industry that practice beyond-compliance emission reductions is critical. As the shipping industry is anticipated to keep growing, more GHG emissions are going to be released, it is vital to understand how to mitigate future emissions today. To support effective law and regulation the basis of this study is to begin building the understanding of which factors currently push corporations in the shipping industry to reduce their emissions.
1.2 Shipping Industry and Climate Change Impacts

The shipping industry is a key component to facilitating global trade, however, it is also a key factor in environmental degradation and climate change (Lun et al., 2016). Climate change is caused by the increasing release of manmade GHG emissions which has led to an anthropogenic rise in global average temperature (Chapman, 2007). This temperature rise can lead to significant impacts such as a reduction in food yields, significant water shortages, extreme weather, and global climate changes (Marsden & Rye, 2010). Hence, there are significant human and economic consequences associated (Brueckner & Pforr, 2011) with climate change, for example growing mitigation costs.

The volume of GHG emissions, hereafter simply referred to as emissions, released by the shipping industry has been recognised as significant only a few years back (Lack et al., 2011). The principle exhaust gas emissions released by the shipping industry are CO$_2$, NO$_x$, SO$_x$, CO, hydrocarbons, and particulate matter (PM) (Eyring, Köhler, van Aardenne, & Lauer, 2005). The main culprit to these emissions are the engines utilised by ships (Smith et al., 2014). Oil tankers, container ships, and bulk carriers are the three dominating ship types associated with the release of emissions (Smith et al., 2014).

To provide context why climate change mitigation is important for the shipping industry it is important to highlight how the released emissions impact the environment. The emissions of GHG can regionally impact the composition of the atmosphere but also globally, where the radiative active properties can have significant impacts on climate impact (Eyring et al., 2010). Specifically, the impacts of GHGs influence cloud formation and RF. Firstly, the reflectivity and dispersion of clouds are impacted through ship-generated aerosols. Here factors such as water pollution in the clouds, drop formation and size, and the precipitation process can be impacted (Eyring et al., 2010). Secondly, RF is impacted by various GHGs released directly through ship-produced aerosols but also indirectly through cloud changes. Here the atmospheric lifetime of CO$_2$ (more than 100 years) and other GHGs (days to weeks) influence global warming differently. It is important to note that SO$_2$ and NO$_x$ can have a negative impact on net RF. Or in other words, they cause a cooling of the planet. Authors Eyring et al. (2010) determined that historically there has been a net cooling effect by the shipping industry. However, in the next 30-35 years the cumulative warming effects of the released CO$_2$ emissions by the industry will surpass the cooling effects of SO$_2$ and NO$_x$ emissions due to their short atmospheric lifetime (Eyring et al., 2010).

Despite the abovementioned facts, the shipping industry is often discussed as a sustainable, energy efficient, and relatively environmentally friendly mode of transport (Chapman, 2007; Han, 2010; KNVR interview, 17-11-2017; Lister et al., 2015; Van Leeuwen & Van Koppen, 2016). Shipping is relatively the most sustainable method of transportation due to the ratio of transported goods and fuel required to propel a ship. However, the industry of shipping can become more environmentally friendly. For example, GHG emissions can be cut by 50% through fuel efficiency (such as different engines) and up to 90% through using cleaner fuels (Chapman, 2007). Other emission reduction strategies such as mitigation will be discussed next.

1.3 Mitigation Strategies and Policy for the Shipping Industry

The shipping industry presents a growing problem to actors such as policy makers (Eyring et al., 2010). As the industry continues to grow there is a substantial future to offset the release of emissions through adopting mitigation options (IPCC, 2014). Technological and operational improvements, such as those presented by the International Energy Agency (IEA) (2009), can be utilised to reduce the volume of GHG emissions released. Unless emissions are reduced significantly, the benefits of emission reduction initiatives by other industries will be offset by the shipping sector (Cofala et al., 2007; Eyring et al., 2010). As such, (future) policy strategies should be oriented to create incentives into green investments while allowing companies to remain competitive (Eyring et al., 2010).
The greening of shipping practices is important to facilitate the pressures between growing trade and growing environmental concerns (Lun et al., 2016). Green practices for the shipping industry can include setting environmental goals, environmental operations, goal monitoring, management reviews, and business policies and processes which require environmental impact assessments (Lun et al., 2016). There is no consensus within the literature which climate change mitigation strategy is the most effective for the shipping industry. But today, the technology is available to reduce emissions beyond law and regulation requirements (Cofala et al., 2007). The International Chamber of Shipping (ICS) (2015) finds that fuel efficiency is key. Author Chapman (2007) states that short-term behavioural changes are needed (in order to fully achieve effective technology changes). Park and Galley (2011) focus upon corporate social responsibility (CSR), in combination with government enforcement, to achieve significant reductions. However, Heikkurinen (2011) determined that the responsibility of change should not only lie with a corporation but also with leaders and academics to play their part.

For governments and academics climate change is the most important policy challenge faced today (Marsden & Rye, 2010). One article suggests that the growth of emissions released by the shipping industry will mitigate the positive impact of current policies, potentially even counter-acting the reduction efforts of land-based GHG sources in the future (Cofala et al., 2007). Policy is supposed to provide long-term solutions to complex situations (Smith-Jacobs, 2017). Yet, there is little research performed regarding transnational policy and its impacts in the shipping industry (Lister et al., 2015). The control of growing emissions, through shipping transportation, remains “a political and legal challenge” (Han, 2010, p. 8). However, due to complex interactions of actors across governance levels the transport sectors is the hardest to cut emissions from (Marsden & Rye, 2010). Establishing accountability is difficult when there are many actors involved. This reduces policy efficiency where establishing effective policies is critical to improve mitigation outcomes (Marsden & Rye, 2010).

Lister et al. (2015) and Han (2010) found that the shipping industry remains largely unaccountable on the global policy level, with transnational environmental governance seriously lagging. And yet, to meet the 2015 Paris agreement temperature target the shipping industry needs to reduce emissions by 70-100% by 2050 (Faber, 2017). This builds a sense of urgency and moral pressure for the shipping industry and other shipping relevant stakeholders to change activities, in part through forming additional policies to achieve this goal. However, control remains politically and legally challenging to accomplish (Han, 2010). According to Doh and Guay (2006, p. 49) “key institutions include the political, legal, and social institutions at the supranational, national, and sub-national levels”. Of the law and regulation identified, in the context of this study, policy is directed at the international (supranational) and national level, with only future policies at the international level. Appendix 1 (p. 80) highlights the current law and regulation applicable to the case studies, and upcoming policy in the (near) future that is known today in more detail. Policy currently sets certain standards for (a few) GHG emissions at the international level (through the IMO and the European Union) and at the national level (by the Dutch government). Only two international polices have been identified to control air emissions by the shipping industry, namely MARPOL Annex VI (with various sub-sections) and the EUs Monitoring, Verification and Reporting (MVR) regulation. The national level policy is a translation of the international policies internalised into Dutch law, rather than setting additional requirements. Future policy is limited to the international level. In Appendix 1 (p. 80) the specific requirements for shipowners are indicated to showcase the expectations faced by the case studies.

1.4 Problem Statement

The majority of shipping companies have been characterised as only performing emission reduction practices as part of a “crisis-oriented strategy” (Van Leeuwen & Van Koppen, 2016, p. 50). However, several shipowners in the Netherlands have made significant changes to reduce their emissions beyond what is legally required. This behaviour indicates that corporations are (beginning to) voluntarily
undertake steps beyond meeting “regulatory conditions” and “environmental measures when this is necessitated by compliance requirements” (Van Leeuwen & Van Koppen, 2016, p. 50). Here practices beyond law and regulation can be classified into three stages of beyond-compliance environmental strategies: “process-oriented strategy”, “chain-oriented strategy”, and “full environmental sustainability strategy” (Van Leeuwen & Van Koppen, 2016, p. 50). In the context of this research study, beyond-compliance practices are those that reduce the release of GHG emissions beyond what is required by law and regulation. And this is considered a positive behaviour as climate change mitigation efforts increase. However, there is no known literature investigating specifically what pressures lead to beyond-compliance emission reductions by shipowners. This indicates a gap in the literature. Researching why some corporations in the shipping industry are performing more environmentally friendly operations is important in the context of growing GHG emissions and climate change reduction efforts. Namely, the research outcomes can assist other researchers, policymakers, and managers to better predict corporate behaviours and to increase policy efficiency (Bansal & Roth, 2000).

The purpose of the study is to investigate which external and internal pressures lead shipping corporations to change their practices beyond their legal obligations. This is to increase the understanding of pressures that support these behaviours. As such, the study’s outcomes aid to begin bridging the previously identified literature gap. Furthermore, the results can be used to develop policy recommendations to facilitate additional GHG emissions reduction from the shipping industry.

1.5 Research Questions

As stated before, there is no known literature investigating specifically what pressures lead to voluntary emission reductions in the shipping industry. The objective of this research was, therefore, to begin to fill this gap. Firstly, this study focussed on the theoretical pressures (both external and internal) behind beyond-compliance emission reductions. These theoretical pressures were then tested through the four case studies Anthony Veder, Case X, Fairtransport and Case X. Namely, to identify the pressures behind their beyond the norm behaviours. By comparing the theoretical pressures with the experiences of the case studies this research aids bridging the previously mentioned knowledge gap.

Based upon the problem statement and research scope the following research question was investigated in this study: What are the key internal and external pressures in place for four case study corporations in the shipping industry to move from a crisis-oriented strategy towards voluntary beyond-compliance emission reduction practices in the Netherlands?

The following sub-research questions are to answer the main research question identified above:

1. What environmental strategy stage can the investigated case studies be classified into?
2. Which external and internal pressures lead to the adoption of beyond-compliance emission reductions in the four case study corporations?

To answer these research questions, in Chapter 2 first the theory upon which the research study is built is identified followed by theoretical pressures to explain changes in behaviours are described. Hereafter, the research method (Chapter 3) and four chapters of case study results are presented (Chapter 4-7). Based upon the gathered results a comparison and discussion is made to answer the research questions (Chapter 8) after which this research study’s conclusion is given (Chapter 9).
2 Theory and Theoretical Pressure Identification

The following chapter combines the identification of the four-stage model and the conceptual framework needed to begin answering the research question(s). Firstly, the four-stage model (4SM), by Van Leeuwen and Van Koppen (2016), is introduced. The model is utilised to classify the environmental strategies of the investigated case studies in broad terms and to provide an additional perspective to the experienced pressures identified by the case studies. Hereafter, the conceptual framework upon which this research is build is highlighted. Specifically, the concept of institutional theory (IT) shall be introduced as the basis from which various theoretical pressures can be identified. Finally, external and internal pressures are classified to, theoretically, explain corporate behaviour changes. As such creating the foundation upon which the case study investigation is build.

2.1 Four-Stage Model

Van Leeuwen and Van Koppen (2016) discuss four stages of environmental strategies that companies in the shipping industry can be classified into. These are based upon the original model presented by Van Koppen and Hagelaar (1998), where in the 2016 model a fourth stage was added, namely “full environmental sustainability strategy”. This is to account for the changed sustainability goals of corporations since 1998. Specifically, the 4SM has been updated to account for changes in management practices and higher levels of green operations. The 4SM is relevant to this research study as it establishes an environmental strategies classification scheme for the investigated case studies.

Furthermore, the authors identify that most companies in the shipping industry operate only at Stage I of the 4SM namely at a “crisis-oriented strategy” (Van Leeuwen & Van Koppen, 2016). And yet, as discussed by Lun et al. (2016) and Van Leeuwen and Van Koppen (2016), there are several corporations that voluntary move beyond-compliance in their practices. The 4SM provides the characteristics, per stage, with some basic rationale that can be compared to the external and internal pressures discussed in the previous chapter.

Van Leeuwen and Van Koppen (2016) identified two overarching characteristics of green practices:

1. The internal characteristics of the company, where the factors of knowledge and information, technology, organisation, and budget are particularly relevant to consider.
2. The external relationship of the corporation with the surroundings, namely through environmental risks and environmental opportunities.

The following section summarises the four stages in order as discussed by Van Leeuwen and Van Koppen (2016) in their article:

I. “Crisis-oriented strategy” (Stage I): a company at this stage has no elaborate environmental strategy, rather the strategy is a response to imposed regulatory conditions and compliance with requirements. Companies in this stage are not inclined to make investments into sustainability unless forced to do so or significant costs are associated with unsustainable behaviour.

II. “Process-oriented strategy” (Stage II): at this stage, a company focuses on changing internal processes following cost-benefit analyses to identify economically favourable sustainable behaviours. When sustainability management investments are made these are often considering short-term payback time periods. Subsidies or taxes or tradable quotas imposed upon companies at this stage can have impacts upon their environmental efficiency.

III. “Chain-oriented strategy” (Stage III): here, companies expand their focus towards long-term eco-efficient strategies for the value chain in which they operate. Rather than compliance companies at this stage are focussed on expressing their green performance to the market. Here,
planning towards sustainability is driven by market opportunities and certification schemes rather than imposed taxes or tradable quota’s.

IV. “Full environmental sustainability strategy” (Stage IV): at this final stage companies move from a focus towards market opportunities and improving their green recognition but rather actively attempt to change their surroundings. Through their practices and active involvement companies at this stage attempt to engage stakeholders in their market to improve environmental conditions beyond the company through green identify.

The model does not allow for an assessment of a corporation’s environmental performance effectiveness. Rather, it is assumed that a more sustainable strategy leads to better environmental practices, where with each stage beyond-compliance practices increase. In the context of this research study better environmental practices equals less emissions released by ships during operations. Quantifying a company in the four stages a complete understanding of their position and behaviours towards emission reduction cannot be reflected (Van Leeuwen & Van Koppen, 2016). The authors also highlight that no company will fall neatly into one stage. Firstly, a corporation’s strategy is not required to start at Stage I and then develop onto the next until Stage IV is reached. For example, start-up companies may start at Stage IV with a full environmental sustainability strategy. Secondly, a corporation needs more than ambition-level changes to move from one stage to the next. Moving through the stage leads to accumulative progress rather than a complete change in practices and a corporation can fall back into earlier stages (Van Leeuwen & Van Koppen, 2016). Internal characteristics as well as external pressure characteristics are needed to change an environmental strategy, as to create a tipping point between stages. An overview of the two external and six internal characteristics, as defined by Van Leeuwen and Van Koppen (2016, pp. 48–49), of a corporation’s environmental strategy is highlighted in Table 1 (p. 7). The characteristic description changes between the four environmental strategy stages.
Table 1. Four-stage model characteristics as presented by Van Leeuwen & Van Koppen (2016, p. 48–49), excluding the market-based mechanisms (MBM) characteristic.

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<tr>
<td>Ambition</td>
<td>Compliance</td>
<td>Company eco-efficiency</td>
<td>Chain eco-efficiency</td>
<td>Green identity</td>
</tr>
<tr>
<td>Knowledge and Information Exchange</td>
<td>Knowledge is directed to only a few (prescribed) aspects; little horizontal or vertical information exchange</td>
<td>Knowledge is directed to production process; information exchange on operational and tactical level</td>
<td>Knowledge is directed at product chain; information exchange up to the strategic management level</td>
<td>Knowledge is directed at product chain and broader societal context; information is shared over all company levels and with relevant stakeholders (e.g. consumers)</td>
</tr>
<tr>
<td>Technology</td>
<td>End-of-pipe-technology, directed at cleaning and filtering</td>
<td>Process-integrated technology, directed at prevention</td>
<td>Process and product innovations from a product life-cycle perspective</td>
<td>Process and product innovations from a sustainable society perspective</td>
</tr>
<tr>
<td>Organisation</td>
<td>Environmental tasks are focused and isolated</td>
<td>Environmental management system</td>
<td>Environment-oriented organizational networks, encompassing marketing, R&amp;D, suppliers and customers</td>
<td>Sustainability-oriented networks extend to NGOs and consumers</td>
</tr>
<tr>
<td>Budget for Environmental Investments</td>
<td>Limited</td>
<td>For investments with 1–4 years payback period</td>
<td>For strategic investments (with long-term or intangible payback)</td>
<td>For investments in sustainability projects in cooperation with other stakeholders</td>
</tr>
<tr>
<td>Product Communication</td>
<td>None</td>
<td>None</td>
<td>For selected products</td>
<td>Actively communicated for full product range</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Risks</td>
<td>Serious and inherent to the production process</td>
<td>Limited or convertible</td>
<td>Under control and not a major constraint</td>
<td>Risk perspective shifts from avoiding risks to sustainable development</td>
</tr>
<tr>
<td>Environmental Opportunities</td>
<td>Hardly any</td>
<td>Indirect environmental opportunities (e.g. corporate image, relation with authorities)</td>
<td>Direct environmental opportunities (e.g. green market, supply chain management)</td>
<td>Opportunities for added value through cooperation with other stakeholders in promoting sustainability</td>
</tr>
</tbody>
</table>
2.2 Conceptual Framework: Institutional Theory

The conceptual framework of this research study is based upon institutional theory (IT) to explain the driving pressures for corporations resulting in changes of their environmental practices. The theory provides the basis for the identified pressures in section hereafter (p. 10).

Though there are (inter)national policy and regulations applicable to the shipping industry, it appears that these are not enough to elicit additional, but voluntarily initiated, behaviours from corporations in the industry. Here, the value of environmental institutions, or lack thereof, needs to be evaluated within the context of this research study. IT reviews the sociology of organisations through relating cultural and ideas to causes (Amenta & Ramsey, 2010) across a common organisational field (Delmas & Toffel, 2003). It relies upon institutions that structure actions, where institutions are not only informal and formal procedures such as routines, norms, and conventions, but also consists of cognitive scripts, moral templates, and symbol systems (Amenta & Ramsey, 2010). The theory provides a foundation to the explain the voluntary adoption of green practices as a process where corporations are subjected to various driving forces (Lun et al., 2016) that lead to different behaviours. Here, (changes in) cultural institutions are important factors behind changes in organisations behaviour. IT stipulates the importance of institutions and stakeholders as external pressures placed upon corporations to change behaviour, for example the adoption of greener practices. Stakeholders that form the institutions or are perceived to hold a corporation to these institutions are identified to exert pressure onto the corporation to change behaviours (Doh & Guay, 2006). The interdependencies between, and the interactions among, stakeholders in the analysis are recognised (Babiak & Trendafilova, 2011; Matten & Moon, 2008) as influential to the institutional outcomes.

IT theorises that institutions are not only different across the world (although institutions are becoming more internationally comparable) they can also shift over time (Campbell, 2007). Delmas and Montes-Sancho (2011) identify that institutions go through a process of three basic stages. And moving through these stages depends upon social consensus among decision makers. The first stage is “pre-institutionalisation” where there are only a few adopters of the new practice with only limited knowledge (Delmas & Montes-Sancho, 2011, p. 105). The second stage is “semi-institutionalisation” where the practice becomes diffused across a sector but is not yet permanent and stable (Delmas & Montes-Sancho, 2011, p. 105). It may even have a fashionable or fad quality. Finally, the “full institutionalisation” stage is when a practice, and associated institutions, is taken for granted thus becomes a necessary quality for a group to follow (Delmas & Montes-Sancho, 2011, p. 105). Based upon these descriptions a hypothesis for the current situation in the reviewed shipping industry is that operates in a pre-industrialisation stage (or under a crises-oriented environmental strategy). This brings some hope for the future when the relevant institutions, and related pressures, further move into the next institutional stages until GSP becomes a common practice. However, until that time it is important to better understand the current institutions and associated pressures to facilitate endeavours aiming to diffuse green practices across the shipping industry.

IT helps to understand that institutions are necessary to ensure corporate responsibility towards the interests of social actors. There are two main types of external institutions identified in the literature (Doh & Guay, 2006), both of which are considered applicable as pressures leading to changes in corporate behaviours. The first are formal institutions such as constituents, laws, policies, and formal agreements that are created by citizens (Doh & Guay, 2006). In the context of the reviewed literature, these institutions are often discussed as regulations requiring certain standards of environmental practices. The other type are informal institutions, which includes behavioural norms and mental models of individuals that have various backgrounds (Doh & Guay, 2006). These can be created by individual social actors, such as citizens, but can also be utilised by formal actors such as government agencies.
Following the exposure to institutional pressures there are two types of responses that a corporation can have (Delmas & Toffel, 2003). Firstly, they can follow a compliance strategy where the corporation follows imposed regulations and adopt industry standards. This would be the first stage of the 4SM’s environmental strategy, in which most of the corporations in the shipping industry are classified as operating under (Van Leeuwen & Van Koppen, 2016). However, going beyond regulations can be achieved through a voluntary strategy which requires creative problem solving and collaboration with stakeholders (Delmas & Toffel, 2003). This behaviour is the second type of response to institutions exposure. There are significant incentives for corporations to act solely in the interest of maximising profits, ensuring continued shareholder values, and to act opportunistically (Campbell, 2007). And yet, more socially-based corporate behaviours are practiced across the world (Campbell, 2007) where corporations begin to transition to look beyond maximizing profits (Galbreath, 2011). Here, “economic, legal, ethical and/or philanthropic responsibilities” set internally by the corporation are met (Carroll, 1991 in Van Leeuwen & Van Koppen, 2016, p. 44) while achieving financial returns (Brueckner & Pforr, 2011).

Lai et al. (2011) identify that there are not enough incentives provided in the shipping industry for many companies to make the transition to greener practices or to overcome the doubts of competitiveness when operating with these practices. And yet, Lun et al. (2016) identified that there are several corporations beginning the transition to becoming more sustainable in their practices. Within IT there are two perceptions of the role of institutions in influencing the behaviours of corporations when operating in the same sector or industry. Namely, whether these institutions lead to homogeneous or heterogeneous industry practices. Firstly, authors such as DiMaggio and Powell (1983) determine that when exposed to the same institutional pressures corporations implement similar practices, thus creating a homogeneous environment. IT highlights a social construction process where various external entities influence the strategies and motivations of corporations (Rivera, 2004). It emphasises the importance of regulatory, normative, and cognitive factors (Babiak & Trendafilova, 2011; Delmas & Toffel, 2004). These factors affect decision-making to adopt organisational practices beyond technical efficiency, where legitimation and procedures are taken for granted (Delmas & Toffel, 2004). As such institutions become standardised and rationalised in and between industries (Babiak & Trendafilova, 2011). This is through three dimensions of isomorphism: coercive pressure, normative pressure and mimetic pressure (DiMaggio & Powell, 1983) that can be applied by various stakeholders (Delmas & Toffel, 2004). “Coercive isomorphism” is created by both formal and informal pressures imposed by other organisations (such as government agencies and regulatory norms) and cultural expectations (DiMaggio & Powell, 1983, p. 150). Secondly, “mimetic isomorphism” is created through mimicking the actions of other organisations' actions when there is uncertainty for the corporation (DiMaggio & Powell, 1983, p. 150). As a response a corporation may follow another (seemingly successful) corporation’s lead through adopting their practices. Thirdly, “normative isomorphism” is based upon professionalisation where employees define the conditions and methods of their work (DiMaggio & Powell, 1983, p. 150). Here, professional networks and the selection of employees, from a small pool within the same industry, may lead to the diffusion of practices across corporations. Homogeneity is created by these three external factors, and is a widely accepted theory often used to categorise different external pressures, thus a similar approach shall be taken in section 2.3 (p. 10) to order the external pressures.

Secondly, other research indicates that heterogeneity in practices within an industry is more likely. Authors Delmas and Toffel (2003) highlight three factors that lead to heterogeneity where the internalisation of pressures into a corporation influences how, and by which pressure, a corporation is affected. Firstly, the experience of external institutional pressures changes through the process of filtering and interpretation by managers as they ‘enter’ into the organisation. Secondly, where there are multiple institutions in place at the same time, of which some might be conflicting. For corporations and management this requires a process of pressure prioritisation which can lead to response differences across an industry to the same pressures. Finally, for multinational and diversified organisations,
operating in multiple organisational fields, they can be exposed to multiple institutional norms and values across societal and organisational levels thus, again, leading to different practices (Delmas & Toffel, 2003). Here, internal pressures differ across an industry thus creating various practices. As such, it is important to discuss pressures that originate from within a corporation as well to evaluate why behaviours across the shipping industry differ. In the 4SM six internal characteristics are highlighted (Van Leeuwen & Van Koppen, 2016) further indicating the importance of understanding internal pressures leading to changes in environmental strategies.

Van Leeuwen and Van Koppen (2016) have identified that the shipping industry is already highly heterogeneous in its practices. But the differences in IT literature regarding homogeneity or heterogeneity indicates the importance of testing both the internal and the external pressures as they collectively influence the overall behaviours of a corporation.

### 2.3 Theoretical Pressures

As introduced previously, within IT there various external and internal pressures based upon institutions that can lead to changes in a corporation’s behaviour. For example, those that pressure corporations to incorporate beyond-compliance emission reduction practices. Below the research combining IT and changes in corporate behaviours are identified to provide an initial theoretical hypothesis of the different external and internal pressures that can play a factor in promoting a corporation’s green behaviours. Table 2 outlines the specific pressures that have been identified in the literature review, incorporating both formal and informal institutions. The pressures have been analytically separated to be able to describe them individually. However, in reality these pressures overlap and interact, potentially moderating the individual effect of a pressure’s influence over a corporation (Delmas & Toffel, 2004). Furthermore, it must be mentioned that the identified pressures are not specifically discussed in the context of the shipping industry.

In academic literature drivers of behaviours lead to the overall environmental changes, and these changes are then initiated directly through related pressures (Oesterwind, Rau, & Zaiko, 2016). However, in research and policy these terms are often used interchangeably (Oesterwind et al., 2016) thus the identified drivers in the reviewed literature are discussed as pressures hereafter.

<table>
<thead>
<tr>
<th>Type of Pressure</th>
<th>Individual Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External Pressures</strong></td>
<td></td>
</tr>
<tr>
<td>Mimetic pressure</td>
<td>- Industry</td>
</tr>
</tbody>
</table>
| Normative pressure | - Shareholders  
| | - Industry  
| | - Customer/consumer |
| Coercive pressure | - Government and regulators  
| | - Industry  
| | - Civil society organisation and NGOs  
| | - Shareholders  
| | - Legitimation  
| | - Customer/consumer |
| **Internal Pressures** | | |
| | - Managers  
| | - Ethical responsibility  
| | - Economic opportunities  
| | - Strategic behaviours  
| | - Green practices as modern business operations  
| | - Reputation and appearance  
| | - Poor environmental record |
2.3.1 External Pressures

Within IT, external pressures are considered to motivate corporations to undertake similar strategic actions (Dubey, Gunasekaran, & Samar, 2014). Here, stakeholders that form institutions, or are perceived to hold a corporation to the changing institutions, are identified to exert external pressure onto the corporation to change behaviours to fit a certain norm of operations (Doh & Guay, 2006). Within the reviewed literature the following stakeholders or stakeholder groups were identified to be especially relevant to influence the behaviours of corporations through external pressure. A significant portion of the literature places external pressures in the context of DiMaggio and Powell’s (1983) three dimensions of isomorphism, namely: coercive -, normative -, and mimetic pressure. As highlighted in Table 2 (p. 10) these dimensions will be considered in the following identification of theoretically applicable external pressures.

2.3.1.1 Government and Regulators

A government can impose pressure through formal institutions such as government regulation (Bansal & Roth, 2000; Brueckner & Pforr, 2011; Campbell, 2007; Delmas, 2002; Joskow & Rose, 1987; Lun et al., 2016; Smith-Jacobs, 2017; Stigler, 1971) through politics (Delmas & Toffel, 2004), utilising force (Lun et al., 2016), and (threats of) sanctions (Babiak & Trendafilova, 2011; Lyon & Maxwell, 1999) to pressure corporations to changing their behaviours. Lai et al. (2011) note that it is important for corporations to achieve compliance with regulations while improving their environmental performance.

Government pressure showcases social regulation as applicable to environmental, health, and safety practices to promote social wellbeing (Joskow & Rose, 1987). Two basic forms of environmental regulation can be used by government agencies: limiting the amount of pollution or controlling the polluting entities e.g. through a permit system (Borck & Coglianese, 2009). Regulation is an important tool as it imposes penalties onto firms that do not undertake proactive measures for self-regulation (Khanna & Damon, 1999), and are thus endangering social wellbeing. Here, pressures from a state can be identified as the most direct mechanism of institutional diffusion (DiMaggio & Powell, 1983) giving a clear signal to the industry of what is expected (Delmas & Toffel, 2004). Government and regulators have the authority to exercise coercive power (Delmas & Toffel, 2003; DiMaggio & Powell, 1983). For example, regulatory pressure can be seen as to threaten or impede a company’s operations (Delmas & Toffel, 2003; Rivera, 2004) allowing a government to force or persuade corporations to change their behaviours. This type of pressure can also promote the internal pressure for a corporation to achieve legitimacy in their industry through conforming to rules and regulation (DiMaggio & Powell, 1983).

Finally, a government can also facilitate informal pressures through promoting voluntary environmental programs (Borck & Coglianese, 2009). Borck and Coglianese (2009) associate policy with high costs, inflexible options, and incompleteness while facing ever changing environmental challenges. Through voluntary programs, when successful, stakeholders such as the government can improve the environmental conditions while also overcoming the disadvantages of regulations (Borck & Coglianese, 2009).

2.3.1.2 Industry Agreements

All three isomorphic dimensions are applicable to describe the pressures that originate from the industry. Firstly, coercive power can be exercised through industry agreements (Delmas, 2002) where compliance with an industry standard environmental practices is required (Delmas & Toffel, 2004). Not only can these regulations be enforced with penalties, but also re-enforced through imitation practices in the industry (Delmas & Toffel, 2003). Here, successful practices within the corporation’s network, for example to meet regulation, are imitated (Delmas & Toffel, 2004). This is the second isomorphism dimension of mimicking (DiMaggio & Powell, 1983). Furthermore, industry norms are promoted
through peer pressure (Brueckner & Pforr, 2011; Lister et al., 2015) and professional experts creating external pressure to (voluntary) conform to regulations (Lister et al., 2015). Normative pressure, as the third isomorphic dimension (DiMaggio & Powell, 1983), are when educational and professional authorities (in)directly set standards (Matten & Moon, 2008). Through formal education and a professional network within the industry practices (Delmas & Toffel, 2003; DiMaggio & Powell, 1983) behaviours are diffused and promoted. A trade organisation, for example, can build the credibility of the initiated voluntary behaviours and legitimacy in the industry (Rivera, 2004).

2.3.1.3 Legitimation

Legitimation is created through certain action’s befitting societies norms, value’s, and rules. As such, companies may become, or appear to be, trustworthy, meaningful, worthy, and predictable (Babiak & Trendafilova, 2011). As an external pressure, legitimation is created through the expectations by other stakeholders, such as professional experts, epistemic communities, and peer pressure (Amenta & Ramsey, 2010). Namely, the expectations regarding what constitutes as appropriate and legitimate behaviour within a particular organisational context, which is informal coercive pressure (Delmas, 2002). Here societal norms or broad cultural institutions are important factors behind changes in an organisation’s behaviour (Amenta & Ramsey, 2010). The level of legitimacy of a corporation affects how stakeholders understand and act upon a corporation, which creates coercive pressure. Furthermore, legitimacy can influence access to benefits such finances (Babiak & Trendafilova, 2011).

And when other corporations within an industry are appearing as more legitimate this can create mimetic pressure for a corporation with a (apparent) lesser position (Matten & Moon, 2008). This is through the pressure by customers or the labour force to keep the standard of better performing, and more legitimate, corporations in the same industry (DiMaggio & Powell, 1983). Or when societies needs are expressed as ambiguous goals, here the uncertainty forces a corporation to model oneself after another to increase its legitimacy (DiMaggio & Powell, 1983).

2.3.1.4 Consumers and Customers

Customers of a corporation and the consumers of its products can directly impose pressure (Delmas & Toffel, 2003, 2004). Customer and consumer pressures has been recognised as a legitimate method to express institutional preferences through the market (Lyon & Maxwell, 1999). Consumers in the developed world have growing income levels, which allows premium payments for environmental friendly products and increased pressure (Lyon & Maxwell, 1999). Customers, as major financial stakeholders for a corporation (Zailani, Eltayeb, Hsu, & Choon Tan, 2012), also give pressure to change corporate behaviours (Lister et al., 2015). The stakeholder can give coercive pressure based upon informal institutions. For example, threaten to not purchase the products (Becchetti, Ciciretti, Hasan, & Kobeissi, 2012) unless certain environmental practices are performed (Delmas & Toffel, 2003).

Specifically, in the context of shipping transport customers, such as cargo-owners, are beginning to exert pressure (Lai et al., 2011; Lister et al., 2015). For example, large global brand companies can pressure the shipowners “to either report or act on selected environmental issues” (Lister et al., 2015, p. 20). And responses to these requirements or concerns (Delmas & Toffel, 2004) creates rewards for the corporations (Becchetti et al., 2012), for example through keeping or accessing new customers. These rewards make it strategic for a corporation to change behaviours. Here, the external pressure is translated to an internal pressure for the affected corporation.

2.3.1.5 Shareholders

Investors can directly shape the governing of organisations (Matten & Moon, 2008) through having a strong voice (Lun et al., 2016). With coercive pressure, shareholders can control and/or press
corporations to practice certain behaviours, and even monitor behaviour changes (Becchetti et al., 2012). Some stakeholders focus specifically on a firm’s commitment to social activities (Becchetti et al., 2012). Lyon and Maxwell (1999) identify that green investors are creating pressure for corporations to act greener. There can be significant consequences for corporations when their environmental impact is higher than (institutionally) required by their shareholders. Then regulatory action is often undertaken against the offending corporation (Lyon & Maxwell, 1999) through shareholder activism (Matten & Moon, 2008). Thus, there is internal pressure from the corporation to ensure that the standards of shareholders are met.

2.3.1.6 Civil Society Organisations and NGOs

Civil society organisations are a type of institutional category identified by Doh and Guay (2006). They are described as advancing the collective interests through forming informal institutions with the goal to (in)formally institutionalise these interests into society. Here non-government community and environmental interest groups (NGOs) can create coercive pressure through activism (Borck & Coglianelle, 2009; Hafenbrädl & Waeger, 2017) and citizen lawsuits (Delmas & Toffel, 2003, 2004). Furthermore, the pressure exerted can create the internal pressure with the influenced corporations to maintain or improve relations with their communities to be recognised as part of a “good neighbour policy” (Bansal & Roth, 2000, p. 730). This highlights the link between external pressures and the internal pressures discussed next.

2.3.2 Internal Pressures

A firm’s perception of institutional pressures is a function of stakeholder actors, and their external pressures. But external pressures are moderated by the firm’s own organisational characteristics, strategic positioning and attributes of potential environmental management practices (Delmas & Toffel, 2003). Though external pressures can have significant impacts upon a corporation, changes in behaviour and practices must come from within a corporation. In the literature various internal pressures have been identified as influencing corporate behaviours.

2.3.2.1 Ethical Responsibilities

The ethical responsibility that a corporation may feel towards its impact on the environment within a societal context can build pressure to change. Van Leeuwen and Van Koppen (2016) note that corporations can consider good citizenship and moral responsibility for the environment in their corporate strategies. Some authors discuss a corporation’s ethics as “doing what is right, just, and fair” (Kemper, Schilke, Reimann, Wang, & Brettel, 2013, p. 1955) while others identify an ethical value and what is perceived as important, good, and moral (Heikkurinen, 2011). Ethics, however, is increasingly prevailing as a motive to explain certain corporate behaviours (Bansal & Roth, 2000; Heikkurinen, 2011; Lun et al., 2016). For example, the practice of CSR (Brueckner & Pforr, 2011).

2.3.2.2 Management

Bansal and Roth (2000) identify that (top) managers are key to translate a corporation’s concerns stemming from its social obligations and value’s. This behaviour is often associated of a corporation being innovative and independent, and thus goes beyond mere mimicking of others (Bansal & Roth, 2000). Managers are influenced by institutional mechanisms that create and diffuse norms, values, and rules producing similar organisational behaviours. Here, institutional forces or external pressures, permeate an organisation through the filtering and interpretation by managers according to a firm’s unique history and culture (Delmas & Toffel, 2004). Furthermore, managers are also responsible to filter various conflicting external pressures placed onto the corporation. They identify which pressures require prioritisation (Delmas & Toffel, 2003, 2004) effectively influencing the external pressures experiences for a corporation.
Furthermore, societal norms are enforced by formal education and professional network creating and diffusing new institutions (or on the job socialisation) to managers (Borck & Coglianese, 2009; DiMaggio & Powell, 1983). And through filtering personnel within the same organisational field builds normative isomorphism (selective number of people sharing similar practices and similar information) which homogenises a corporation’s internal pressure (DiMaggio & Powell, 1983). Furthermore, as an organisational member in a corporation managers have a degree of discretion to act upon their value of the environment (Bansal & Roth, 2000; Campbell, 2007; Delmas & Toffel, 2003) through leadership value’s (Delmas & Toffel, 2003). And a unethical behaviours are reflected directly onto the managers (Matten & Moon, 2008), as such they are inclined to enforce the pressure of upholding the ethical standards within the corporation out of personal interest.

2.3.2.3 Economic Opportunities

Regardless of the environmental goals, a corporation operates with the objective to ensure the economic sustainability of the company (Babiak & Trendafilova, 2011; KNVR interview, 17-11-2017). And when changes in behaviours can bring economic opportunities (Bansal & Roth, 2000) this becomes a strong internal pressure. Within the reviewed literature the following economic benefits are identified to lead to changes in behaviour: shifts in demand-supply of environmental friendly products e.g. by consumers and investors (Lyon & Maxwell, 1999), increased revenue through green marketing (Bansal & Roth, 2000), driving the attention of customers/consumers away from a products price (Kemper, Schilke, Reimann, Wang, & Brettel, 2013), productivity gains through a reduction in resource usage (Lai et al., 2011), and larger financial margins than the competition (Kemper et al., 2013). From these examples the rationality of adopting ‘beyond-compliance’ practices (Delmas & Montes-Sancho, 2011) becomes clear. Ornitz and Champ (2002, p. 329) identify, specifically for the shipping industry, that “economic incentives, in the form of the market, of repeat clientele, strong customer base, public stock support, a strong bottom line picture, will be the most vigorous forces for a proactive, safety-oriented approach to shipping”.

But the opportunities are driven by what external stakeholders impose upon or provide to a corporation. For example, consumers can afford premium payments for environmental friendly products (Lyon & Maxwell, 1999). And if governments did not utilise market-led incentives to promote certain behaviours (Gibbs, 1996) the internal pressure of economic opportunities would be much smaller. However, high costs of compliance with regulations can also be an internal economic incentive for corporations to reduce their overall environmental impact rather than investing into more expensive mitigation strategies (Khanna & Damon, 1999).

2.3.2.4 Strategic Behaviour

When conforming to a more environmentally friendly method of operations (Babiak & Trendafilova, 2011) the economic benefits highlighted above makes beyond-compliance practices strategic for a corporation to employ. In the reviewed literature this is discussed as a separate pressure. Namely, increased environmental practices brings rewards for superior performance, a condition of long-term returns with short-term losses (Lyon & Maxwell, 1999) to the corporation. The strategic behaviour pressure is often one of economic self-interest, as there are significant expected gains due to public recognition, the possibility of technical assistance with some programs, and the potential to avoid liabilities and high costs of compliance in the future (Khanna & Damon, 1999). Other benefits of increased voluntary environmental efficiency include: reducing stringent treatment by regulators (Lyon & Maxwell, 1999; Videras & Alberini, 2000), reduce competition (Lyon & Maxwell, 1999), voluntary programs as signal of low abatement costs (Lyon & Maxwell, 1999), lower future abatement costs (Khanna & Damon, 1999), increased distribution capabilities (Kemper et al., 2013), driving customers attention away from a service or products price (Borck & Coglianese, 2009; Kemper et al., 2013), positive publicity (Borck & Coglianese, 2009), and increased access to strategic collaborations (Babiak
These benefits clearly link the pressure of strategic behaviour with economic opportunities as pressure behind change in behaviours. However, accessing these benefits requires that a corporation can look beyond the corporation and current pressures to recognise these opportunities (Borck & Coglianese, 2009; Lyon & Maxwell, 1999).

2.3.2.5 Emission Reductions as Modern Business Practice

Pressures, such as by the industry and/or societies norms, can lead to changes in the internal pressures of a corporation. A possible internal pressure that has been identified is that increasingly the utilisation of environmental practices, beyond legal requirements, can be recognised as today’s modern business plan (Smith-Jacobs, 2017). For example, a change in the code of conduct practices by (voluntary) initiatives such as the UN may be copied from within the corporation. Here, new institutions can be come mainstream (Matten & Moon, 2008).

2.3.2.6 Poor Environmental Record

Within the literature, research has indicated that the pressure of a poor environmental record incentivises a corporation to adopt beyond-compliance practices (Borck & Coglianese, 2009; Lyon & Maxwell, 1999). For example, in response to disasters (Delmas & Toffel, 2003) corporations change their practices. External factors such as bad press with environmental disasters or impact create an internal pressure for mitigation through adoption of greener practices (Arora & Cason, 1995). In the shipping industry, however, this could be limited as the industry is considered as releasing the least amount of emissions of the different transport sectors (Van Leeuwen & Van Koppen, 2016).

2.3.2.7 Reputation and Appearance

The internal pressure of reputation is the desire of a firm to improve its appropriateness of actions within set regulations, norms, value’s, and beliefs of society and the relevant industry (Bansal & Roth, 2000). And is as such related to the external pressure of building legitimation. Public recognition and increased consumer goodwill, which is achieved through reputation building, is improved with the adoption of greener practices (Khanna & Damon, 1999) bringing additional benefits.

Reputational gains improve a corporation’s ability to attract resources, enhance its performance, and build competitive advantage over others in the industry (Babiak & Trendafilova, 2011). Building reputation can also help to repair a tarnished environmental reputation (Doh & Guay, 2006) in the face of environmental disasters. These two benefits of building reputation also showcase how different internal pressures tie together, highlighting the importance of understanding the contextual factors identified next.

2.3.3 Contextual Factors

The external and internal pressures described previously were analytically separated to facilitate individual pressure identification. However, in reality these pressures overlap and interact which can moderate the individual influences over a corporation (Delmas & Toffel, 2004). Still, within the reviewed literature several authors have highlighting key pressures that their research determined to give the most pressure to changing behaviour. Within the reviewed literature several external and internal pressures have been identified by various authors. Yet, there is no consensus within the literature which pressure is the most important to lead to beyond-compliance behaviour in corporations. Regarding external pressures three articles (Bansal & Roth, 2000; Lai, Lun, Wong, & Cheng, 2011; Lyon & Maxwell, 1999), identified regulations, or legislation, as key to changing corporate behaviour. Dubey et al. (2014) determined that market pressures (e.g. competition) are key to help an organisation to improve. This is while Lister et al. (2015) determined that customers are the key pressure. Finally, Rivera (2004) identified that building social legitimation is key to achieve long-term
profitability and is as such an important pressure. Ornitz and Champ (2002) simply identify that external pressures are important to facilitate internal pressures and are such key to change behaviours.

Other authors identified internal pressures as key facilitators of behavioural changes. Hafenbrädl and Waeger (2017) find that a managers belief system and a corporations moral value’s/ emotions are the two main pressures leading to behavioural changes. Delmas and Toffel (2003) also find management key, where managers are needed to exercise rational thinking to identify when it pays to be green. Here management needs to be able to recognise economic opportunities of reduced environmental impacts (Delmas & Toffel, 2003). Furthermore, economic opportunities are considered a key pressure as well by Lyon and Maxwell (1999) and Ornitz and Champ (2002). These pressures are provided by external stakeholders “[...] in the form of the market, of repeat clientele, strong customer base, public stock support” (Ornitz & Champ, 2002, p. 329). Furthermore, poor environmental record, shareholder pressure, and negative reactions shareholders to higher than expected emissions are key pressures (Lyon & Maxwell, 1999).

It is important to highlight that not every reviewed article identified a key pressure or identified, and as evidenced above, the same key pressure. With various research methods and research objectives it is expected that results and conclusions of key pressures differ within the literature. For example, the interaction of pressures, the diffusion of external pressures into a corporation, and its response to pressures may lead to this difference in identifying key pressures. Some contextual factors have been identified in the literature, including factors specific to the shipping industry, as influencing a corporation’s ability to undergo a behavioural change or its perception of these pressures. This further explains the differences in conclusions of key pressures in the reviewed literature.

Contextual factors such as field cohesion, the intensity and density of formal and informal network ties within a field (Bansal & Roth, 2000), and the strength of enforcement (Borck & Coglianese, 2009) affects the pressures experienced and a corporation’s response. For example, Lister et al. (2015) discuss that corporations in the shipping industry are unable or unwilling to make significant investments into greener practices. This is due to high level of uncertainty within the industry regarding regulations. For example, the moving deadlines and weak enforcement of IMO regulations (Lister et al., 2015). This, in combination with regulatory unevenness across regions, complicates investments into more environmentally friendly practices.

The financial performance of a company is also discussed in the literature as influencing the experience of, and responses to, pressures. Research suggests that implementing voluntary environmental regulations tend to benefit large firms relative to small firms within industries (Borck & Coglianese, 2009; Campbell, 2007; Joskow & Rose, 1987). Furthermore, a firm’s adaption of behaviours is driven by performance outcomes, e.g. when it pays to be green and managers rationally adopt beyond-compliance practices (Delmas & Toffel, 2003). Finally, the financial rewards associated with higher environmental performance and/or the negative reactions of (green) investors when environmental impacts are higher than expected all play a part (Lyon & Maxwell, 1999) in how pressures are experienced and responded upon.

Furthermore, the diffusion of institutions through globalisation and across multi-national corporations also affects pressure experience and a corporation’s response (Delmas & Toffel, 2004). A growing number of shipping companies are aspiring to becoming more sustainable in their practices as globalisation and global economic integration pressures firms to adopt more environmentally friendly operations (Lai et al., 2011). Institutional variations arise from differences in range of social, political, and economic experiences in respective political, cultural, religious and geographic contexts (Doh & Guay, 2006). Globalisation, as a process, leads to the creation of new economic, political and social situations transforming the traditional roles of the state (Brueckner & Pforr, 2011). As such moving
institutions beyond the national sphere (Brueckner & Pforr, 2011) which can lead to changes in pressures that, in turn, can affect corporate behaviours.

Finally, the market of a corporation’s industry can affect the experience of external and internal pressures. Pressures originating from the market, e.g. through consumers and investors, are recognised as legitimate ways to express preferences of behaviour (Lyon & Maxwell, 1999) and setting industry standards. The market concentration affects the diffusion of environmental practices, where a market with little fragmentation (thus only a few big players) is characterised with higher rates diffusion (Delmas, 2002; Delmas & Toffel, 2004). Also access to (new) markets can stimulate changes in internal motives (Delmas, 2002). As such, the market can be used to incentivise greener behaviours. For example, market-based mechanisms align economic strategies of a corporation with environmental aims and strategies (Van Leeuwen & Van Koppen, 2016) allowing the expression of formal institutions by government. Furthermore, in high competition markets the adoption of environmental friendly practices allows a corporation to draw a customer’s attention away from the price as such improving its performance (Kemper et al., 2013).

In summary, there are various external and internal pressures, in combination with contextual factors, which can be used to promote behavioural changes of corporations. But whether all of these pressures are experienced by the case studies was tested through four case studies using the method outlined in the next chapter.
3 Method

The use of qualitative research allows for prolonged or intense contact with everyday life to reflect this accurately (Punch, 2005). The research performed was based upon the concept of "explorative research" (Baarda & De Goede, 2006, p. 103; Punch, 2006). The objective of the method outlined hereafter was to create a functional theory regarding the phenomena studied (Punch, 2006). There is no known literature investigating specifically the internal and external factors that push initiatives in the shipping industry to be more sustainable beyond what is legally required. This study aims to investigate why there are differences between shipping companies in their approaches to sustainable practices and tries to account for the factors leading to these differences (Baarda & De Goede, 2006; Punch, 2006). And though there might be multiple interpretations of these ways, theory is utilised to find the most-likely explanation of the behaviour (Punch, 2005). There are four principle stages of this research study’s method, as indicated in Figure 1. The four stages identified below are an interpretation of the analytic induction analysis method as presented by Punch (2005) and Silverman (2011). This method allows for the systematic examination of case studies as to identify similarities between cases to build concepts or ideas (Punch, 2005) regarding a phenomena. In this research study, analytic induction allows for the assessment and identification of pressures behind the beyond-compliance practices of four case studies. The research method in this chapter outlines the different aspects required for the four method stages identified hereafter.

Stage 1: The introduction and problem statement (p. 3) of this thesis represents the phenomenon identified through a literature review to serve as the basis of this study. Namely, providing the context of the situation needing research.

Stage 2: An extensive literature review was performed to investigate the theoretical pressures to explain the phenomenon. These pressures were then tested in stage III.

Stage 3: The collected data regarding the four case studies and accompanying analysis served to determine the pressures applicable in practice. Expert interviews were performed for additional knowledge and support. From the discussion the key pressures that are coaxing shipping corporations into being more sustainable were identified.

Stage 4: Upon the key pressures this report’s conclusion is based, as will the policy recommendations.

3.1 Research Scope

The shipping industry covers the entire world, with ships transporting goods on a daily basis. However, this study specifically focussed on shipping activities here in the Netherlands. This simplifies the number of organisations that could be approached for this study. Regarding the shipping industry, the Netherlands contains one of the biggest seaports in the world, namely the Port of Rotterdam (World Shipping Council, 2017). At handling more than 600 million ton of goods in 2015 (Eurostat, 2017) it is the largest EU seaport. The Dutch fleet of ships consisted of almost 8,500 ships in 2015, and exported 35.425 million US$ worth of transport services that same year (UNCTADstat, 2017). This showcases that on one hand the shipping industry plays an important economic factor for the Dutch society. While on the other, the shipping industry confronts the government and the public with significant environmental concerns (IPCC, 2014).
As will be discussed in the method section, the scope of the data collection was narrowed further to Dutch shipowners as (potential) case studies. Van den Hoed (2015) identifies that Dutch shipowners want to become more sustainable. The selection of these cases is based upon various characteristics to provide a complete overview of corporations with beyond-compliance emission reductions, which will be discussed further in the following section. In Appendix 1 (p. 80) a brief description of the Dutch national law regarding shipping and emissions is given. This is to highlight what Dutch shipowners must comply with beyond international law and regulations.

### 3.2 Research Design: Case Study Strategy

Case studies are the unit of analysis for this study’s the qualitative data collection. As stated in the problem statement there are several instances of companies that are showcasing sustainable behaviour beyond the norm of the shipping industry. Thus, an investigation into these outliers can aid in answering the research questions. The utilisation of “case studies” as a research strategy allows for a better understanding of the motivations and drivers behind the real-life phenomena of green practices through multiple sources of evidence (Creswell, 2013; Kumar, 2011) to represent an entire population (Kumar, 2011). Case studies, in theory, provide unique and valuable knowledge to understand complex situations, such as social behaviour, through holistic and in-context research (Kumar, 2011; Punch, 2005, 2006; Verschuren & Doorewaard, 2010). Specifically, “collective case studies” (Punch, 2005, p. 144) provide an extended instrumental investigation to investigate the phenomena from multiple perspectives to refine the theory explaining beyond-compliance practices. And “negative case studies” are used to study those that are seemingly different from the general pattern (Punch, 2005, p. 146) or industry norm as to understand the researched phenomena. Through utilising multiple data sources in researching case studies triangulation is achieved, thus improving the credibility of the results created (Verschuren & Doorewaard, 2010).

As discussed earlier, in this study a focus is given to the Netherlands for this investigation. Here “strategic sampling” (Verschuren & Doorewaard, 2010, p. 179) allows for the selection of case studies to facilitate the selection of a variety of Dutch shipowners. Case studies were sampled through the criterion method, as presented by Punch (2006), where the cases that fit the study’s specific criteria can be used to answer the research question(s). One of these criteria is the selection based upon beyond-compliance utilisation of green practices. Thus, the method of selecting an “extreme case” is applicable as the cases selected showcase unusual manifestations (Punch, 2006, p. 51) or practices against the norm. For this study, four case studies were identified that fit the criteria. These were selected based upon suggestions by Mr. Elco Leemans (personal conversation, VVM Café seminar 20-8-2017) and expert Lurkin (KNVR interview, 17-11-2017). Appendix 2 (p. 82) provides an overview of the four case study interviews that were performed.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating beyond</td>
<td>The goal of the research is to determine what pressures are important to promote beyond-compliance practices. Thus, corporations that do not fit this criterion do not suffice as a relevant case study to answer the research question(s). Here the 4SM (Van Leeuwen &amp; Van Koppen, 2016) presents a guideline to classify the state of the environmental management of a corporation to understand the environmental situation and strategy.</td>
</tr>
<tr>
<td>Stage I: Crisis-</td>
<td></td>
</tr>
<tr>
<td>oriented strategy</td>
<td></td>
</tr>
<tr>
<td>Internationally</td>
<td>Through this criterion, the selected corporations do not only fall under national legislation but also international rules, regulations, and policies such as by the IMO. As international polices are often integrated into national policies it is important to consider this level of policy making in the context of GSPs.</td>
</tr>
<tr>
<td>operating</td>
<td></td>
</tr>
</tbody>
</table>
Many of the mitigation options outlined in the introduction (p. 2) require direct changes to the ships used in transport. Thus, shipowners, ultimately, carry the responsibility of ensure that these changes are implemented or acquire vessels that meet certain criteria. This makes shipowners important as case study corporations to research.

In the Netherlands, inland shipping is important shipping sector as the nation is located in the deltas of several major European rivers. However, a focus shall be given solely to seaborne transport as there is more literature available on the emissions from this sector. As such case studies must operate sea transportation services.

For this criterion, case studies involved in commercial shipping will be selected. A similar focus is given in the 4SM research by Van Leeuwen and Van Koppen (2016). Thus, to optimally utilise the model presented by the authors commercial shipping shall be a criterion for the case studies.

Due to availability limitations the case studies investigated will also be selected based upon their accessibility to be part of the study.

Based upon the first five criteria, initially five corporations were approached to be part of the study. As one was not available for an interview this case study was dropped as it no longer met the sixth and final criteria (participatory in the study). However, Anthony Veder, Vroon, Fairtransport, and Case X were interested and available to partake in the study. Here, Case X denotes the wishes of one of the case studies to remain anonymous in the write-up of this research study. Finally, the criteria of operating under 4SM stages beyond ‘crisis-oriented strategy’ is determined based upon a document review and the information gathered during the interviews.

3.3 Data Collection

The data collection was performed and analysed by a single individual, after which referred to as the investigator. A mix-method of data collection was employed in this research study through utilising three types of data, namely: literature review, documents, and interviews as discussed in the following sections. The aim of utilising more than three data sources, other than receiving more information and data, is to increase the credibility of the research conducted (Bowen, 2009; Punch, 2005) through “method triangulation” (Thurmond, 2001, p. 254). The data collected through these three sources are to be used for both the first, second, and third stage of this study’s research method (Figure 1, p. 18).

3.3.1 Literature Review

A literature review, as a source of data, is often used for framing the problem and setting the scene (Bowen, 2009; Yin, 2009). However, for the analytic induction method, which is expanded upon in section 3.4 Data Analysis (p. 23), a literature study was utilised as a source of data. The research phenomenon was, firstly, investigated through a literature review (first stage of the research method) to develop a conceptual theory (second stage of the method). This conceptual theory is an initial theoretical hypothesis of the different external and internal factors that can play a factor in promoting a corporation’s green behaviours. These were then tested through the case study interviews to identify the pressure that are actually behind their beyond-compliance practices.

The literature investigated for this thesis was sourced through two primary research data-bases: the Wageningen UR online library and www.scholar.google.com. Key research terms or themes (in English and Dutch) that were utilised include the following: "shipping", "shipping industry", "maritime transport", "climate change", "global warming", "institutional theory", "emissions", "fuel", "corporate social responsibility", "green management", "mitigation", "emission", "voluntary
environmental programs”, “environmental” and “shipowner”. These key terms reflect the various aspects covering the research topic. The terms were used in various combinations to identify multiple sources of information relevant to the research topic. The literature reviewed for this data collection includes academic and scientific articles as a source of knowledge (Verschuren & Doorewaard, 2010). The articles found through the database search were also used to identify additional literature, namely through the snowballing method (Jalali & Wohlin, 2012). Through this method literature can be identified “from reference lists” of the primary articles (Jalali & Wohlin, 2012, p. 29).

3.3.2 Documents

The second type of data was the reviewing of documentation. This allows for the establishment of contextual and background additional information (Bowen, 2009; Verschuren & Doorewaard, 2010) for the research and case studies. Documents as a data source can take on a variety of forms, including: “[…] newspapers (clippings/articles) […] and] various public records” Here paper and electronic based materials, accessible in the public domain such as company websites, (Bowen, 2009; Creswell, 2013) were reviewed to provide information regarding the case studies outside of the interviews.

Documents are often readily available in great quantity and variety which allows for information gathering throughout the length of a study (Creswell, 2013; Verschuren & Doorewaard, 2010). Documents allow for the research into the case studies to not solely depend upon people for information (Verschuren & Doorewaard, 2010). But rather, documents facilitate looking beyond a single individual’s perception of their respective companies effectively reducing interview data bias (see section 3.5 Research Limitations, p. 24). Documentation was used to compare language (Creswell, 2013) and information regarding the case studies (practices) to data gathered during the interviews.

3.3.3 Interviews

Finally, interviews were a critical source of data in this research study. Interviews allows an individual or group to be (scientifically) assessed for academic analysis (Punch, 2005) to understand a wider situation (Verschuren & Doorewaard, 2010) and is often operationalised in qualitative research (Edwards & Holland, 2013; Punch, 2005). This method utilises the individual as the unit of analysis: to identify behaviours, attitudes, and perceptions of the individual while also understanding how the organisation, represented by the individual, works and why certain behaviours are displayed (Punch, 2005; Yin, 2009). Interviews served to address the third stage of the research method (Figure 1, p. 18). An overview of the conducted interviews is presented in Appendix 2 (p. 82).

The data sourced through an interview is seen as giving accurate answers or facts about the social world investigated (Punch, 2005; Silverman, 2011). For this research study, the following interview type was utilised: a semi-structured interview. Here a combination was made between planned and structured questions to investigate the theoretical pressure behind green practices. However, through incorporating an standardised open-ended (or unstructured) approach in parts of the interview questions knowledge can be gathered when the information is uncertain or unknown (Baarda & De Goede, 2006; Turner, 2010). An interviewee can respond outside a pre-established response category using their own language and thus expand upon answers or provide new (insights into) pressures and motivations (Edwards & Holland, 2013; Punch, 2005; Silverman, 2011; Turner, 2010). The set-up will be further discussed in section 3.3.3.3 Interview Set-up (p. 22) and the specific interview questions are presented in Appendix 3 (p. 83).

3.3.3.1 Interview Ethics

As individuals are utilised as sources of data it is important to briefly identify the ethical considerations that were made to protect these individuals, and the corporations they represent. Firstly, the topic of
consent must be addressed. The interview was recorded to allow transcription and word-based coding in the data analysis. This, of course, had to be agreed upon by the interviewee. Secondly, the topic of confidentiality must be considered. Namely, the possibility that an individual or the company represented by the individual did not want to be publicly named in this research write-up or directly quoted. One interviewee had requested that in the thesis report he and his company are not made public. As such they are indicated as Case X and interviewee X. Finally, the interviewees received a provisional copy of interview summary, where interviewee X requested the transcript as well. This was to ensure that the correct observations of the interviews were made, to strengthen the results validation (Kumar, 2011). Slight changes were suggested by the interviewees in the summary or the transcript. These three points of anonymity were discussed with the interviewee and their response is stated in the recording.

3.3.3.2 Expert Interviews

Beyond in-depth interviews with the identified case studies two additional interviews were conducted, as identified in Appendix 2 (p. 82). These interviews were to collect supplementary knowledge regarding the background and context of the investigated phenomena (Verschuren & Doorewaard, 2010). Actors such shipping industry consultants can provide more real-life information regarding the situation that the case studies are operating under than available documents. The following individuals were interviewed for this study:

- Mr. N. Lurkin – Senior Policy Advisor Environmental Affairs at the Koninklijke Vereniging van Nederlandse Reders (KVNR) or the Royal Association of Dutch Shipowners. As the representative of the Dutch maritime industry operating on the sea the interviewee gave specific information regarding possible experiences of pressure for Dutch shipowners. For the interview with Mr. Lurkin a slightly different version of the interview questions was used (see Appendix 4, p. 88).
- Dr. J. Faber – Theme leader Air- and Shipping Transportation at CE Delft. This expert presented at the VVM café on the 20th of September 2017, where his talk showcased intimate knowledge regarding the scientific community on the topic of the shipping industry thus representing as a valuable source of information. During an additional expert interview the interviewee expanded upon the shipping industry and beyond-compliance practices within the context of pressures. In the interview with Mr. Faber the case study interview questions were used as a guideline where not all questions were asked but rather as points of discussion.

3.3.3.3 Interview Set-up

In preparation to the interviews initial contact with the investigated case studies was made through email. Per case study a specific text was drafted serving as first contact, which are identified in Appendix 5 (p. 91). A preliminary research abstract was also sent to the case studies before the interviews take place (see Appendix 6, p. 94). This was used as a standardised explanation of the study (Silverman, 2011). As such, providing the interviewees with information of the study while preventing bias introduction and setting mutual expectations.

The interviews were conducted with individuals with knowledge regarding the environmental practices performed by the corporation and an understanding of the managerial reasoning to identify the internal and external pressures behind these practices. As the scope of the research focuses on the Netherlands and targets Dutch companies all interviews were conducted in Dutch as this appeared to be the preferred language. English is the language used to convey the results in this thesis, as such the final analysis outcome were translated by the investigator for the write-up of this study.

The interviews were set-up following inputs from various methodological texts. The four steps presented by Creswell (2013) in a general protocol layout, the eight principles for an interview
preparation (Mcnmara, 2009 in Turner, 2010), and information from Edwards and Holland (2013). The general interview protocol was then expanded upon to outline the interview structure. This interview protocol includes a heading, prepared instructions of the interview, the interview questions, and a follow-up plan text. These remained consistent between the interviews to reduce discrepancies. Firstly, the instructions allowed for control of the interviewee expectations of the data collection through reiterating the purpose of the study, the relevance of the corporation and the interviewee to the study, and what will happen in the interview (e.g. structure of the interview). Furthermore, the terms of confidentiality, length of interview and any pre-interview questions were discussed. Secondly, the interviews were based around a set order of questions that includes structured and open-ended questions, that gradually become more specific. The questions were developed to reflect the theoretical pressures behind green practices identified in the literature study, see section 2.3 Theoretical Pressures (p. 10). Here the interviewee could answer whether a factor applied and then rank how much the factor applies to their practices. Open-ended questions were utilised to give space for the interviewee to express additional pressures not reflected in the interview. Finally, the follow-up plan was used as a conclusion to the interview and discuss what came next. i.e. the sending of a preliminary interview summary to ensure that the investigator’s perception of the data reflects the position described and that a final version of the thesis is to be made digitally available to the interviewee. The interview questions and protocol are outlined in Appendix 3 (p. 83).

3.4 Data Analysis

The method of data analysis focussed on analytic induction as to assess the data collected through the literature review, documents, and case study interviews. This type of analysis allowed for the systematic examination of similarities between cases from which concepts or ideas of causal relationships related to the studied phenomena can be developed (Punch, 2005). The goal was to identify the factors that the investigated case studies experience to build a practical theory, as per the third stage of this study’s research method (Figure 1, p. 18).

Punch (2005) and Silverman (2011) both describe a basic outline of the analytic induction method for data collection and analysis. This method is used, in theory, to define explain a phenomenon through hypotheses based upon case study investigations. However, it must be noted that analytic induction served as a starting point for this study’s research method. Unlike the theoretical analytic induction method three sources of data have been used. Namely, a literature review, a document review, and case study research through interviews. The four stages outlined in Figure 1 (p. 18) broadly follow the structure of the original analytic induction method discussed by Punch (2005) and Silverman (2011). But, rather than revisiting the research hypotheses (to explain a phenomena) with each new case study the data collected for this study was analysed at two stages. Firstly, theoretical pressures that could be applicable to the shipping industry were identified based upon a literature study. The outcomes of this investigation are outlined in section 2.3 Theoretical Pressures (p. 10). Secondly, these pressures were then tested through the analysis of the interviews with the four case studies through using grounded theory. This was to identify the pressures that are applicable in practice.

3.4.1 Pressure Ranking

During the case study interviews, the interviewees were asked to rank the different external and internal pressures on a scale from one (very low pressure) to five (very high pressure). This allows a quick overview of how much a single pressure influences, or is relevant to, the case studies. In Table 11 (see Appendix 7, p. 95) the value’s given during the interview, or at a later point in time through email correspondence, are highlighted. And the representation of ranges in rank or multiple ranks in a single cell indicates different types of pressure sources with different levels of pressure experienced within one category. An average rank was created between the case studies classified as practising under the
same 4SM environmental stage to showcase a standard of sorts of pressure experiences. Here the different ranking values were added up and then divided between the number of rankings (ranging between three to five in total, if more than one rank was given by an interviewee to a single pressure) to create an average. In the case of that the ‘pressure is not applicable’ (NA) or ‘not possible to rank’ (NF) these responses were treated as having a 0 value.

3.4.2 Case Study Stage Classification

The data collected, through the method data triangulation, was used for the environmental strategy classification of the case studies. This was to answer the first sub-research question and to satisfy the first case study selection criteria. Specifically, the six internal characteristics: ambition, knowledge and information exchange, technology, organisation, budget for environmental investments, and product communication, and the two external characteristics: environmental risks and environmental opportunities (see Table 1, p. 7). Four sources of environmental strategy descriptions, and associated characteristics, were used to classify the four case studies. Namely, the articles by Van Koppen and Hagelaar (1998), and by Van Leeuwen and Van Koppen (2016), the Environmental Management and Industry coursebook by Van Koppen and Van Leeuwen (2017), and finally the MSc thesis by Hougee (2013). The descriptions created the theoretical foundation to compare the collected data with as to determine the individual case studies environmental strategy Stage. First, per individual characteristic and then the overall environmental strategy was identified.

3.4.3 Grounded Theory

The interviews conducted were recorded, to facilitate transcription after the interviews had taken place. The transcription of the interviewees responses was word-by-word (Campbell, Quincy, Osserman, & Pedersen, 2013) with the exception of oh’s, ah’s and the likes. By being so specific allowed for the identification of additional themes across the interviews beyond individual pressure experiences (Campbell et al., 2013). These transcripts were loaded into Atlas.ti, a qualitative data analysis software, to code the transcripts using the grounded theory method.

By using grounded theory, the interview responses were analysed to develop a practical theory of pressures behind beyond-compliance practices based upon the data collected (Punch, 2006). The method of inductively generated codes (Campbell et al., 2013) was utilised during the data analysis. Here initial codes were based upon the different individual pressures identified during the theory analysis. And served as a starting point from which to start the analysis and the development of codes as to identify a core category, secondary categories and finding relationships between these (Punch, 2006). The goal of the coding was to extract the key comments of the individual case studies related to the identified pressures, even when outside the related question. E.g. a comment regarding customers of the shipowners outside the customer pressure specific question. Furthermore, this method allows for the identification of new themes and/or pressures across the four case study interviews that would have been otherwise missed in individual interview analysis. The practice of coding was based upon guidance provided in the book ‘Qualitative data analysis with ATLAS.ti’ by Susanne Friese (2014).

3.5 Research Limitations

As with any research performed, there are limitations to what a single study can represent of the vast world. Thus, it is important to highlight some key research limitations identified. The majority of the (possible) case study identification was performed through an internet search query. This could have introduced a bias into the case study section and thus into the data collected. However, this was overcome through using case study suggestions made by experts and setting the case study criteria to ensure that the corporations investigated were relevant to this research study.
The primary source of data to be utilised is collected through in-depth individual interviews. The use of people as instruments of data collection can introduce limitations to the data. People are often not aware of their own behaviours, all of choices that they make, and are often (unintentionally) selective in memory (Baarda & De Goede, 2006; Punch, 2005). Humans often have the compulsion to showcase better behaviours than actually is the case, which can lead to inaccurate answers by the interviewee during the interview (Baarda & De Goede, 2006; Punch, 2005; Yin, 2009). However, through using online available documentation, the interview data collected was compared to other data to reduce this limitation. Finally, interviewees can also have an individual interpretation of the interview questions (despite it being designed to be only interpretable one way) which influences the answer and associated results (Creswell, 2013). These limitations were addressed through preventing question bias and answer leading in the development of the interview questions, but this can never be fully overcome.

Furthermore, the interviews, data analysis, and data interpretation was performed by a single individual and is thus vulnerable to human error. For example, utilising an interview requires interpretation by the investigator (Creswell, 2013). However, as the investigator was supervised during the study it is expected that the limitation has been reduced. Not only could the transcription of the interview introduce possible limitations due to human actor but there is the language limitation. As the research was performed utilising Dutch companies the interviews were performed in Dutch. To reduce translation bias, the coding method, as described under the data analysis, was completed in Dutch. Following this the key words and categories were translated for accessibility in the write-up of the study.

The set-up of this study, through using interviews, the influence of external pressures was identified through the experiences of the four case studies. Yet, as recognised in the literature reviewed, external pressures can be filtered and interpreted by management to prioritise upon which pressure to act (Delmas & Toffel, 2003, 2004). Furthermore, a scoping limitation needs to be considered. By utilising one country to investigate a global phenomenon, extrapolating general trends and insight that are applicable across the vast industry of shipping to represent reality with conviction is unwise. Based upon these two limitations, the conclusion is a starting point to bridge the gap in the literature between (institutional theory) pressures and the shipping industry (see problem statement, p. 3).

Finally, it is important to highlight how some of the interview limitations were addressed. It is difficult to determine the ability of instrument (such as an interview) to be a consistent tool of qualitative data collection. Interview limitations are reduced through testing the “trustworthiness” and “authenticity” (Guba and Lincoln, 1994, p. 114 in Kumar, 2011, p. 171) of the data collected. For this research study the validation and reliability method for qualitative research will be utilised as classified by Trochim and Donnelly (2007) as highlighted by Kumar (2011).

1. **Credibility.** Through sending a preliminary interview summary to the interviewee, he could confirm the interpretation of data collected during the interview was correct.
2. **Transferability.** To ensure that in future the method can be replicated a copy of the case study interview questions (Appendix 3, p. 83) and the method of the data analysis is provided.
3. **Dependability.** This also refers to the replicability of a research study through detailed records to ensure that the conclusions are not due to an accident or mistake in the research study.
4. **Confirmability.** This, again, refers to replicability of the research as research conclusions must be able to be confirmed or corroborated by others.

Having identified the key limitations of the study regarding the method, the following chapters highlight the results gathered through the method outlined within this chapter.
4 Case Study – Anthony Veder

The following chapter is to provide an overview of the research results regarding the case study Anthony Veder. Firstly, the case is introduced based upon information gathered during the interview and what information is available on the corporate website and other sources of online documentation. Hereafter, the interview results, per individual external and internal pressure, are highlighted. And finally, the combination of all of these results are used to determine the environmental stage of the case using the eight 4SM characteristics by Van Leeuwen and Van Koppen (2016).

4.1 Introduction

The corporation Anthony Veder started in 1937 as a shipowner and port agent, and has since 1969 focussed exclusively on gas shipping (Anthony Veder, n.d.-c). Anthony Veder is a shipowner with a fleet of about 30 small-to-medium scale gas tankers transporting primarily petrochemical and natural gasses, such as LNG (Anthony Veder interview).

According to the interviewee, Anthony Veder performs additional emission reductions based upon intrinsic motivations (ambition), international policy, and pressure from within the chain in which the corporation operates (Anthony Veder interview). On the company website the ambition is recognised as being “a gas shipping company that leads in safety, service, and sustainability” (Anthony Veder, n.d.-c). It appears that these motivations are based upon the recognition that “responsible environmental management is good business” with benefits to the company, its customers, and the environment (Anthony Veder, n.d.-b). The practices of additional emission reductions include: the use of the transported LNG product (boil-off) to propel the vessel, and the burn-off of left-over products to transform them into gasses that are less harmful (e.g. nitrogen to CO\textsubscript{2}) without the indication of future policy requirements (Anthony Veder interview). Furthermore, Anthony Veder aims to aid in building a LNG infrastructure for the shipping industry and wants to keep the dialogue open between customers and shipowners to facilitate further emission reductions in the industry (Anthony Veder interview). On company website, however, the identified environmental practices are: the conduction of environmental assessments, the promotion of sustainable behaviours, and the utilisation of strict protocols to minimise environmental impact (Anthony Veder, n.d.-b). It was recognised in the interview that these various emission reduction practices lead to only marginal beyond-compliance reductions. And though the corporation has no externally communicated climate goals, currently internal goals are being developed (Anthony Veder interview).

Since 2009 the corporation has been innovating it’s ship designs and technology to reduce the environmental impacts of transport (Anthony Veder, 2016). Utilising LNG as a fuel source the ship’s releases less emissions (Anthony Veder, n.d.-a) unlike heavy fuel oil (HFO), which is traditionally used (ABN AMRO, 2016; Anthony Veder, 2016). Related to this practice, the corporation has also received the world’s first certified sustainable shipping loan of 66 million Euro’s (ABN AMRO, 2016). The loan was utilised to build a Super LNG carrier named ‘Coral EnergICE’ that uses LNG boil off from the cargo transported to fuel propulsion (ABN AMRO, 2016). This is the world’s first “direct driven dual-fuel engine ship” to transport LNG in a more environmentally friendly manner (Anthony Veder, n.d.-a). It also marks number seven in the corporations fleet that operates upon LNG as a fuel for propulsion (Koninklijke Vereniging van Nederlandse Reders, 2015).

4.2 Interview Results

From the Anthony Veder case study interview (21-11-2017) the following results were found. In this section first, the responses regarding the tested external pressures are given, after which the responses to the tested internal pressure are given. The ranking of the individual pressures by the interviewee are highlighted in Appendix 7 (p. 95).
4.2.1 External Pressures

External pressures were identified as the overall *most important type of pressure* for Anthony Veder.

Regarding the two pressures *national and international law and regulation* it is clear that these are often experienced at the same time by the case. Of course, the case complies with law and regulations set at the national level but for Anthony Veder international law is most influencing.

Regulations, like those set by the IMO as *industry agreements*, do not prevent too much emissions beyond restricting the worst. But the IMO is able to create fear of long-term future policy, which changes the compliance requirements on a short-term basis. This fear forces the corporation to look beyond today’s policy and start emission reductions beyond what is required today in preparation to the future.

Within the interview the broader theme of “beleid” or policy was also discussed. The Anthony Veder interviewee identified that today policy is too slow and ineffective to stimulate emission reductions. The shipping industry contains too many different sub-industries of shipowner types, sizes, capabilities, and other factors, which significantly influences the effectiveness of an industry-wide policy. Here these sub-industries represent *industry fragmentation*, which is considered as playing a factor to policy effectiveness.

For the pressure of *Dutch society* Anthony Veder recognises that the corporation is a part of society but that this does not equal stimulation to change the corporation’s practices of emission reduction. The case only operates business-to-business (B-t-B) therefore who can exert direct pressure is limited. For example, it is difficult for society to exert direct pressure on to the case. On the other hand, the interviewee also highlighted that sustainability is a trend in society which can influence the corporation.

The ambition of Anthony Veder is to build *legitimation within the industry* through becoming a leader in innovation, which includes technology and practices reducing emissions. As noted before, the shipping industry is very fragmented, consisting of different sub-industries with different transport products e.g. gas tankers versus container carriers. This impacts what is recognised as the ‘industry’ where legitimation is to be built by the case studies.

Fear for the practices of the *competition within the industry* was a stimulator of emission reduction for Anthony Veder, specifically the fear to lose a customer to competition within the relevant sub-industry. Regarding *competition between transport industries* on one hand the Anthony Veder interviewee identified that it, as part of the shipping industry, it does not want to lag behind other transport industries, and their emission reduction efforts. But, as shipping already has an image as a polluting industry, there is no pressure to change.

During the interview Anthony Veder was identified as willing to go the distance for *customers*, including beyond-compliance emission reductions. However, only very little pressure is given at the moment, but customer still give the *most important external pressure*. It is becoming standard, in Anthony Veder’s experience, to receive interest and questions into the sustainability of practices from customers. But nowadays there is also a growing interest in receiving proper solutions to these interests. This interest is given partially through corporations and consumers in the business chain, where some customers are willing to pay for transport services with less emissions. The Anthony Veder interviewee recognised that *consumers* can only exert pressure through Anthony Veder’s business chain. Namely through pressure from consumer-to-business (C-t-B) corporations (e.g. Unilever) which are pressured by consumers to reduce their carbon footprint. Then C-t-B corporations can only reduce the footprint
when related corporations in the chain (e.g. Anthony Veder), operating as a B-t-B corporation, reduces their emissions. And Anthony Veder identified the pressure of consumers to be growing.

Furthermore, to date there is no direct pressure from citizen groups and NGOs. There were also no new external pressures identified by the interviewee.

### 4.2.2 Internal Pressures

The current environmental frameworks, or environmental strategies, that Anthony Veder has builds ambition for the corporation. However, these frameworks provide only minimal expectations and not aid to pressures the establishment of specific goals. The worldview of top management was identified as the most important internal pressure, where management is charged with pushing changes. Specifically, the world view and responsibility felt by management. Thus, if the worldview of management is to reduce emissions beyond-compliance, they can have significant impacts. However, no concrete pressure has been given by management, merely the idea to change. The case’s shareholders give ambition towards reducing the released emissions. However, shareholders do not give a specific pressure to change practices, nor do they stop beyond-compliance practices.

From the interview it is clear that economic opportunities are a very important internal pressure. The interviewee of Anthony Veder recognises that these opportunities are very stimulating but that there are little opportunities available today, highlighted as commercial concerns.

Under the pressure emission reductions as a modern business practice the Anthony Veder interviewee highlighted that sustainability as a business practice plays in the background of the corporation and the employees. For Anthony Veder, the business practice of emission reduction means awareness of impacts past and present. Past behaviours, and associated poor environmental record regarding emissions, are no longer an option. Emissions reductions are the biggest focus to lessen the case’s overall environmental impacts (contribution to improve the impact on the environment).

During the interview it was indicated that at Anthony Veder they are aware of the effect that the ships have on regions and people through releasing emissions in an area (contribution to improve the impacts on society). This was discussed as being confrontational for the corporation. Specifically, for those working on the ships that ‘personally’ release the emissions. Here employees onboard the fleet were identified as a new internal pressure by the case. Here the confrontation with releasing the emissions, or not, seems to lead to different levels of pressure to change behaviour from within the corporation.

Finally, the pressure of improving reputation is an additional benefit for Anthony Veder of emission reductions. It plays a part for the case, but it is not something where new employees can be attracted through more emission reduction (which innovation does). Hence, it has not the greatest impact on the case. Furthermore, as the rest of (shipping) industry isn’t changing fast to reduce emissions further there is no chance to have a lesser reputation for the case, thus reducing the pressure of worsening reputation.

### 4.2.3 Applicable Pressures

Based upon the results gathered during the interview, including the ranking of pressures highlighted in Appendix 7 (p. 95), and the information highlighted in the introduction of Anthony Veder the following Table 4 highlights experienced (✔) or not experienced (X) pressures.
Table 4. Overview of the tested external and internal pressures tested indicating which pressures were experienced (✔) or not experienced (X) by Anthony Veder.

<table>
<thead>
<tr>
<th>External Pressures</th>
<th>Internal pressures</th>
</tr>
</thead>
<tbody>
<tr>
<td>National law &amp; regulation</td>
<td>Managers</td>
</tr>
<tr>
<td>International law &amp; regulation</td>
<td>Environmental strategy</td>
</tr>
<tr>
<td>Industry agreements</td>
<td>Shareholder influence</td>
</tr>
<tr>
<td>Dutch Society</td>
<td>Economic opportunities</td>
</tr>
<tr>
<td>Build legitimation within industry</td>
<td>Modern business practice</td>
</tr>
<tr>
<td>Competition within the industry</td>
<td>Poor environmental record</td>
</tr>
<tr>
<td>Competition between transport industries</td>
<td>Contribution to improve the impacts on</td>
</tr>
<tr>
<td></td>
<td>the environment</td>
</tr>
<tr>
<td>Consumers</td>
<td>Contribution to improve the impacts to</td>
</tr>
<tr>
<td></td>
<td>society</td>
</tr>
<tr>
<td>Customers</td>
<td>Improve corporation’s reputation</td>
</tr>
<tr>
<td>Citizen groups and NGOs</td>
<td>Risk worse reputation</td>
</tr>
<tr>
<td>New Pressure: State of the world</td>
<td>New Pressure: Crew onboard the ships</td>
</tr>
<tr>
<td>New Pressure: Suppliers</td>
<td>New Pressure: Founders</td>
</tr>
<tr>
<td>New Pressure: EU</td>
<td></td>
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</tbody>
</table>

4.3 Four-stage Model Environmental Strategy Stage

The 4SM allows for the identification of the environmental strategy of Anthony Veder, specifically which stage the current emissions practices of the corporation fall under. As visible in Table 4 some the practices are classified under the characteristics of Stage II and Stage III, while the majority is classified as Stage I.

For Anthony Veder five of the eight 4SM characteristics can be classified as Stage I. Under the characteristics of knowledge and information exchange there is no mention of knowledge exchange or focus to do so within the case organisation identified. The Anthony Veder interviewee discussed that as an emission reducing practice the case keeps an open dialogue with others in the product chain. And though distributing knowledge across the product chain fits with Stage III, the interviewee recognised that this practice is very limited. As such, the practice of Anthony Veder cannot be recognised as Stage III under the characteristic knowledge and information exchange. Furthermore, the case is focused on
isolated beyond-compliance practices and tasks, rather that the whole organisation is involved. Only the operations of a few ships have changed rather than a complete overhaul of the fleet, with recent movements within the case, to establish a climate goal. From the interview it seems that Anthony Veder accepts the environmental risks of releasing emissions during operations of the fleet. And though there is the ambition present to change these emissions they still appear to be part of daily operations rather requiring active change. Furthermore, it is clear from the interview that there is only limited possibility to increase the budget of investments at Anthony Veder due to commercial constrains. This is in part due to a lack of direct, or even indirect, environmental opportunities for Anthony Veder to facilitate the adoption of more beyond-compliance emission reducing practices. As a B-t-B corporation there are limited economic opportunities to facilitate suppression of commercial concerns. In the past economic opportunities were present, the interviewee of Anthony Veder recognised that co-investments with customers is limited.

Two characteristics can be classified as Stage II for the case. As stated in the case study introduction the ambition of Anthony Veder is to have additional emission reductions. This is based upon intrinsic motivations (ambition), international policy, and pressure from within the chain in which the corporation operates (Anthony Veder interview). As such the case is classified under Stage II. And though Anthony Veder tries to make an effort to extent the ambition to others in their chain, as associated with Stage III chain efficiency, Anthony Veder is unable to exert significant pressure. The case’s ambition remains restricted towards the company and how they transport the product, as such the characteristic ambition is classified as Stage II. Secondly, Anthony Veder’s practices of reducing emissions through burning off left-over products and to use LNG boil-off to propel the ship. Though these practices can be considered as process innovation (Van Leeuwen & Van Koppen, 2016) under the characteristics technology the fact that these only prevent the release of emissions (Hougee, 2013) Stage II is the most appropriate stage for this case.

Finally, the pressure product communication, can be classified as Stage III. There is some information found on the company website, which appears to be voluntarily given, as such this stage is applicable.

Anthony Veder’s emission reducing practices fit five Stage I, two Stage II, and one Stage III strategy characterises. Perhaps most importantly, the ambition to practice beyond-compliance emission reductions as Stage II. As identified by Van Leeuwen and Van Koppen (2016) the process of developing an environmental strategy is cumulative. And as such all eight categories must be met by a corporation in order to be classified in a stage. But, Anthony Veder is currently unable, due to various reasons, to completely change the corporation’s practices and behaviours to fully realise this ambition. As such, until all characteristics of the 4SM can be classified as Stage II the corporation is considered as being in transition into a process-oriented strategy (Stage II).
5 Case study – Case X

The following chapter is to provide an overview of the research results of case study Case X. Like in the previous chapter first the case is introduced, based upon information from the interview and what information is available on the corporate website and other sources of online documentation. Then the interview results are presented, per individual external- and internal pressures. And finally, the environmental strategy stage of the case is determined.

5.1 Introduction

Since early 1920s, Case X has been transporting various types of dry cargo across the world (Case study X, n.d.-a) with ships operating solely under Dutch flags (ROC Nederland, 2012; Case X interview). Case X offers maritime transport services in piece cargo, specifically it ships products that do not fit in a container (Case X interview). Here various companies and transport specialisations, each with multiple ships, fall under Case X management.

There are no set climate goals, currently, to reduce emissions beyond what is required by law and regulation. Several environmental practices, to reduce the corporations carbon footprint, are highlighted online. These include: minimisation of fuel consumption, optimisation of the ships propulsion systems, technology and behaviour changes to reduce on board resource consumption, speed optimisation, and with the acquisition of new ships to keep the technology standards high (ROC Nederland, 2012). Not all of these were identified during the case study interview. Interviewee X identified the ambition of Case X, that through utilising beyond-compliance emission reductions, is to stay ahead of the law and regulation. According to the company’s website, the core of the corporation is to carry its environmental responsibility and abiding to international standards (Case study X, n.d.-b). The corporation focuses on improving technical and behavioural efficiency while also reducing emissions to both air and water (Case study X, n.d.-b). Here compliancy with regulation is a big motivator of emission reduction (Case X interview). Since 2012, the case has fitted some of its ships with a hybrid scrubbing system (Case study X, n.d.-b; Case X interview). Though requiring significant capital (Case X interview), in combination with a small subsidy (ROC Nederland, 2012), this was considered a solid investment (Groenervaren, 2017). Utilising a scrubbing system allows the ships to utilise cheaper, but SOx heavy, fuels rather than switching between fuels types to meet emission requirements (Groenervaren, 2017; ROC Nederland, 2012). It was a necessary development to adhere to changes in legislation faced by their internationally traveling ships (ROC Nederland, 2012). Furthermore, it is important to highlight that the case was one of the first corporations in the shipping industry to incorporate a closed-loop scrubbing system (ROC Nederland, 2012)

Case X practices experimentation with new techniques, such as the scrubber systems. This method of operations allows the corporation to gather knowledge regarding techniques and practices to meet future law and regulation requirements while the products are still cheaply available. As such the practices lead to additional emission reductions today. However, the corporation is not able to achieve beyond-compliance reductions on all emissions (from GHG emissions to water ballast) of transportation due to financial constrains (Case X interview).

5.2 Interview Results

From the Case X case study interview (19-11-2017) the following results were found. In this section first, the responses regarding the tested external pressures are given, after which the responses to the tested internal pressure are given. The ranking of the individual pressures by the interviewee are highlighted in Appendix 7 (p. 95).
5.2.1 External Pressures

External pressures were identified as the overall most important type of pressure for Case X.

Within the interview the broader theme of “beleid” or policy was discussed. The case’s interviewee identified that national law is crucial, where international law (like that given by the IMO and EU) is translated to this policy level. Related to international law and regulation, the pressure given by the European Union (EU) was identified as a new pressure. Here the EU was described both as influencing other law and regulation makers but also as setting laws, though this is considered international law and regulation henceforth.

As Case X’s vessels are flagged in the Netherlands, the Dutch national law and regulation gives pressure to reduce emissions. Policy requirements are the most important external pressure for Case X to change behaviours. Here looking ahead towards future policy changes, requiring additional emission reductions, impacts today’s practices. Namely, this leads to the beyond-compliance behaviours currently practiced by the corporation.

Regarding industry agreements the Case X interviewee identified that organisations, like ship insurers or ship classification organisations, are able to set certain standards across the industry that must be complied with. If these standards include emission reductions beyond law and regulation, industry agreements stimulates beyond-compliance reductions.

Interviewee X identified in later correspondence that, in the context of pressure exerted, society is not a homogenous actor that gives pressure as a single entity. Rather, it is a heterogeneous combination of various actors, that all have a different position to exert pressure to the case (personal communication, January 8, 2018). Thus, the interviewee was unable to give a ranking of how much pressure is exerted by society, as indicated in Table 11 (p. 95). Yet, the interviewee did reflect upon the pressure of Dutch society during the interview through the analogy of the “koopman en de dominee”1 (salesman and the minister). This was to indicate that society will choose making/saving money over the ethics of emission reductions (and bearing the costs of these reductions).

Unlike the other case studies, Case X follows its own path and is thus impacted only very little by pressure to build legitimisation within the industry. Yet, Case X does experience pressure if the competition within the industry is ahead in emission reduction. The interviewee recognised that this is separate from building prestige or recognition. During the interview, the word “concullega’s”2 was used to describe (part of) Case X’s competition which seems to reduce the negative connotation of competition. And yet, competition can become a brake against further emission reductions when the product of a competitor is cheaper in comparison to own transport fees when implementing beyond-compliance practices.

Customers, specifically market pressure by customers, was another most important external pressure for Case X. In the experience of the case, customers have begun to express a more proactive attitude towards change practices. Customers select which transporter or ships to use based upon its classification, which includes information regarding emission reductions, thus generating pressure. Consumers, however, are too far away in Case X’s business chain to exert any real pressure.

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1 A Dutch saying that conveys how ethics, what is right for society, is overruled by economic logic and the need to make a profit according to interviewee X.

2 Professionals view their competitors also a colleague’s in the profession (www.encyclo.nl, 2018).
There is no direct pressure experienced from citizen groups or NGOs. Rather, these groups influence shipowners indirectly through the government and the media.

Another new external pressure was identified by the Case X interviewee, namely the pressure of suppliers. Suppliers, in the experience of Case X, can provide opportunities to test out new products, with result of beyond-compliance emission reductions. For the case understanding how new techniques work, and overcoming the challenges it brings, can aid the corporation to build prestige with competitors and tackling future regulation requirements. Interviewee X suggested that suppliers could refer other shipowners (possible competitors) to talk to Case X as to aid them in adopting new techniques.

5.2.2 Internal Pressures

Changes to reduce emissions beyond law and regulation can only be achieved when a corporation changes the practices itself. Ambition is the most important internal pressure for Case X, where management gives direction towards what (emission) goal everybody is working. Furthermore, management can give back-up to changes made in the corporation and is overall a source of strong stimulation. For Case X, ambition can push beyond-compliance emission reductions but, like to other case studies, there is no strategy currently. The corporation does not practice emission reduction as to sell the case corporation as a green company strategy, which is how ‘environmental strategy’ was interpreted.

In the experience of the case, large shareholders can give significant pressure to change behaviour while smaller shareholders cannot exercise any pressure. Yet, there is no significant pressure to change given by Case X shareholders to change emission releasing practices.

From the interview it is clear that economic opportunities are a very important pressure, and part of accessing these opportunities is to look ahead of what policy is coming. Recognising opportunities allows the case to experiment with new technologies while they are still cheap, which can bring (economic) advantages tomorrow.

Interviewee X highlighted that sustainability as a modern business practice plays in the background, that is it part of the world that we live in today. Related, for the case understanding past environmental impacts, related to poor environment record, gives a bandwidth of what emission reductions are possible. However, these emissions do not actually give any significant stimulation to change. The Case X interviewee recognised that reputation improvement does create some pressure to change behaviours. Yet, there is limited pressure associated with the risk of a worsened reputation. However, the pressure of this risk is greater with customers in comparison to NGOs. Similarly, Case X has the ambition for emission reductions as part of the contribution to improve environmental impacts, which was shared through the ISO-14001 certification to the case. And then the contribution to society is an additional benefit to Case X of the emission reductions, and part of achieving their ISO certification.

A new internal pressure was identified during the interview, namely corporate culture. However, in practice this pressure is no experienced by the case.

5.2.3 Applicable Pressures

Based upon the results gathered during the interview, including the ranking of pressures highlighted in Appendix 7 (p. 95), and the information highlighted in the introduction of Case X the following Table 5 highlights experienced (✔) or not experienced (X) pressures.
Table 5. Overview of the tested external and internal pressures tested indicating which pressures were experienced (✔) or not experienced (X) by Case X.

<table>
<thead>
<tr>
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<td>Competition within the industry</td>
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<tr>
<td>Competition between transport industries</td>
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<td>Consumers</td>
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<td>Customers</td>
<td>Improve corporation’s reputation</td>
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<td>Citizen groups and NGOs</td>
<td>Risk worse reputation</td>
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<td>New Pressure: State of the world</td>
<td>New Pressure: Crew onboard the ships</td>
</tr>
<tr>
<td>New Pressure: Suppliers</td>
<td>New Pressure: Founders</td>
</tr>
<tr>
<td>New Pressure: EU</td>
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</tbody>
</table>

5.3 Four-stage Model Environmental Strategy Stage

The 4SM allows for the identification of the environmental strategy of Case X, specifically which stage this strategy falls under. As visible in Figure 3 some the practices of Case X are classified under the characteristics of Stage II, while the majority is classified under Stage I.

![Figure 3](image)

Figure 3. Visual representation of Case X’s environmental strategy and the stage classification per category. Each circle represents a single category and is filled in the colour of the four 4SM stages (Van Leeuwen & Van Koppen, 2016).

Specifically, four out of eight characteristics are classified as Stage I for the case. Here, under the pressure organisation, Case X appears to be focussed with isolated beyond-compliance practices and tasks, rather that the whole corporation is involved in emission reductions. The environmental risks of emissions released during operations seems to be accepted by Case X, these risks appear to be part of daily operations rather than requiring active change. Only for a few ships operations have been changed rather than a complete overhaul of the fleet. Thus, Case X is practising isolated environmental tasks and does not have a climate goal. There is only a limited budget, or room to increase the budget, for emission
reduction practices. This is in part due to limited *environmental opportunities* for the corporation through a lack of customer interest to invest together with the corporation to reduce emissions.

Three 4SM characteristics are classified as Stage II for the case, the *ambition* of Case X is to reduce emission released, however, this seems to be restricted towards the company and how they transport the product. The case is not focussed on emission reduction, under the characteristics *technology*, but rather the filtering off released particles through scrubbers (convertible indirect environmental risks according to Hougee (2013)). Finally, Case X is starting to analyse ship performance to improve use and efficiency at the operational level (*knowledge and information exchange*). As Case X is using the information to set an emission benchmark with the goal to influence emission production processes, it is effectively gaining and internally sharing information to influence production processes.

There is a little bit of information found on the company website regarding the implementation of a scrubber system and efficiency analysis as such Stage III is applicable. There is some voluntary *product communication* by Case X regarding beyond-compliance emission reductions.

Case X’s emission reducing practices fit four Stage I, three Stage II, and one Stage III strategy characterises. Perhaps most importantly, the ambition to practice beyond-compliance emission reductions as Stage II. As the process of developing an environmental strategy is cumulative all eight categories must be met. But, Case X is currently unable, due to various reasons, to completely change the corporation’s practices and behaviours to fully realise the ambition. As such, until all characteristics of the 4SM can be classified as Stage II the corporation is considered as being in *transition into a process-oriented strategy* (Stage II).


6 Case Study – Vroon

The following chapter is to provide an overview of the research results of the Vroon case study. Like the previous two chapters first the case is introduced, based upon information from the interview and online documentation. Then the interview results are presented, per individual external – and internal pressures. And finally, the environmental strategy stage of the case is determined.

6.1 Introduction

The corporation has more than a century’s experience in the international shipping industry, with approximately 200 vessels (Nederland Maritiem Land, 2017) in its fleet. Vroon operates within various shipping industry sectors, where the ships are rented out to customers via different management companies (Vroon interview). Here the corporation ensures that the ships remain operational and as such can be used effectively by the customers (Vroon interview).

In the interview, it was identified that the corporation practices beyond-compliance measures to remain competitive with the commercial benefit of separating the corporation from the competition. Online it is stated that Vroon “provides seagoing transportation services and engineering & support solutions that are reliable, sustainable, cost effective and enable its customers to be successful.” (Vroon, n.d.). Here the ambition of the corporation publicly expressed includes sustainability, but the focus of efficiency is also clear. Yet, there are currently no set climate goals to reduce emissions beyond law and regulations (Vroon interview).

To achieve the corporation’s ambition, emission reducing practices include: improving the efficiency of the vessels (in part through the installation of measurement equipment) and the installation of scrubbers on a few ships in the past (Vroon interview). Unlike the other case studies there is not a lot of information available on the internet regarding the environmental practices of Vroon, whether on the company website or other sources. What is available regarding emission reducing practices online is that Vroon has installed measurement instruments onto 19 ships (Vision and Robotics, 2014). This is to better understand the fuel usage of the ships which aids to remain efficient regarding released emissions (Vroon interview).

6.2 Interview Results

From the Vroon case study interview (5-12-2017) the following results were found. In this section first, the responses regarding the tested external pressures are given, after which the responses to the tested internal pressure are given. The ranking of the individual pressures by the interviewee are highlighted in Appendix 7 (p. 95).

6.2.1 External pressures

External pressures were identified as the overall most important type of pressure for Vroon.

The broader theme of “beleid” or policy was discussed as the most important external pressure for Vroon, which includes industry agreements such as by the IMO. Without policy there is no change, in that extreme investments are not made if not required by policy due to commercial concerns. As such law and regulation is a very important source of stimulation for the corporation, as to create a level-playing field between the case and its competitors. Here international law is most relevant to influence behaviours with national laws less so. Looking ahead, to anticipate future national and international law and regulations that demand additional emission reductions, is an important habit of the case leading to the beyond-compliance practices today. There is no direct pressure from citizen groups and NGOs experienced. Rather, these groups can influence shipowners through law and regulation setting actors.
In Vroon’s experience Dutch society does not exert direct pressure to change the case’s behaviour. The case operates as a B-t-B corporation, as such it is unknown to the larger society reducing the pressure experiences of this source. Yet, the interviewee highlighted that sustainability is a hot topic in society, indicating that this could have some influence in behaviours.

The interviewee identified that it experiences pressure to be recognised as better than other shipowners. Building legitimation within the industry allows the case to gain a competitive edge towards (potential) customers. And through emission reductions the case can differentiate and rise above the competition to attract more customers. However, there is no pressure from competition with other transport industries as there is no alternative to the services of the shipping transport. Furthermore, the shipping industry is endorsing the story of it being the cleanest transport industry, which restricts the expectations or pressure to change.

Customers are seen as giving economic opportunities, thus they are an important source of pressure. However, reducing air emissions is largely in the hands of the clients whom utilise the vessels rather than Vroon. If a customer is willing to rent a vessel longer then Vroon is willing to change the practices in dialogue with the customer to give them what they want. In the experience of this case if Vroon is sole transporter then customers are more likely to bring sustainability questions. But if it is just one transporting agent among many for the customer these requests, and associated pressure, are lower. Consumers, however, are located too far in the corporation’s chain to exert any real pressure.

Finally, the Vroon interviewee identified the new external pressure of suppliers, namely through suggesting (new) technology and software. He reflected that suggestions to change practices by suppliers, through adopting their product, does not always lead to actual change but does lead to re-thinking the current practices (Vroon interview). Suppliers bring new technology at relatively cheap price, in comparison to the price of the same technology when it is needed to comply with new law and regulations. Here technology prices are higher due to higher demand, and thus it is cheaper to begin experimenting today. These price and opportunity differences can lead to changes in practices. Understanding how new techniques work, and overcoming the challenges it brings, can aid corporations to build prestige with competitors.

6.2.2 Internal pressures

For Vroon ambition directs attention to emission reduction but there is no specific environmental strategy stimulating these practices. Though management can give pressure at Vroon, they are limited to behavioural changes as finances makes large investments difficult to achieve. Furthermore, the shareholders of Vroon only give a vision of a greener future, which includes emission reductions, but do not give direct pressure to change.

From the interview it is clear that economic opportunities are a very important pressure for Vroon, specifically in consideration with commercial concerns that the corporation faces. The opportunities are an essential reason to make any investments. And part of accessing these opportunities is to look ahead towards what policy is coming. This allows the case to experiment with new technologies while they are still cheap, which can bring (economic) advantages tomorrow. However, there are very little opportunities available today. The Vroon interviewee identified that the current economy of the industry, where the industry was described as overflooded with ships, is not stimulating investments into beyond-compliance emission reductions.

In the interview with Vroon, the interviewee identified that emission reductions as modern business practice was not really a pressure felt. Regarding a poor environmental record, if vessels in Vroon’s fleet had a better performance in the past (where the past is a baseline) than that will impact today’s
practices through the ambition to be efficient. This was identified as the most important internal pressure to changing behaviours of the corporation.

Emissions reductions, in Vroon experience, are not a result from pressures to contribute a reduced impact on the environment for the case. Changes to reduce environmental impacts are largely in the hands of the clients whom utilise the vessels rather than the case itself. And improving the impacts to society only gives a little bit of pressure to Vroon’s practices. Regarding reputation the Vroon interviewee specified that it is more important to improve reputation in the industry than in society. And the worsening reputation pressure is also dependent with whom, where the reputation within the industry is more important than with society.

Finally, the Vroon interviewee described the distinction in pressure given by people working in the offices and those working on the ships themselves as a new internal pressure. Confrontation with practice of releasing emissions seems to lead to growing pressure to change behaviours from within the corporation.

### 6.2.3 Applicable Pressures

Based upon the results gathered during the interview, including the ranking of pressures highlighted in Appendix 7 (p. 95), and the information highlighted in the introduction of Vroon the following Table 6 highlights experienced (✔) or not experienced (X) pressures.

<table>
<thead>
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</tr>
<tr>
<td>Industry agreements</td>
<td>Shareholder influence</td>
</tr>
<tr>
<td>Dutch Society</td>
<td>Economic opportunities</td>
</tr>
<tr>
<td>Build legitimation within industry</td>
<td>Modern business practice</td>
</tr>
<tr>
<td>Competition within the industry</td>
<td>Poor environmental record</td>
</tr>
<tr>
<td>Competition between transport industries</td>
<td>Contribution to improve the impacts on the environment</td>
</tr>
<tr>
<td>Consumers</td>
<td>Contribution to improve the impacts to society</td>
</tr>
<tr>
<td>Customers</td>
<td>Improve corporation’s reputation</td>
</tr>
<tr>
<td>Citizen groups and NGOs</td>
<td>Risk worse reputation</td>
</tr>
<tr>
<td>New Pressure: State of the world</td>
<td>New Pressure: Crew onboard the ships</td>
</tr>
<tr>
<td>New Pressure: Suppliers</td>
<td>New Pressure: Founders</td>
</tr>
<tr>
<td>New Pressure: EU</td>
<td></td>
</tr>
</tbody>
</table>

### 6.3 Four-stage Model Environmental Strategy Stage

The 4SM allows for the identification of the environmental strategy stage of Vroon, specifically which stage this strategy falls under. As visible in Figure 4 some the practices of Vroon are classified under the characteristics of Stage II, while the majority is classified under Stage I.
Specifically, five out of eight characteristics are classified as Stage I for the case. Vroon appears to be focussed on isolated beyond-compliance practices, rather that the whole organisation is involved. Only a few ships operations have changed rather than a complete overhaul of the fleet and there is currently no climate goal for the case. Part of these isolated practices is the limited budget available to invest, both from the corporation internally and the lack of economic opportunities given externally to the corporation. These environmental opportunities, e.g. as given by stakeholders such as customers, are rare. The Vroon interviewee described the shipping industry as overloaded with ships as such further restricting economic opportunities. And like the previous case studies, Vroon seems to accept that the environmental risks of releasing emissions remains’ during operations of their ships. That emissions are a part of daily operations rather than requiring active change. Finally, there is no active product communication by Vroon that it transports utilising beyond-compliance emission reducing practices. Therefore, Vroon is classified as operating at Stage I/II3.

There are three characteristics classified as Stage II, here ambition is key. Vroon wants to be more sustainable, with a restriction towards the company and how they transport the product, but it is unable to achieve this ambition. Current practices of the corporation rely heavily upon analysing ship performance to improve efficiency at the operational level. As such knowledge and information of processes is gained and shared within the corporation, though these habits are not actively focussed on air emission reductions. Yet, these practices focus only upon filtering off particles through scrubbers rather than reducing the release of emissions. Under the pressure technology this behaviour is considered reducing indirect environmental risks (Hougee, 2013), as such Stage II is applicable.

Vroon’s emission reducing practices fit five Stage I and three Stage II environmental strategy characterises. Perhaps most importantly, the ambition to practice beyond-compliance emission reductions as Stage II. As the process of developing an environmental strategy is cumulative all eight categories must be met. But, Vroon is currently unable, due to various reasons, to completely change practices and behaviours to fully realise the ambition. As such, until all characteristics of the 4SM can be classified as Stage II the corporation is considered as being in transition into a process-oriented strategy (Stage II).

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3 In the 4SM (Van Leeuwen and Van Koppen, 2016) both Stage I and Stage II of the characteristic Product Communication are described as “none” (see Table 1, p. 7). As such the stage cannot be further determined.
7 Case Study – Fairtransport

The following chapter is to provide an overview of the research results of the Fairtransport case study. Like the previous three chapters first the case is introduced, based upon information from the interview and what information is available on the corporate website and other sources of online documentation. Then the interview results are presented, per individual external – and internal pressure. And finally, the environmental strategy of the case is determined.

7.1 Introduction

During the interview it was stated that Fairtransport started 10 years ago with the vision of the corporation’s three founders; Arjen van der Veen, Andreas Lackner, and interviewee Jorne Langelaan. Namely, to start as specialised shipowners transporting goods via sailing vessels (Fairtransport interview). The first voyage of emission free cargo was in 2009 with the sailing ship Tres Hombres, (Fairtransport, n.d.-b). Now the ships ‘Tres Hombres’ and the ‘Nordlies’ are used to re-introduce the sailing transportation method. Specifically, to transport A to Z without the release of operational emissions (Fairtransport interview). To achieve this ambition the founders made the decision not to include any systems of mechanical propulsion, which release emission through fuel usage, onto the ships. And rather depend upon wind and solar radiation to propel the vessel and capture energy to be used onboard (Fairtransport interview). With its non-engine cargo ships Fairtransport has the world’s only engineless cargo sailing fleet (Fairtransport, n.d.-d), the corporation’s website claims.

The corporation is also trying to move beyond renovating old sailing vessel’s, like the two ships currently in use, and looking into designing new ships to better compete with traditional transport methods (Fairtransport, n.d.-c; Fairtransport interview). The corporation was designing a new vessel with the Dykstra Naval Architect named ‘Ecoliner’ (Fairtransport, n.d.-c) but this project was discontinued. The vessel would not have met the standards of low emission transport while achieving its goal to be competitive with traditional transportation ships (Fairtransport interview).

The corporation uses its distinction from other shipowners to attract attention and promote both its services and the products transported (Sailors for Sustainability, 2017). Fairtransport intentionally only transports organic or traditionally crafted products (Fairtransport, n.d.-a) where strict sustainability principles are applied to the cargo (Sailors for Sustainability, 2017). This approach to the goods transported is in part achieved through the company’s own certification scheme where the shipped products are certified with an “A Class” sticker (Fairtransport, n.d.-a). The certificate guarantees a 90% reduction of transport emissions through utilising sails rather than engines (Fairtransport, n.d.-a).

Furthermore, the corporation has set-up a “Sail Cargo Alliance” with two other European sail-based transport corporations in 2015 (Fairtransport, n.d.-b). The alliances goal is to use a clean power source to create healthy and sustainable transport while using as little resources as possible (Fairtransport, n.d.-b). It also allows the coordination of transport jobs among the various ships, allowing a wider service to be offered to cargo owners (Fairtransport, n.d.-b).

7.2 Interview Results

From the Fairtransport case study interview (23-11-2017) the following results were found. In this section first, the responses regarding the tested external pressures are given, after which the responses to tested internal pressure are given. The ranking of the individual pressures by the interviewee are highlighted in Appendix 7 (p. 95).
7.2.1 External pressure

Related to the effectiveness of external pressures the following must be noted. During the interview with Fairtransport the interviewee identified that the corporation already practices at the minimum level of air emissions possible within the constrictions of international law and regulations. “So we cannot go any further. So they can still exert so much pressure but this is it” (Fairtransport interview). As the case’s practices go beyond compliance requirements the external pressures have been identified as giving ‘no pressure’ or ‘not applicable pressure’ to Fairtransport. This reasoning or experience, however, has not been identified by the other three case studies.

The broader theme of “beleid” or policy was also discussed by the case interviewee. However, unlike the previous case studies, Fairtransport highlighted that emission reducing regulations are not always able to achieve its goals. In the case of Fairtransport, international and national law and regulation does not actually stimulate additional emission reductions. Rather it makes it “impossible” to have maximum sustainability for the corporation. For example, some national laws require Fairtransport to use tugboats to enter a harbour or use non-renewable resources on the ships to comply with safety standards. Nor is the case able to be flagged under the Dutch flag due to current regulation, restricting the applicability of Dutch law and regulation to the case.

In the experience of Fairtransport, the industry agreements that are currently applicable, such as a list of the most sustainable transporters, can be considered paper initiatives that do not help to receive/attract more customers for the corporation. And thus, does not create pressure to further reduce emissions.

The Fairtransport interview highlighted that sustainability fits with today’s (Dutch) society. In the experience of Fairtransport there is encouragement, in general, for the corporation to continue its practices by society, which includes operating beyond-compliance low emissions. But when faced with the costs of sustainability, e.g. higher costs, society is no longer interested.

As noted before, the shipping industry is very fragmented, consisting of different sub-industries with different transport products e.g. sailing vessels versus container carriers. This impacts what is recognised as the ‘industry’ where legitimation is built by the case studies. Fairtransport identified that it has little interaction with the larger shipping industry, due to industry fragmentation, and as such experiences no pressure to build legitimation with the industry.

Similarly, due to industry fragmentation, the case has a different transport product or service. As such, not every shipowner within the industry is competition or a direct threat pressuring behavioural changes. Yet, in the context of the wider shipping industry competition, Fairtransport has been looking into designing new sailing boats to be able to compete with more traditional methods of shipping transportation. However, it has been unsuccessful, as of yet, to compete effectively without compromising the ambition to transport without the release of emissions. In the niche market of Fairtransport, the case is not threatened by competition but rather works together with them. The Fairtransport interviewee used the word “concullega’s” to describe the niche market competition.

Competition with other transport industries was described as not being applicable as Fairtransport has a different product from the wider transportation industry. Here the shipping industry is the cheapest method of transport, air transport as the quickest, and sailing transport the most sustainable which does not lead to inter-transport industry competition pressure for the case.

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4 Professionals view their competitors also a colleague’s in the profession (www.encyclo.nl, 2018).
The Fairtransport interviewee identified that their transport service takes (too) long and is too expensive for many, potential customers. Within the overall shipping industry customers, there is very little interest in their service as customers not willing to pay the real price of sustainable transport. However, the sustainable shipping niche market is growing. As Fairtransport operates as a B-t-B corporation, consumers can have pressure in the chain through buying sustainable products.

Unlike the other three case studies Fairtransport has direct contact with citizen groups. In this contact, citizen groups and NGOs are positive of the corporation’s work and do not give pressure to change. Also, unlike the other case studies recognising “the state of the world” (Fairtransport interview) was the most important external pressure for the case. This is a new external pressure which was explained as what currently happening to the planet. This is in terms of ecological and climate degradation, overpopulation, among other dangers that the world faces today, in part due to the emissions released by the shipping industry.

7.2.2 Internal pressures

Of the case studies, internal pressure is the overall most important type of pressure for Fairtransport to stimulate emission reductions, second to the external pressure of the state of the world. Also, only Fairtransport has set a clear climate strategy for the corporation, namely to not expel any air emissions, which is achieved through not placing a mechanical propulsion during operations. This environmental strategy is the most important reason for their sustainability practices.

Due to the set-up of Fairtransport, with the ambition to transport goods without the release of emissions during operations, shareholders include those owning the company itself (the founders) and the shareholders of the ships. The shareholders owning shares of the ships, support and believe in the corporation and thus do not give pressure to change current practices. The corporation’s founders are critical to remain radically sustainable and the most important internal pressure to change current practices. As such management does not have significant impact on emission reduction. However, employees on board the fleet and the corporation’s founders, are critical.

Currently, the niche market of sustainable (sailing) transportation, in which the case is operating, is booming. The interviewee of Fairtransport identified that there is a gap in the market for sustainability shipped products, which provides significant economic opportunities for corporations like this case. Here sustainability sells, promoting emission reductions as a modern business practice. There is awareness of past environmental impacts (or a poor environmental record) where past mistakes matter for the corporation. Yet, Fairtransport cannot always change these behaviours, but it is something that is kept in mind.

The Fairtransport interviewee recognised that the case, as a transporter via sailing ships, has no positive, possibly even negative effects, on environmental impacts. That the case only has low emissions is largely symbolic, according to the interviewee, rather than contributing to improve the environmental impacts. One cannot measure the difference that two sailing boats have on an industry as large as that of the shipping industry. Furthermore, the interviewee of Fairtransport identified that through reducing its emissions the corporation cannot give pressure to change society to improve impacts.

Regarding reputation, that of Fairtransport is built entirely upon the sustainability of the transport method it utilises. Thus, as to improve corporation’s reputation this is an important pressure to maintain the case’s reputation, and associated benefits. Ensuring that the corporation practices the lowest possible emission released is vital, releasing emissions carries maximum risk through worsening the case’s reputation.
Finally, the new internal pressures identified by the Fairtransport interviewee is to separate management, the case’s founders (as identified previously), and the employees working on the ships themselves. The ideas of employees working on the fleet and the founders, with releasing the emissions and the current state of the world seems to lead to different levels of pressure to change behaviour from within the corporation. Here founders are the source of the most important internal pressure.

7.2.3 Applicable Pressures

Based upon the results gathered during the interview, including the ranking of pressures highlighted in Appendix 7 (p. 95), and the information highlighted in the introduction of Fairtransport the following Table 7 highlights experienced (✔) or not experienced (X) pressures.

Table 7. Overview of the tested external and internal pressures tested indicating which pressures were experienced (✔) or not experienced (X) by Fairtransport.

<table>
<thead>
<tr>
<th><strong>External Pressures</strong></th>
<th><strong>Internal pressures</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>National law &amp; regulation</td>
<td>Managers</td>
</tr>
<tr>
<td>International law &amp; regulation</td>
<td>Environmental strategy</td>
</tr>
<tr>
<td>Industry agreements</td>
<td>Shareholder influence</td>
</tr>
<tr>
<td>Dutch Society</td>
<td>Economic opportunities</td>
</tr>
<tr>
<td>Build legitimation within industry</td>
<td>Modern business practice</td>
</tr>
<tr>
<td>Competition within the industry</td>
<td>Poor environmental record</td>
</tr>
<tr>
<td>Competition between transport industries</td>
<td>Contribution to improve the impacts on the environment</td>
</tr>
<tr>
<td>Consumers</td>
<td>Contribution to improve the impacts to society</td>
</tr>
<tr>
<td>Customers</td>
<td>Improve corporation’s reputation</td>
</tr>
<tr>
<td>Citizen groups and NGOs</td>
<td>Risk worse reputation</td>
</tr>
<tr>
<td>New Pressure: State of the world</td>
<td>New Pressure: Crew onboard the ships</td>
</tr>
<tr>
<td>New Pressure: Suppliers</td>
<td>New Pressure: Founders</td>
</tr>
<tr>
<td>New Pressure: EU</td>
<td></td>
</tr>
</tbody>
</table>

7.3 Four-stage Model Environmental Strategy Stage

For the case Fairtransport, the classification of the environmental strategy stage is which one, and not whether it is practising with a beyond-compliance strategy. Based upon the interview and the information found online the case is classified within a single strategy, namely Stage IV, as visible in Figure 5.
Since the start of the corporation the *ambition*, and climate goal, is to transport goods without emissions. As the corporation is ensuring the maximum minimum released emissions legally possible the case is classified under Stage IV. Here *knowledge and information*, including the corporation’s ambition, appears not only to be actively shared within the organisation to facilitate maximum efforts. It is also widely shared on the company website and carried across a wide platform within society, which is part of *organisation*. For example, under the pressure *product communication*, the corporation actively communicates its sustainable practices through certifying the shipped products with an “A Class” sticker as to communicate the limited release of emissions to consumers. Furthermore, Fairtransport has taken significant steps to reduce direct *environmental risks* of transport through not using *technology*. The corporation has removed the possibility of releasing emissions during the ship’s operations by not including an engine on board as the method of propulsion. The goal of the case is to avoid all possible emissions, or environmental risks, unless law and regulations demands emissions releasing behaviours.

Unlike the other three case studies, there appears to be no *budget* constraints (where only part of the budget is used to that limit the release of emissions). Fairtransport has the ambition to transport products with minimal emissions, and that this is more than a long-term economic strategy. Sustainability investments are actively made in cooperation with stakeholders, namely the shareholders that own the vessels and as such invest with Fairtransport. Other sources of economic opportunities, or *environmental opportunities*, for the case is operating in a niche market with only limited competition and growing customer interest. Where some competition are partners through the ‘Sail Cargo Alliance’ and some shareholders are actively engaged to promote the corporation. As such the corporation can diversify transporting services with the other corporations and other areas.

Unlike the other three case studies the environmental strategy of Fairtransport classified is operating with a *full environmental sustainability strategy (Stage IV)*. As such Fairtransport not only represents a different stage for this research but a radically different approach and experience regarding the shipping industry.
8 Comparison and Discussion

During the case study interviews various pressures were tested on the extent to which they stimulated the case studies in their voluntary practices of beyond-compliance emission reductions, as highlighted in chapters 4 through 7. Through discussing and analysing the research results, including placing the interview outcomes of the study into the wider context of the reviewed literature, the main research question is answered. Namely, *what are the key internal and external pressures in place for four case study corporations in the shipping industry to move from a crisis-oriented strategy towards voluntary beyond-compliance emission reduction practices in the Netherlands?*

This chapter is separated into four sections. The first two sections outline the immediate discussion of pressures. Firstly, the external pressures followed by the internal pressures are placed in the context of the reviewed literature and the case studies to identify the overall key pressures that promote beyond-compliance practices by shipowners (answering the main research question, p. 3). Hereafter, the case studies environmental strategies in the 4SM context are discussed. Namely why the case studies are selected in their respective stages and what this represents for the case studies. And finally, the identified key internal and external pressures, in relation to the environmental strategies stages, are placed into the context of IT.

8.1 External Pressures

In the literature review various stakeholders and stakeholder groups were identified as able to externally pressure corporations to incorporate beyond-compliance practices, among other behaviours (Doh & Guay, 2006). Within institutional theory, which is utilised specifically in this study, these stakeholders can form and/or hold corporations accountable to institutions. As such, the pressure from these stakeholders is important to test in practice through the four case studies. Firstly, the key external pressures identified in the reviewed literature are highlighted. Hereafter, the external pressures that were found to be relevant to the four case studies are acknowledged (answering the second sub-research question, p. 3). Finally, these two identifications are compared (in the wider context of the reviewed literature) to identify which external pressures are key to lead to the adoption of beyond-compliance emission reductions.

8.1.1 Literature

As highlighted previously in the conceptual framework (section 2.3.3, p. 15) in theory, there have been numerous external pressures identified that are applicable to change behaviour. And of the reviewed research a few authors concluded that some pressures are more important than others. Ornitz and Champ (2002) identify that external pressures are important to facilitate internal pressures and are such key to change behaviours. Yet, there is no consensus within the literature which external pressure is the most important to lead to beyond-compliance behaviours in corporations. Three articles, Lai et al (2011), Bansal and Roth (2000), and Lyon and Maxell (1999), identify regulations, or legislation, as key to changing behaviour. Dubey et al. (2014) determined that market pressures (e.g. competition) are key to help an organisation to improve. This is while Lister et al. (2015) determined that customers are the key pressure. Finally, Rivera (2004) identified that building social legitimation is key to achieve long-term profitability and is as such an important pressure. Thus, from the literature the external pressure of rules and regulation is particularly important to change corporate behaviours regarding environmental practices, such as emission reductions.

8.1.2 Case studies

In practice, the following external pressures, as highlighted in Table 8, are considered to lead to changes regarding beyond-compliance emission reduction. During the interviews ‘external pressure’ was
identified as the most important pressure to stimulate emission reductions by all case studies. In the table ‘✔’ indicates that a pressure is experienced, ‘X’ that it is not experienced, and ‘*’ denotes that this pressure was identified as the most important external pressure by the respective case study interviewee. As such, Table 8 combines the individual case study experiences (see Table 4 through Table 7) to highlight which pressures have led to the beyond-compliance practices between the case studies.

**Table 8. Overview of the external pressures tested during the case studies interviews to indicate which pressures were experienced (✔) or not experienced (X) per individual case study.**

<table>
<thead>
<tr>
<th>External Pressures</th>
<th>Anthony Veder</th>
<th>Case X</th>
<th>Vroon</th>
<th>Fair-transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>National law &amp; regulation</td>
<td>X</td>
<td>✔*</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>International law &amp; regulation</td>
<td>✔*</td>
<td>X</td>
<td>✔*</td>
<td>X</td>
</tr>
<tr>
<td>Industry agreements</td>
<td>X</td>
<td>✔</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Dutch Society</td>
<td>X</td>
<td>X</td>
<td>✔</td>
<td>X</td>
</tr>
<tr>
<td>Build legitimation within industry</td>
<td>X</td>
<td>X</td>
<td>✔</td>
<td>X</td>
</tr>
<tr>
<td>Competition within the industry</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>X</td>
</tr>
<tr>
<td>Competition between transport industries</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Consumers</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Customers</td>
<td>✔</td>
<td>✔*</td>
<td>✔</td>
<td>X</td>
</tr>
<tr>
<td>Citizen groups and NGOs</td>
<td>X</td>
<td>X</td>
<td>✔</td>
<td>X</td>
</tr>
<tr>
<td>New Pressure: State of the world</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>✔*</td>
</tr>
<tr>
<td>New Pressure: Suppliers</td>
<td>X</td>
<td>✔</td>
<td>✔</td>
<td>X</td>
</tr>
<tr>
<td>New Pressure: EU</td>
<td>X</td>
<td>✔</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

In answering the second sub-research question *Which external pressures lead to the adoption of beyond-compliance emission reductions in the case study corporations?* the following can be stated: in practice law and regulation (at the national and international level), building legitimation within industry, competition within the industry, customers, industry agreements, suppliers, and state of the world have been identified as the eight external pressures behind the adoption of beyond-compliance emission reductions for the case studies.

8.1.3 Comparison Theory and Reality Experiences

The previous two sections have highlighted what the reviewed literature has determined to be key pressures and hereafter the pressures determined as being applicable in practice for the case studies were identified. In this section, these experienced external pressures are placed in context of the literature to identify why some pressure are (not) experienced. In turn this discussion allows for the identification of key pressures across the four case studies to answer the main research question.

8.1.3.1 Experienced Pressures

*Law and Regulation*

As discussed in the introduction, and in more detail in Appendix 1 (p. 80), law and regulations that are applicable today to the case studies in this research context span two international policy levels and one at the Dutch national level. As one of the international policies is implemented on the EU level the pressure given by this stakeholder, as a new external pressure (Case X interview), shall not be considered separately from international law and regulation.
Based upon the interviews conducted, law and regulations are used to reduce the amount of (air) pollution through exercising coercive pressure. Thus, setting an industry standard. In the cases of Anthony Veder, Case X, and Vroon policy has resulted in a reduction of their operational release of emissions. This is in part though their internal capacity to anticipate future policies (Borck & Coglianese, 2009; Lyon & Maxwell, 1999). As such achieving the goal of regulation of emission reductions and building beyond-compliance practices. The pressure of law and regulation has been found to be key by the three TiSII case studies. This supports the findings by Bansal and Roth (2000), Lai et al (2011), and Lyon and Maxell (1999). However, between the TiSII interviews, there is a difference of opinion whether the national or international policy level is more important. But, on average, the international pressure has been ranked higher by the TiSII case studies, see Table 11 in Appendix 7 (p. 95). This discrepancy could be due to the perception and experience of pressures by the case studies (see section 9.2.3 Four-stage Model and the Identification of Environmental Strategy Transition (p. 69) for further discussion). However, expert Lurkin identified that it is unlikely for national law to implement stricter regulations, in comparison to international policy, as the industry would then move to neighbouring countries (KNVR interview, 17-11-2017). As highlighted in Appendix 1 (p. 80) it appears that the national level law and regulations are a translation of the two international policies which become internalised into Dutch law. Thus, national law should not be considered a key pressure as it primarily influenced by international policy changes.

Reviewed literature regarding policy has expressed doubts regarding the (past) effectiveness, or capacity, of policy in curbing the emissions released by shipping activities (Cofala et al., 2007). Policy strategies should be oriented to create incentives into green investments while allowing corporations to remain competitive (Eyring et al., 2010). And yet, the interviews have shown that currently policy is not perfect to promote beyond-compliance emission reductions, for example for Anthony Veder and Fairtransport. This follows what Lister et al. (2015) discuss, which is that corporations in the shipping industry are unable or unwilling to make significant investments into greener practices due to high level of uncertainty within the industry and regarding regulations. Here, the moving deadlines and weak enforcement of IMO regulations in combination with regulatory unevenness across regions complicates investments into more environmentally friendly practices (Lister et al., 2015). National law, due to these differences cannot be expected to efficiently promote global changes in operations for shipping corporations. Further building the importance of recognising international law as key. Yet, as “law is law” (Case X interview) regulation will always be followed, regardless of its efficiency or policy level.

This explains why the law and regulation penalties, or non-compliance consequences, were scarcely mentioned during the interviews. This is not to indicate that penalties are not applicable, which would go against the articles like Delmas & Toffel (2003) and DiMaggio & Powell (1983). But rather suggests that not changing practices based upon new regulations is not an option for the case studies. To be able to provide the corporation’s services, thus to be able to transport goods, compliance with law and regulation is required. Otherwise a corporation will not be allowed to operate, and this reduces the financial sustainability of a corporation. The TiSII cases have identified that they practice looking ahead to pre-emptively reduce emissions as to meet future policy requirements more easily (Anthony Veder interview; Case X interview; Vroon interview). Looking ahead to anticipate future policies was primarily discussed in the literature as to recognise economic opportunities (Borck & Coglianese, 2009; Lyon & Maxwell, 1999). However, it appears to also pressure the capacity to start planning to meet future policy demands, e.g. by adopting and testing new practices today. Thus, as an additional outcome, the internal capacity to look ahead, to anticipate future external pressure of law and regulation, facilitates reducing emissions to beyond-compliance levels today.

Finally, there have been no informal regulation coercive pressures, e.g. the promotion of voluntary programs by government stakeholders (Borck & Coglianese, 2009), identified by the case studies. Government supported voluntary programs were identified in the literature as to overcome the
incompleteness, and other disadvantages, of regulation in the face of changing environmental challenges. This could explain how to beyond-compliance practices are just beginning to present itself in the shipping industry, as (in)formal policy has been ineffective to facilitate this voluntary change.

Industry Agreements

The normative pressure of industry agreements was only identified by the Case X interviewee. Namely that industry agreements set industry standards through several non-governmental organisations operating in the shipping industry, e.g. ship insurers (Case X interview). Here professional authorities (in)directly set standards (Matten & Moon, 2008) for the industry and the corporations operating within that. However, other than Case X none of the case studies mentioned professional authorities like insurers. Documentation regarding Fairtransport identifies an internally developed industry agreement between this case study with two other European sail-based transport corporations through a “Sail Cargo Alliance” in 2015 (Fairtransport, n.d.-b). The alliances goal is to use a clean power source to create healthy and sustainable transport while using as little resources as possible (Fairtransport, n.d.-b). However, as this alliance was not identified during the interview it is expected that this agreement only plays a limited role for the case study. In summary, the pressure of industry agreements is not expected to be very relevant to promote beyond-compliance reductions.

Customers

Lister et al. (2015) found that customers are a key pressure to change corporate behaviours. This stakeholder represents the source financial income for all four of case studies, as suggested Zailani et al. (2012), and as such signifies an important source of pressure. Customers, as major financial stakeholders (Zailani et al., 2012), are critical for corporations to be financially secure. The stakeholder has been described, in the literature, as exercising informal pressure through threats to not purchase the products (Becchetti et al., 2012) unless certain environmental practices are performed (Delmas & Toffel, 2003). Yet in practice, customers can both promote and limit investments in the experiences of the case studies. If there is customer interest, then the reviewed TiSII case studies are more than willing to adopt beyond-compliance practices (Anthony Veder interview; Case X interview; Vroon interview). A similar suggestion was made by expert Faber, thus strengthening the importance of customer support for shipowners to make investments (CE Delft interview, 27-11-2017). However, when this interest is not present there is the fear for the TiSII case studies that insisting upon additional emission reductions (or raising the transportation costs) will turn customers away (Anthony Veder interview; Case X interview; Vroon interview). This concern was also discussed by expert Faber (CE Delft interview, 27-11-2017). The resulting fear restricts investments into further beyond-compliance emission reductions. In part due to associated commercial concerns with losing customers, which will be discussed further in section 8.2.3.3 Internal Interview Themes: Ambition and Commercial Concerns (p. 58). In the case of Fairtransport, the market of sustainable shipping transport, and interested customers, is increasing. The case study already practices the lowest level of emissions possible as such it is unlikely that customers will exert any pressure to change the corporation’s practices. Fairtransport does not need to fear a lack of customers (due to the growing niche market) (Fairtransport interview) but, it still needs to achieve economic sustainability (Babiak & Trendafilova, 2011). Hence, customers are expected to remain an important factor for the case study. In summary, customers are a key pressure to promote beyond-compliance reductions.

Competition Within the Industry

Competition within the industry was ranked as the third most important external pressure (see Table 11, p. 95) for the TiSII case studies. In theory, this pressure can lead to mimicking pressures in the industry where corporations change their behaviour to follow the lead of a better performing competitor (DiMaggio & Powell, 1983). However, in practice competition is a little more complex. It can, namely,
result both in the promotion of beyond-compliance (e.g. when competitor is ahead can build pressure to catch-up) but also as a restricting factor (Case X interview). Here competition without beyond-compliance practices have less financial investments to carry, and as such can attract customers by providing their service at (relatively) lower prices. Thus, when a corporation fears to lose customers it cannot justify further investments (Case X interview) due to commercial concerns. However, the Anthony Veder interviewee identified that increasing beyond-compliance practices can aid to keep customers (Anthony Veder interview). But only when this change is made in dialogue with the customers, thus customers need to be willing to pay more for the service before investments are made. Due to this complexity and differences in experiences between the case studies, the competition within the industry pressure it cannot be considered as a key external pressure.

State of the World

The new external pressure of the ‘state of the world’ was only identified by the Stage IV case study Fairtransport. Here, recognising the current state of the world builds the internal pressure of ambition for the case study which is the backbone of the corporation since the beginning (Fairtransport interview). This pressure was not identified by the TiSII case studies. However, realising, and being influenced by, the current state of the world can be linked to the descriptions of ambition by the TiSII case studies (again under internal pressure). Namely, recognising what is going on in the world and their part therein pushes the case studies ambition to incorporate additional emission reductions. As such, perhaps more indirectly than Fairtransport, the TiSII case studies are influenced by the state of the world, supporting the recognition of this pressure as a key.

Looking beyond building ambition, recognising the state of the world could build normative pressure, for example within the possible employee base (DiMaggio & Powell, 1983). Based upon the employee description in the Fairtransport interview and on the corporation’s website, it seems likely that, the current state of the world creates a pool of employees for the case study. Confrontation with the state of the world could stimulate individuals to reduce emissions in their life, including their professional life. Potentially this can build motivation to join Fairtransport and maintain the radical standards of the corporation (see Improving Corporate Reputation under section 8.2.3.1 Experienced Pressures, p. 55). This interpretation of the state of the world, as building normative pressures, is expected to be very small for the TiSII case studies. For example, the Anthony Veder interviewee recognised that emission reductions are not expected to aid in attracting new employees (Anthony Veder interview).

In summary, the state of the world is a key pressure due to the link of building corporate ambition rather than normative pressure.

Suppliers

Suppliers were identified by Case X and Vroon as a new external pressure (Case X interview; Vroon interview), but this pressure is likely to be applicable to Anthony Veder as well. Under the theoretical internal pressure of strategic behaviour, suppliers provide the possibility of technological assistance (Khanna & Damon, 1999) but are otherwise not discussed in the reviewed literature. However, this stakeholder could also be interpreted as giving normative pressure through representing a professional network (DiMaggio & Powell, 1983) of information and actively trying to sell their products. In the context of emission reductions for example. Though it was not identified as a key pressure during the interviews suppliers are to be considered important to promote beyond-compliance emission reductions, namely in relation to anticipating law and regulation. Suppliers can use their position to provide opportunities to experiment with new, non-required, and thus cheaper technologies in order for corporations to begin to meet upcoming regulation requirements. These opportunities can help to overcome commercial concerns of the TiSII corporations and as such suppliers are determined to be a key source of pressure. Furthermore, Han (2010) identified that currently IMO policy codifies already
established technology rather than best available, but new, technology. Suppliers, through directly contacting corporations can aid to overcome this limitation of law and regulation making it key to promoting beyond-compliance practices.

**Building legitimation within the Shipping industry**

Thirdly, the informal external pressure to build social legitimation within society, a key pressure identified by Rivera (2004), is not considered applicable based upon the study results. Though Vroon feels pressure to build legitimation, this was linked with the pressure of competition rather than the wider society that this pressure is linked to in the reviewed literature. As the pressure is not experienced by the case studies all four case studies it is not considered a key pressure.

### 8.1.3.2 Not Experienced Pressures

The external pressures of citizen groups and NGOs, the pressure from the wider society, consumers, and competition between transport industries have been found as not applicable to the case studies. Firstly, as the corporations operate B-t-B, where the case studies are not known by name in the wider public and Fairtransport already practices the highest level of beyond-compliance practices the scope of influence of society is limited. Furthermore, the Fairtransport interviewee highlighted the experience where the practice of one corporation reduces the pressure on all. Here the overall beyond-compliance practices (highlighted in the media) of corporations like Fairtransport were discussed as allowing society to believe that the entire shipping industry is operating as beyond-compliant. Thus, giving a further indication why the external pressure of society given is limited.

Secondly, the operation of B-t-B explains why consumers and citizen groups and NGOs are unable to give direct pressure also due to scope of influence limitations. As citizens have only limited, and non-specific, information regarding shipping practices and associated impacts they are not expected to know that they can give pressure or to whom. As such it is expected to be unlikely that pressure by citizen groups or NGOs will grow in the nearby future.

Finally, the pressure of competition between transport industries was identified by expert Lurkin (KNVR interview, 17-11-2017). However, as the other transportation industries are not changing fast (Anthony Veder interview). And the shipping industry is perceived as environmentally friendly (Vroon interview) there is no direct pressure to change practices in relation to competition between transporting industries.

In summary, the pressures by citizen groups and NGOs, the pressure from the wider society, consumers, and competition between transport industries are out of the equation as influencing beyond-compliance emission reductions based upon the four case studies.

### 8.1.3.3 External Interview Theme: Industry Fragmentation

Industry fragmentation, has been identified as a new theme from the interviews. Namely, as a factor that can explain why external pressure experiences are different between the four case studies. This research study, and the external pressures identified in the literature it seems, originally assumed that that all shipowners, if not all corporations in the shipping industry, operate equally or at least with each other. However, from the case study interviews (Anthony Veder interview; Fairtransport interview) it became apparent that this is not the case. Rather, the shipping industry is fragmented with pressures being placed, and experienced, differently across ‘sub-industries’ each with different transport products e.g. gas tankers versus container carriers (Anthony Veder interview; Fairtransport interview). The market concentration affects the diffusion of environmental practices and institutional changes. An industry with less fragmentation (thus only a few big players) can experience higher rates of institution
This provides a possible explanation why the shipping industry is just beginning to make the transition; the changing institutions are only slowly diffusing across the various sub-industries.

Recognising this fragmentation also clarifies why policies, and other pressures to change emission behaviours, have not achieved the goal of promoting reductions beyond law and regulation requirements. Regulatory unevenness across regions complicates investments (Anthony Veder interview), providing an answer to how policy is unable to overcome commercial concerns of corporations. A one-fit solution for all is too broad for all the different sub-industries and thus ineffective (Anthony Veder interview; KNVR interview, 17-11-2017). And if policy is designed to be achievable for all sizes and financial capabilities of corporations in the wide industry, this does not stimulate emission reductions effectively, let alone inspire beyond-compliance reductions.

Finally, the industry fragmentation reduces the potential of mimicking pressure e.g. for management in designing new practices. It is anticipated that fragmentation makes it difficult to identify who to mimic if there are other corporations practising different types of emission reduction behaviours or which practices to mimic. It seems unlikely that all beyond-compliance practices are equally applicable to the various shipowner. For example, when comparing the practices of Fairtrans and the other three case studies. This consideration was not made in the literature reviewed as restricting mimicking pressure applicability.

8.1.3.4 Summary

In answering the main research question, the following external pressures have been identified as key to changing the case studies practices: international law and regulation, suppliers, customers, and state of the world (in connection with ambition). Furthermore, the interviewees identified that external pressures are most important type of pressure behind their voluntary beyond-compliance emission reduction practices.

8.2 Internal Pressures

Internal pressures, for all four case studies, are the internal changes to reduce emissions beyond law and regulation. Internal pressures are the perception of external pressures that are moderated by the corporations own organisational characteristics, strategic positioning and attributes of potential environmental management practices (Delmas & Toffel, 2003). According to the literature reviewed the incorporation beyond-compliance can only be achieved when a corporation changes the practices itself. Regardless of how much external pressure is exerted, the internal pressure leading to these changes must be considered as well. Firstly, the key internal pressures identified in the reviewed literature are highlighted. Hereafter, the internal pressures that were found to be relevant to the four case studies are discussed (answering the second sub-research question, p. 3). Finally, these two identifications are compared (in the wider context of the reviewed literature) to identify which internal pressures are key to lead to the adoption of beyond-compliance emission reductions.

8.2.1 Literature

As highlighted previously in the conceptual framework (section 2.3.3, p. 15) in theory, there have been numerous internal pressures identified that are key to change behaviour from within a corporation. Hafenbrädl and Waeger (2017) find that a managers belief system and a corporations moral value’s/emotions are the two main pressures leading to behavioural changes. Delmas and Toffel (2003) also find management key, where managers are needed to exercise rational thinking to identify when it pays to be green. Here management needs to be able to recognise economic opportunities of reduced environmental impacts (Delmas & Toffel, 2003). Furthermore, economic opportunities are considered
a key pressure as well by Lyon and Maxwell (1999) and Ornitz and Champ (2002). These economic pressures are provided by external stakeholders “[…] in the form of the market, of repeat clientele, strong customer base, public stock support” (Ornitz & Champ, 2002, p. 329). Furthermore, poor environmental record, shareholder pressure, and negative reactions shareholders to higher than expected emissions are key pressures (Lyon & Maxwell, 1999). Thus, from the literature the internal pressure given by management and economic opportunities, both in combination of each other and as separate pressures, are key to change corporate behaviours regarding environmental practices, such as emission reductions.

8.2.2 Case studies

In practice the following internal pressures, as highlighted in Table 9, are considered to lead to changes regarding beyond-compliance emission reduction in practice. Here ‘✔’ indicates that a pressure is experienced, ‘X’ that it is not experienced, and ‘*’ denotes that this pressure was the most important internal pressure for the individual case study. As such, Table 9 combines the individual case study experiences (see Table 4 through Table 7) to highlight which pressures have led to the beyond-compliance practices between the case studies.

<table>
<thead>
<tr>
<th>Internal Pressures</th>
<th>Anthony Veder</th>
<th>Case X</th>
<th>Vroon</th>
<th>Fair-transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers</td>
<td>✔️*</td>
<td>✔️</td>
<td>✔️</td>
<td>X</td>
</tr>
<tr>
<td>Environmental strategy</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>✔️</td>
</tr>
<tr>
<td>Shareholder influence</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>✔️</td>
</tr>
<tr>
<td>Economic opportunities</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Modern business practice</td>
<td>✔️</td>
<td>✔️</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Poor environmental record</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️*</td>
<td>✔️</td>
</tr>
<tr>
<td>Contribution to improve the impacts on the environment</td>
<td>✔️</td>
<td>✔️</td>
<td>X</td>
<td>✔️</td>
</tr>
<tr>
<td>Contribution to improve the impacts to society</td>
<td>✔️</td>
<td>X</td>
<td>✔️</td>
<td>X</td>
</tr>
<tr>
<td>Improve corporation’s reputation</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Risk worse reputation</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>✔️</td>
</tr>
<tr>
<td>New Pressure: Crew onboard the ships</td>
<td>✔️</td>
<td>X</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>New Pressure: Founders</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>✔️*</td>
</tr>
</tbody>
</table>

In answering the second sub-research question Which internal pressures lead to the adoption of beyond-compliance emission reductions in the case study corporations? the following can be stated: in practice management, environmental strategy, economic opportunities, emission reductions as modern business operations, poor environmental record, contribution to improve the impact on the environment, improving the impact on society, improving the corporation’s reputation, the risk of a worsened reputation, the crew onboard the ships, and the founders have been identified as the internal pressures behind the adoption of beyond-compliance emission reductions for the case studies.

8.2.3 Comparison Theory and Reality Experiences

The previous two sections have highlighted what the reviewed literature has determined to be key pressures and hereafter the pressures determined as being applicable in practice for the case studies.
were identified. In this section, the internal pressures are placed in context to determined which are key across the four case studies to answer the overarching research question of this study.

8.2.3.1 Experienced Pressures

Management

The influence of management was identified as the key internal pressure for Anthony Veder and Case X, supporting the findings of the literature, whereas for Vroon this was an important pressure. However, for Fairtransport management only gives minimal pressure to changing behaviours. Founders (sole shareholders of the corporation) can have much more impact regarding practices (Fairtransport interview). As such highlighting, the differences in pressure experiences between the environmental strategies stages.

Translating corporate ambition to real-life practices (Delmas & Toffel, 2004; Lun et al., 2016; Matten & Moon, 2008) is within the management’s capacity for the case studies. Yet, budget constrains limit how much action a manager can undertake (Vroon interview). From the interviews managers seem to be influenced by the ethics of shareholders and other actors from within and outside the corporation. But it appears managers are also influenced by their own ethics (Bansal & Roth, 2000; Campbell, 2007; Matten & Moon, 2008). Namely, through identifying the state of the world for themselves and translating that to their work, as suggested by the Anthony Veder interviewee. It seems likely that this would also facilitate implementing the ambition of the corporation with more determination as now the manager is personally more involved.

The process of filtering pressures across departments (Delmas & Toffel, 2003, 2004) by management as an explanation of the differences in pressure experiences, however, was not identified during the interviews. Nor was the source of external social pressure given to management through professional networks or education, as associated with external normative or mimicking pressure (DiMaggio & Powell, 1983) discussed by the case studies.

In summary, as management is valued highly in the interviews and is a key pressure in the literature, it is considered a key pressure to changing behaviour.

Poor Environmental Record

In theory, having a poor environmental record can incentivise a corporation to adopt green practices (Borck & Coglianese, 2009; Delmas & Toffel, 2003; Lyon & Maxwell, 1999). The pressure of bad press leading to internal changes (Arora & Cason, 1995) also seems unlikely as the industry is considered and portrayed as the most environmentally form of transportation (Chapman, 2007; Lister et al., 2015; Van Leeuwen & Van Koppen, 2016). Furthermore, as highlighted previously, the cases studies are not known by name in society which reduces how much pressure can be given by press directly.

One can overcome the consequences of a poor record through building a better reputation (Doh & Guay, 2006). But the suggestion that disasters result in changes in practices seems unlikely (Delmas & Toffel, 2003) for the case studies as the release of emissions is not a sudden disaster. But rather corporations begin to face the realisation that how the industry has operated is no longer environmentally responsible, as such the theory that changes are made in response to disasters is unlikely. And yet, all case studies feel pressured by past behaviours and associated releases of emissions, to the point that this pressure was identified as key for Vroon. Here the corporation’s recognition of the consequences of past emission building ambition to be better today plays a factor (Anthony Veder interview; Fairtransport interview). But efficiency considerations also play a part in this pressure. If ship emissions in the past were lower than they are today this creates pressure to find out why to overcome this challenge (Case
X interview; Vroon interview). Furthermore, by comparing the efficiency between vessels of the same class discrepancies between operational practices to light (Vroon interview). Here a competition between peers operating the different vessels is created with the outcome of higher efficiency. Bringing the new pressure by the crew onboard the vessels to the attention as well (Vroon interview) though this will be discussed in a later section.

The perception of how the pressure of poor environmental record is experienced by the case studies is different than suggested by the reviewed literature. This could be a limitation of the literature reviewed, or an indicator of the knowledge gap regarding pressures experienced in the shipping industry. But, in summary, recognising past environmental impacts and actively being influenced today to overcome past behaviours or be better than the past is a key pressure for the four case studies. Here the link to recognising the poor record and building ambition is key to highlight.

Founders

Secondly, as the pressure of founders is newly identified (Fairtransport interview) there is no theory to consider or compare the experiences to. Only the interviewee of Fairtransport identified founders, as a new and key pressure, which could explain why the corporation is so different from the other case studies. The founders started with the ambition to practice emission free transportation and build Fairtransport’s business model around this ambition. The founders have achieved their goal as they carry significant weight in the corporation and are able to change corporate behaviours (Fairtransport interview). The founders are the only shareholders of Fairtransport company and were identified as being the driving force behind radical sustainability (Fairtransport interview). As such explaining why the pressure is considered key for the interviewee. For the TiSII case studies, however, the corporation’s shareholders can give pressure to change but in practice give only ambition. The three case studies were established several decades ago, as such it seems unlikely that the founders of the corporations give pressure today. The pressure of founders/shareholders is, currently, not applicable to the TiSII case studies. And as these cases represent the majority of the shipowners (in set-up) in the shipping industry, founders are not considered to be key pressures across the industry.

Economic Opportunities

Across the interviews three external sources of economic opportunities were identified. Namely, customers, suppliers, and early emission reductions in relation to anticipating future law and regulation. This link between external and internal pressures was identified both in the literature and in the two expert interviews (CE Delft interview, 27-11-2017; KNVR interview, 17-11-2017). However, the ability of a corporation to recognise the following economic opportunities needs to come from within a corporation and cannot be imposed from the outside. This restricts the capacity of opportunities provided by external stakeholders to promote internal pressures.

During the interviews, the economic opportunities were primarily linked to customers. In the reviewed literature, customers have been described as a source of premium payments for greener practices and as such can pressure internal changes in behaviour (Lyon & Maxwell, 1999). Namely, economic opportunities as rewards for positive behaviours in the eyes of customers (Lyon & Maxwell, 1999), perhaps through their own institutional norms and value. Here customer interest can push the cases studies to adopt beyond-compliance emission reductions, as the investments can then be shared between the corporation and the customers (Anthony Veder interview; Case X interview; Vroon interview). And this connection was discussed by the TiSII case studies as critical to overcome the commercial concerns that they face (see section 8.2.3.3, p. 58). Nevertheless, the TiSII case studies interviewees identified that there is only limited customer interest to invest. And there is the fear that if the corporation invests without customer the higher service costs will deter any (potential) customers. Here customers, as a source of economic opportunities, can be a force to facilitate or brake beyond-compliance emission
reducing practices. But as the TiSII case studies identified not to invest heavily into emission reduction practices without customer support the pressure of economic opportunities is considered to be key.

As stated under the external pressure of suppliers (p. 49), this external stakeholder provides economic opportunities to the TiSII case studies (Case X interview, Vroon interview). Namely, the opportunity to experiment with new technologies. These new technologies were discussed as often not required to meet law and regulation requirements, yet. As such, suppliers can provide technologies at lower costs then when they are needed to meet regulation requirements. And these opportunities can help to overcome commercial concerns of the TiSII corporations and as such suppliers are determined as supporting the pressure of economic opportunities.

Under the opportunities given by law and regulation, Gibbs (1996) suggests that government subsidies can provide economic opportunities that support changes in behaviour to those desired by regulators. Yet, in the interviews no government subsidies have been mentioned. Anthony Veder has received the first certified sustainable shipping loan, but this was given through private channels (ABN AMRO, 2016) and as such not relevant in this situation. However, obtaining economic opportunities, in relation to law and regulation, can be done through looking ahead and recognising future opportunities (Borck & Coglianese, 2009; Lyon & Maxwell, 1999). Looking ahead to future policy reduces higher compliance costs to be carried in the future (Khanna & Damon, 1999) which is what the interviewees of the TiSII case studies indicated as beneficial in their respective interviews (Anthony Veder interview; Case X interview, Vroon interview). But by looking too far ahead, by reducing emissions without a related policy on the horizon, reviewed literature highlights concerns that this practice could actually showcase that a higher industry standard is utilised in the industry thus mitigating future regulations (Lyon & Maxwell, 1999; Videras & Alberini, 2000). For example, Anthony Veder’s practice of burning-off left over gas products to reduce the potency of the gas to one less harmful is not demanded by regulation today or in the foreseeable future (Anthony Veder interview). Yet, the practice could indicate to regulators that a higher standard is possible in the industry. But, unless other gas transporters follow Anthony Veder’s example they will experience no coercive pressure as regulators believes industry will adopt this practice. As a result, this very controllable emission releasing practice will be able to continue without restriction. Of course, Anthony Veder is only one corporation in a global industry but this (theoretical) consequence should not be overlooked.

The experience of Fairtransport is distinctively different from the TiSII case studies. Namely as it experiences a growing pool of customers (Fairtransport interview) willing to utilise the service despite a longer travel time and higher costs in favour of the lower emissions. Public recognition and increased consumer goodwill, which is achieved through reputation building, is improved with adoption greener practices (Khanna & Damon, 1999) which brings additional (economic) benefits. This suggests that the founders of Fairtransport were able to recognise the long-term opportunities, and willing to suffer the short-term losses, to achieve the corporation’s ambition. This recognition builds the importance of considering economic opportunities as a key pressure.

In summary, the provision of economic opportunities in various forms is a key internal pressure to promote beyond-compliance practices.

Improving Corporate Reputation

In theory, to improve corporate reputation is to improve the appropriateness of a corporation within a set of regulations, norms, values, and beliefs in society and the industry (Bansal & Roth, 2000). Here, being recognised as more appropriate can bring additional benefits (Babiak & Trendafilova, 2011; Khanna & Damon, 1999). Furthermore, a better reputation can improve a company’s ability to attract (economic) resources, enhance its performance, and build competitive advantage over others in the
industry (Babiak & Trendafilova, 2011). Furthermore, building reputation can help to repair a tarnished environmental reputation (Doh & Guay, 2006) in the face of environmental disasters.

In practice, however, reputation benefits in society, as suggested in the literature as a pressure to change (Borck & Coglianese, 2009), seem only to be experienced by Fairtransport. The TiSII operate only B-t-B and are not thus known by name in society, as identified by expert Lurkin (KNVR interview, 17-11-2017). Therefore, it is very difficult to for these shipowners to achieve publicity and reap the associated benefits with stakeholders outside of the shipping industry. And yet, the interviews indicate that for all case studies the benefits of building reputation gives a little bit of pressure, just with whom is the question (Case X interview; Vroon interview). Reputation with customers is more important than with wider society, which was also highlighted by expert Lurkin (KNVR interview, 17-11-2017). As indicated in Table 11 (p. 95) the pressure of reputation building is only ranked as a 1.5 (out of 5) for the TiSII case studies. And though this pressure was ranked as a 5 for Fairtransport, the TiSII cases represent the majority of the shipowners in the shipping industry building reputation is not considered to be a key pressure across the industry.

Emission Reductions as Modern Business Operations

Emission reductions as part of modern business operations is not a pressure identified in the literature but rather by an expert (Smith-Jacobs, 2017). Yet, retrospectively, emission reductions as a modern business practice could be related to institutions becoming mainstream (Matten & Moon, 2008) in the industry. Of the case studies, only Anthony Veder and Case X identified that the corporations are influenced by this internal pressure. But then, during the interview, this pressure was discussed as operating in the background rather than active and direct confrontation with this pressure. As such, this pressure cannot be considered key to changing behaviours to incorporate beyond-compliance emission reductions.

Crew Onboard the Ships

The new pressure given by the crew onboard the ships was identified by all case studies, except Case X. Retrospectively, a link can be made to DiMaggio and Powell’s (1983) normative isomorphism where employees define the conditions and methods of their work. Or rather that the crew signals that the current condition of operations, the release of emissions during transportation, needs to be changed. The crew carries weight, per the interviews, as these internal stakeholders are confronted with the release of emissions and are thus interested in current practices to change (Anthony Veder interview, Vroon interview). The Vroon interviewee suggested an informal competition between peers across different vessels to be operationally efficient, prompting operations changes. Or the crew can suggest more effective day-to-day behavioural changes that can be performed to become more sustainable (Fairtransport interview).

However, during the interviews and in the literature, only the top of management was identified as being able to influence a corporation’s practices. Therefore, it seems unlikely that in practice a single individual in a crew, working on one of the ship’s in a fleet, can have a voice strong enough to change an entire corporation’s behaviour. This consideration does not mean that in a wider context crew can give pressure but that they are not able to directly influence the practices of a corporation. As this research study investigates direct pressures the crew onboard the ships cannot be considered key.

Improving the Impacts onto the Environment and Society

The pressure to improve the impacts of the case studies to environment is determined not to be a very influential pressure across the four case studies. But rather, reducing the impacts on the environment is part of a corporation’s ambition, and thus it will be discussed later (section 8.2.3.3 Internal Interview
Themes: Ambition and Commercial Concerns, p. 58). However, it must be mentioned that for Fairtransport the impact to the environment is very important, suggesting a link between the pressure and the high level of beyond-compliance (ambition).

The pressure of improving the impacts of emission to society could be interpreted as early adopters setting an industry standard as to benefit society (Lyon & Maxwell, 1999). However, this pressure was identified only by Anthony Veder and Vroon. For Anthony Veder direct confrontation with the impacts of emissions in sensitive environments leads to changes in behaviour. But reducing emissions in the context of societal impacts gives only a little bit of pressure for Vroon. The other case study indicated that reducing impacts to society is an additional benefit (Case X interview) but not a pressure. And for Fairtransport the pressure was interpreted as giving pressure to society to change, which the interviewee reflected Fairtransport is unable to do (Fairtransport interview).

In summary, the pressures of improving the impacts onto the environment and society both are not key pressures based upon the four case studies.

*Environmental Strategy*

The pressure of environment strategy, in part aimed at capturing the theoretical pressure of strategic reasoning for the case studies, was found not to be applicable across the tested TiSII cases. The TiSII cases are only in transition thus explaining why there is currently no environmental strategy as this is associated with a complete Stage II strategy. Only Fairtransport practices with an environmental strategy, where it seems that this strategy has not changed since the start of the corporation. Namely, to not include any mechanical means of propulsion onboard the ships (Fairtransport interview). The Case X interviewee, indicated that there are no economic marketing benefits for the case study with having an environmental strategy, which goes against findings by Bansal and Roth (2000). As none of the TiSII case studies are pressured by an environmental strategy it seems that the economic opportunities discussed before are not enough in practice for beyond-compliance emission reductions to be a strategic investment. Yet, the presence of an environmental strategy at Fairtransport indicates that for this corporation it is strategic to be beyond-compliant in its operations. As the case study’s image is built upon practising the lowest possible release of GHG emissions this perspective makes sense. Here environmental strategy variations highlight differences in pressure experiences.

In summary, the pressure of environmental strategy is not considered a key pressure but rather highlights the environmental strategy differences in the industry.

*Worsened Reputation*

Across the interviews the possibility of a worsened reputation through releasing more emissions or not was found only applicable to Fairtransport. As such it is not considered a key pressure. For the TiSII case studies their practices, though highlighted on the corporation’s website for Anthony Veder and Case X, are not expected to be known to the wider public. As previously identified, due to practising B-t-B these TiSII case studies are not known by name to the public. Thus, there is no reputation to worsen in the public’s eye. For Fairtransport, however, the ambition, to be as sustainable as possible, is much more publicly identified. Here, any deviation will bring significant consequences to the corporation. It can lose it appropriateness (Bansal & Roth, 2000) within the sustainability norms and values of its customers and the wider public, and the economic benefits that this brings. The experience of the TiSII case studies, the lack of customer interest or pressure by direct society, explains why the pressure of worsened reputation is not experienced as heavily by these cases. Thus, again highlighting the differences between environmental strategy classification in the pressures experienced by the case studies.
8.2.3.2 Not Experienced Pressures

The theoretical internal pressures given by shareholders was not experienced by the case studies. Shareholders are considered part of the corporation rather than an external stakeholder in this study, though discussed as an external pressure in the reviewed literature. Through coercive pressures shareholders can control and/or press corporations to practice certain behaviours (Becchetti et al., 2012; Lun et al., 2016; Matten & Moon, 2008). This has been recognised as a legitimate method to express preferences through the market (Lyon & Maxwell, 1999). In the experience of the TiSII case studies shareholders do not give active pressure to change but rather the perspective to be greener. Due to the lack of pressure identified during the interviews it is unlikely that there are (active) green shareholders for the TiSII case studies. And the only shareholders that actively give pressure for Fairtransport are the founders, a separate source of pressure which has already been discussed. Other shareholders, for Fairtransport, are those holding shares to the two Fairtransport vessels. A stakeholder group that can be classified as green investors (Lyon & Maxwell, 1999). However, as the case study already practices the minimum level of operational release of emissions this group cannot demand more reductions (and thus does not give pressure). The differences in shareholder pressure, or even the type of shareholders, could be linked to the differences in environmental strategy between the TiSII cases and the Stage IV case. Perhaps with more ambitious practices environmentally conscious shareholders are attracted to invest in the TiSII cases, thus pushing beyond-compliance further. However, without knowing past practices, and associated pressure given by shareholders, this cannot be determined for certain. Therefore, the pressure of shareholders cannot be considered key.

Secondly, the pressure of corporate culture was identified by the Case X interviewee as a possible pressure depending upon the type of culture. However, the interviewee also identified that currently the pressure is not applicable to the case study (Case X interview). This newly identified pressure was discussed as a situation where a corporate culture of inter-departmental sharing could be beneficial to facilitating further beyond-compliance emission reductions. Under the pressure of management, the dispersion of external pressures to different departments of a corporation is discussed as an influencing internal pressure (Delmas & Toffel, 2003, 2004). But as the pressure of corporate culture or inter-departmental transfer of knowledge through management was not identified for any of the four case studies it is not considered to be key.

Finally, various aspects of strategic behaviour, as an internal pressure, have been highlighted thus far. However, in practice strategic behaviour is not a single pressure but rather in support and as the reasoning behind other individual pressures. This highlights the complexity of understanding but also testing pressures in an industry like that of shipping. It is easy to say that pressures A through Z are applicable in an industry. But understanding how the combination of these pressures interact and (do not) lead to changes in behaviour is much more difficult. Delmas and Toffel (2004) discuss that in reality pressures overlap and interact, which will most likely moderate the individual pressure influences over a corporation. As such, future research should look further into pressure experiences as interacting factors, specifically in a diverse industry like that of shipping.

8.2.3.3 Internal Interview Themes: Ambition and Commercial Concerns

During the case study interviews, two internal themes were identified beyond the tested pressures. Here ambition and commercial concerns were used by the case studies as factors of facilitation and restriction of beyond-compliance emission reductions. As such ambition and commercial concerns are important to discuss further in this thesis.
Ambition

During the interviews all the case studies have expressed the ambition to reduce emission, as such ambition creates a pressure which can explain their current beyond-compliance practices. Hougee (2013, p. 12) states that “[...] ambition (desire to achieve something) of a company reveals information about the company’s commitment to contribute to a better environment. Having high environmental ambitions means there is a strong desire for achievement of environmental improvements. One can assume that the ‘greener’ the ambition of the company, the more a company wants to make ecological improvements and hence the more likely it is that ecological rationality is institutionalised in everyday practices.”. The ethical responsibility of the TiSII case studies, expressed as their ambition, is to change the corporation’s operations, however, the case studies do not share the same exact ambition. But they share the recognition of the current ‘state of the world’ and feel responsibility to reduce their respective impacts as much as rationally possible. Fairtransport, is also influenced by the state of the world as a pressure building ambition. And though, this case study is able to fully act upon the ambition to transport emission free it is restricted to doing so only on a very small scale and out of competition with other shipowners.

From the interviews, ambition appears to be the internal driver behind the current beyond-compliance practices (Anthony Veder interview; Case X interview; Fairtransport interview; Vroon interview). The theme of ambition was not necessarily identified in the theoretical literature as a pressure or factor. In the reviewed theory, the theme ambition can be interpreted as the translation of the ethical responsibility (Heikkurinen, 2011; Hougee, 2013; Van Leeuwen & Van Koppen, 2016) or social obligations and value’s (Bansal & Roth, 2000) of a corporation. Ambition can expressed by the corporation’s shareholders (Delmas & Toffel, 2004; Lun et al., 2016; Matten & Moon, 2008) and translated to management (Bansal & Roth, 2000; Campbell, 2007; Matten & Moon, 2008). The Vroon interviewee identified ambition as a missed internal pressure (Vroon interview). Therefore, the importance of ambition should not be overlooked in relation to building voluntary beyond-compliance emission reductions. Rather in this research study ambition is considered key to facilitate changes in behaviours. Specifically, in the context of the next theme namely commercial concerns as an inhibitor of ambition.

Commercial concerns

The theme of commercial concerns has been identified specifically during the TiSII interviews as to explain why these cases studies have not been able to act upon their ambition. Namely, as an internal factor that reduces the stimulating effects of both external and internal pressures. Highlighting a trade-off between finances and ambition, where economics wins over ambition. Van den Hoed (2015) identifies that Dutch shipowners want to become more sustainable. But Lister et al. (2015) discuss that corporations in the shipping industry are unable or unwilling to make significant investments into greener practices due to high level of uncertainty within the industry and regarding regulations. As such, the literature recognises that there are critical limitations that restrict beyond-compliance investments.

Hougee (2013, p. 16) states that “[w]hen times are good it is more likely that companies invest in the environment.”. Here it seems that the times are not good for the TiSII cases to change their practices, while the operations of Fairtransport support the identification of growing economic opportunities. A corporation puts the objective to ensure the economic sustainability of the company (Babiak & Trendafilova, 2011; KNVR interview, 17-11-2017) before any other ambitions. Without customer requests for emission reduction investments the product of the corporation loses value (Anthony Veder interview; Case X interview) as such reducing the economic sustainability of the corporation. Lai et al. (2011) identify that there are not enough incentives provided in the shipping industry to make the transition to beyond-compliance emission reductions or to overcome the doubts of competitiveness when operating with these practices. Here commercial concerns can be the most important inhibitor against beyond-compliance emission reductions. Currently, for the TiSII cases the economic
sustainability is threatened with additional investments into beyond-compliance are made, where more economic opportunities could aid to support this.

Furthermore, the interviewee of Case X mentioned that at the moment it must focus upon other environmental strategies, and as such is unable to invest into beyond-compliance emission reduction practices. This consideration is not made in the 4SM internal characteristics. Namely, that the environmental strategy is fragmented in different environmental sub-strategies (such as climate change and ballast water treatment) per interviewee X (Case X interview). And how one sub-strategy is practiced influences the capacity of a corporation to act upon other sub-strategies. As such future research should take this into account.

Regarding the ambition characteristic of the 4SM to be able to “[… advance] to another stage, therefore, usually implies that not just the ambition, but also several internal characteristics, have to be changed.” (Van Leeuwen & Van Koppen, 2016, p. 47). Thus, the value of ambition (in combination with other pressures) matches. However, the model or wider reviewed literature does not explain how ambition changes behaviour. Namely the TiSII case studies have ambition to reduce emissions but do not have the (economic) capacity to change their practices. While the ambition of Fairtransport to be operational emission free has been institutionalised since the start through the founder’s environmental rationality. The influence of one pressure restricting or facilitating another pressure should be research further in the future.

8.2.3.4 Summary

In answering the main research question, the following internal pressures have been identified as key to changing the case studies practices: economic opportunities, management, ambition, and poor environmental record are key to promote beyond-compliance practices.

8.3 Four-stage Model Environmental Strategy Stage Evaluation

During the four case study result chapter’s the corporation’s environmental strategy stages have been determined. Figure 6 (p. 61), located on the next page, visually represents the four case studies and their strategy classification per individual 4SM characteristic. The figure combines the separate strategy classifications represented in Figure 2 through Figure 5. This allows the identification of where the case studies are similar in their environmental strategy and where they are different. Namely, to aid in interpreting what the stage classification means and the pressure experiences (differences) identified during the interviews. Anthony Veder, Case X, and Vroon have been classified as in the transition into Stage II (TiSII) and Fairtransport is operating with a Stage IV strategy. The first case study selection criteria (see method section 3.2 Research Design: Case Study Strategy, p. 19), which requires the case studies used in this study to be operating beyond Stage I, is satisfied. Therefore, the experiences of the case studies can be used to answer the research questions.
As represented in Figure 6, the three TiSII case studies have not been classified as operating under all the characteristics of the Stage II ‘process-oriented strategy’. Rather, only a few characteristics can be classified as beyond Stage I. This indicates the transition or start of a beyond crisis-oriented environmental strategy regarding the release of emissions. Yet, from comparing the three TiSII case studies even within the transition there appear to be different ‘degrees’. To say, the case studies of Anthony Veder, Case X, and Vroon appear at different points of transitioning into to Stage II and/or taking different approaches to achieving beyond-compliance reductions. From the figure Anthony Veder is shown as Stage I for the characteristic ‘knowledge and information’, unlike the other two case studies. But Anthony Veder is further ahead in ‘product communication’ in comparison to Vroon. There does not seem a specific path or order of characteristics of change between these three case studies.

When considering the differences in internal pressure experienced (see Table 9, p. 52) by the TiSII case studies the determination of environmental strategy differences is not surprising. More importantly, the different levels of transition could explain the differences in pressures experienced between them. Or the differences in pressures experienced could have influenced when and how the case studies transitioned. Answering this line of thought is beyond the scope of this study, therefore only a hypothesis can be given to clarify this situation. It theorises that institutions are not only different across the world they also shift over time (Campbell, 2007). The rational expectation is that the differences in pressure experienced have led to differences in transition. And that now the lack of additional pressures is restricting further transition for the TiSII case studies. This, however, cannot be concluded from the interviews conducted.

Nevertheless, the identification of transition means that the environmental strategy of Anthony Veder, Case X, and Vroon includes experiences or practices of associated with compliance. It is important to highlight that the TiSII case studies experience Stage I external pressures (environmental opportunities) and have Stage I responses to these pressures (environmental risks) regarding their emission reductions. This is shows the interconnectedness of changing an environmental strategy for a corporation. Limited opportunities appear to equal limited beyond-compliance practices, see Figure 6. Namely, the
(perceived) lack of opportunities explains the Stage I budget characteristic which is needed to address environmental risks. The commercial concerns, highlighted by the case studies, showcases a lack of external support providing opportunities to change. Explicitly, the lack of substantial customer interest or industry-wide requirements can be identified limiting factors for the TiSII case studies to transition further. Furthermore, without opportunity or the financial capacity to realistically address the environmental risks of transportation, translating the ambition throughout the corporation (organisation) is limited.

From Figure 6 (p. 61) it is clear that for Fairtransport there are significant environmental opportunities that support the current Stage IV environmental strategy. In the case study interview these opportunities were said to be given due to continuing growth of the sustainable (emissions free) transportation sector (Fairtransport interview). Here industry fragmentation is beneficial to the corporation, unlike the other case studies, as competition is limited while customers interest is growing. The fears of the TiSII case studies of customer dis-interest to pay extra for more sustainable services is not supported in the experience of Fairtransport. Perhaps fear is what is keeping Anthony Veder, Case X, and Vroon from accessing additional opportunities. The concern that the corporations will not financially survive are unfounded based upon Fairtransport’s experiences. Economic opportunities are available once the investments are made for this case study, which is supported by findings by Lai et al. (2011). At this point, however, it must be recognised that the business model of Fairtransport is likely to be significantly different to the TiSII case studies. And as such Fairtransport has access to a different market and opportunities. This would go against Lai et al. (2011) and builds the importance of recognising industry fragmentation as an important factor in pressure experiences and responses.

From the four case studies interviews, it is clear that the economic opportunities are key. For Fairtransport economic opportunities are an important reason why it can operate under the Stage IV strategy. And for the TiSII case studies, the capacity to act upon their ambition of beyond-compliance is influenced by the lack of (perceived) economic opportunities as a factor. Thus, this is the most influential pressure (though supported by other pressures) for corporations to utilise beyond-compliance practices regardless of their environmental strategy. Furthermore, the comparison of the four case studies, in the context of pressure experiences, indicate that the environmental strategy influences how and which pressures are applicable. Not only when comparing Fairtransport with the TiSII case studies but also the different degrees of transition as explaining the differences in pressures experienced for these case studies. Or the differences in pressures experienced influences when and how these TiSII case studies transition. This presents a ‘chicken and the egg’ scenario which cannot be answered within the scope this study. However, a hypothesis can be given: the differences in pressure experienced have led to these transition variations, for example due to industry fragmentation. Where today, the lack of additional pressures (including opportunities) is restricting further transition. This places the importance of increasing and improving the pressure experiences of shipowners as to facilitate further transition to incorporate beyond-compliance emission reductions.

8.4 The Four Case Studies in the Context of Institutional Theory

In IT, it is recognised that norms are changing and being integrated across society. Here the acceptance and action upon relevant norms can indicate whether institutional changes have become the new normal for operations. The case studies actions, or the lack thereof, indicate that beyond-compliance reductions are not the norm across the shipping industry. In one paragraph of the conceptual framework (Chapter 2, p. 5) Delmas and Montes-Sancho (2011) are highlighted as they identify that institutional changes go through a process of three basic stages for norms to become widely accepted. The transition from one stage to another is dependent upon social consensus among decision makers concerning the value of practice, and thus affecting the adoption of institutions. The first stage “pre-institutionalisation” is characterised with only a few adopters and limited knowledge (Delmas & Montes-Sancho, 2011, p.
105). Hereafter, the other stages the norms that promote practices become diffused (“semi-institutionalisation”) to the point where it becomes stable, and even taken for granted (“full institutionalisation”) (Delmas & Montes-Sancho, 2011, p. 105). As suggested in Chapter 2 (p. 5) understanding these stages could aid in explaining why only a few corporations in the shipping industry are making the transition to beyond-compliance emission reductions. The general norm of the industry has been identified as to be compliant with law and regulation (Van Leeuwen & Van Koppen, 2016), which is an indicator that the shipping industry is in first institutionalisation stage. Here only few corporations are transitioning to the changing institutions (institutions supporting beyond-compliance behaviours), as found by suggested by Lun et al. (2016) and Van Leeuwen and Van Koppen (2016).

Furthermore, for the second part of the first stage, limited knowledge, the following is relevant: The reviewed literature suggests that economic benefits will occur with the incorporation of beyond-compliance reductions. However, this does not seem to be generally accepted. Rather, short-term commercial concerns seem to rule behaviours as such the academic knowledge does not equal industry knowledge. As such, the research of this study supports the findings by Lun et al. (2016) and Van Leeuwen and Van Koppen (2016), the shipping industry is just beginning to recognise and adopt the changing institutions.

With this recognition of operating in a ‘pre-industrialisation stage’ comes some hope for the future. Namely that the relevant institutions, and identified pressures, are in the process to transition to the next stage. As such it is expected that more shipowners will start to practice beyond-compliance emission reductions. Hopefully until this becomes a common, where decision makers are critical to develop social consensus to facilitate further emission reductions (Delmas & Montes-Sancho, 2011). Rivera (2004) identifies that adhering to external norms, values, and traditions is key to achieving long-term profitability and survival. Thus, when institutions become more widely accepted it becomes in the interest of more actors to adhere to the new norms, values, and transitions thus reinforcing the new norms. However, until that time it is important to better understand these institutions and pressures to facilitate endeavours aiming to diffuse green practices across the shipping industry.
9 Conclusion

A better understanding of the drivers and motivations behind corporations in the shipping industry to reduce their emissions is critical. The industry is anticipated to keep growing, as are the released GHG emissions by its practices. As such effective policy measures to reduce emissions are vital. However, this requires a practical understanding of what motivates corporations in the shipping industry to voluntarily reduce their emissions.

There is no known literature investigating specifically what pressures lead to voluntary beyond-compliance emission reductions by shipowners in the shipping industry, thus indicating a gap in the literature. In this research study four case studies have been investigated to identify the pressures behind practices reducing the release of GHG emissions beyond what is required by law and regulation at the point of the interview. The four-stage model (4SM) by Van Leeuwen and Van Koppen (2016) was used to classify the practice of beyond-compliance emission reductions. The case studies Anthony Veder, Case X, and Vroon were classified as operating with a transitioning environment strategy, namely transitioning into a process-oriented environmental strategy (Stage II). Fairtransport has been determined as operating with a full environmental sustainability strategy (Stage IV).

The case studies were investigated, with each case study operating with various degrees of beyond-compliance emission reducing practices, to answer the research question: What are the key internal and external pressures in place for four case study corporations in the shipping industry to move from a crisis-oriented strategy towards voluntary beyond-compliance emission reduction practices in the Netherlands? The case study interviewees determined that external pressures are the most important for the beyond-compliance practices. Specifically, the following external pressures have been found to be key: international law and regulation, suppliers, customers, and recognising the state of the world. The first three external pressures help to build the key internal pressure of economic opportunities for the investigated corporations. Furthermore, the pressure of the state of the world builds corporate ambition which builds the key internal pressure given by management. Poor environmental record is key to promote beyond-compliance practices, also through building ambition.

The interaction between these eight key pressures is further visualised in Figure 7.

The lack of applicability of all the identified theoretical pressures, or the identification that the case studies are not all influenced in the same way, needs to be recognised. This is not meant to reduce the value of the conclusion rather to indicate the research gap identified in the problem statement is significant, and that this study is unable to fill this gap in its entirety. However, in the next section a starting point to address this gap is made. Hereafter, a reflection upon institutional theory and the 4SM in the context of this study’s outcomes is made. In the following section, two research recommendations based upon the discussion are made. And finally, policy recommendations based upon the identified key external and internal pressures are given.

![Figure 7. Visualisation of the key pressures based upon the four investigated case studies highlighting the links between external and internal pressures.](image-url)
9.1 Moving Beyond the Discussion

Several pressures have been identified by the case studies and placed in the context of the reviewed literature in the discussion chapter. But it is also important to move beyond the obvious discussion of theory and practices to highlight a different perspective on this research study’s findings. Firstly, the interaction of pressures is discussed for the case studies as how they might interact leading to beyond-compliance practices. Secondly, the identified key pressures are discussed under which 4SM characteristic(s) they fall individually and how they interact.

9.1.1 How Pressures Work to Influence the Transition to Beyond-compliance Practices

The themes of ambition and commercial concerns identified during the case study interviews are critical for the following extrapolation, which is to understand the importance of pressures in relation to promoting beyond-compliance practices with corporations like the case studies. As such, the extrapolation is a starting point to begin addressing the gap in the literature. Based upon the interviews it is clear that international law and regulation sets the baseline of how much emissions need to be minimally reduced by a corporation. However, additional (beyond-compliance) reductions are occurring, as evident by the four case studies. These practices seem to be influenced by the ambitions of the corporation, which aids reductions of emissions to achieve environmental goals. Yet, in the current (economic) circumstances for all case studies (except Fairtransport) commercial concerns outweigh the corporation’s ambition to change the levels of released emissions. Here the costs of investment versus the corporate value of emissions and ability to sell a service are weighted (see Figure 8), ultimately resulting in restrictions of emission reduction investments. The reality faced by the case studies is that emission reductions are dependent upon a ‘scale’ weighing commercial concerns and ambition. Pressures, or the lack thereof, can change in which way the ‘scale’ tilts as to create a tipping point (Van Leeuwen & Van Koppen, 2016) between environmental strategies. The direction in which the scale tips influences a corporation’s behaviour.

It appears that the pressures experienced today are not strong enough to significantly tilt the TiSII case studies scale towards beyond-compliance investments. Either to overcome the commercial concerns or build the strength of ambition further. But Fairtransport, with a Stage IV environmental strategy, operates in a growing market (thus ample economic opportunities to reduce commercial concerns) and has a radical ambition regarding practices. As such, the ‘scale’ is anticipate having always tilted towards beyond-compliance practices. Figure 8 was created based upon this realisation to simply illustrate the above-mentioned relationships. Rather than treating pressures as separate entities, which influence either/or the commercial and ambition factors, in reality they can do both. For example, economic opportunities can aid to reduce commercial concerns but can also build ambition to access these opportunities further. As such, a closer look at how pressures lead to behaviour changes, and which part of the scale (commercial concerns or ambition) is influenced, is needed through additional research.

How the identified key external and internal pressures can influence environmental strategies based upon this study shall be discussed next, through placing the key pressures in the context of the 4SM.
9.1.2 Key Pressures in the Context of the Four-stage Model

The 4SM by Van Leeuwen and Van Koppen (2016) has played a critical part in understanding the environmental strategies of the investigated case studies in relation to which pressures are relevant behind their current environmental strategy stages. As such, placing the pressures into the context of the model’s eight characteristic used to classify the type and associated stage of the environmental strategies, provides a new way of looking at the experiences of the case studies.

Law and regulation, or compliance with regulation as ambition, sets the first stage of the 4SM environmental strategy and, as such, builds the beyond-compliance strategy baseline. The pressure of law and regulation, specifically looking ahead to anticipate future requirements, can be seen as further building environmental opportunity but only when the environmental risks can be changed. E.g. using a scrubber to comply with SOx regulations.

The pressure of suppliers can be seen as providing environmental opportunities. Where, through offering technology at lower costs (than when the regulation is in place) to test the applicability, it allows for the net budget to be lower to adopt more beyond-compliance emission reductions. Here the same budget is needed but there are more certain benefits in the market that support using this budget. Suppliers can give new methods and technologies to further reduce environmental risks. The state of the world is important, as an external factor, to build the internal pressure of ambition, which is also an 4SM characteristic. And, based upon the literature, recognising the changing world could influence the organisation. For example, through the ethics of managers facilitating inter-departmental interaction (organisation) and commitment to beyond-compliance. The final key external pressure is given by customers, namely as a source of environmental (economic) opportunities. And through investing together corporations customers also allow a smaller net budget to be needed. This is an important pressure for all the four case studies to facilitate the financial sustainability of the corporation’s.

The internal pressure of economic opportunities, represents the influence of the external characteristic of environmental opportunities in the 4SM. For the corporations (TiSII specifically) these opportunities allow for commercial concerns to be overcome. A smaller net budget is needed when external support is given (e.g. through customer interest) to achieve a corporation’s ability to achieve its ambition. Here management key to execute the corporations ambition, through overseeing knowledge and information sharing and influencing the organisational structure (in part). Yet, management is recognised as restricted by budget in the implementation of the beyond-compliance practices. Here the characteristic of budget can represent opportunities to transition (with growing opportunities) or as a brake to facilitate internal changes.

Finally, the pressure of poor environmental record has been identified as the confrontation with an environmentally conscious ambition. This confrontation could spur additional emission reducing practices to rectify past behaviours or be mindful of the impacts of current behaviours. However, a corporation, and the different departments within a corporation, need to be able to access the knowledge and information regarding emissions released. Ambition cannot be built if knowledge regarding emissions, past and present, and available mitigation options is limited.
Environmental opportunity, ambition, and budget are the most referenced 4SM characteristics to describe the key pressures in relation to beyond-compliance emission reductions. Ambition was referenced six times, but only twice to describe external pressures and thus represents internal pressures as suggested by the 4SM characteristic description. The characteristic environmental opportunity has been used four times, three times to describe external pressures and once to describe internal pressures. Finally, budget was also used four times, equally between external and internal pressures. This showcases the importance of recognising (building) ambition and external opportunities supporting beyond-compliance practices. While also recognising the importance of budget (or commercial concerns) as a critical factor regarding pressure influences.

9.2 Reflection on Theory and Four-stage Model

IT was used to identify which pressures can lead to the adoption of beyond-compliance practices. A comparison has been made between the identified theoretical pressures and the experiences of the four case studies. This comparison has indicated that there are some gaps in the reviewed theory, warranting a reflection of the theory. Firstly, the research results are placed in the context of IT. Secondly, the current institutional stage is identified to explain why only the investigated shipowners, thus far, have adopted beyond-compliance practices. Finally, a reflection is given upon 4SM limitations.

9.2.1 Research Results and Institutional Theory

From the discussion it is clear that the pressures identified through reviewing IT-based literature studies cannot be used to explain the situation of the case studies fully. This could be the limitation of using only a single theory to investigate a complex situation such as global emission reductions by a global (growing) industry. Institutions seem simple: by changing the way one aspect is valued (e.g. the current and future environmental situation) resulting changes will occur (e.g. active reductions of emissions released during transportation). Unfortunately, in practice life is not so idyllic. There are a host of reasons why changes do (not) occur that cannot be fully reflected in academic literature let alone
single study. As such, this research study’s identification that IT was not able to fully account for the shipping industry and the behaviours expressed by the case studies is not surprising. Rather this realisation highlights the research gap in IT, institutions and pressures need to be tested in the shipping industry to better understand the industry and the role of IT therein.

9.2.2 Homogeneity or Heterogeneity in the Shipping Industry

In IT pressures have been discussed as either leading to homogeneity (DiMaggio & Powell, 1983) or heterogeneity (Delmas & Toffel, 2003) of practices in an industry. Van Leeuwen and Van Koppen (2016) determined that the shipping industry is characterised by heterogeneity.

In the reviewed literature regarding homogeneity the assumption appears to be made that all pressures, and the institutions which are the source of these pressures, are given equally to an industry. That they are dispersed across the industry and thus experienced by all effectively and equally. An assumption which was also made at the beginning of this research study. However, this study’s outcomes have showcased that the pressure experiences of the four investigated case studies are quite different, both between environmental strategies and within the same strategy. The TiSII case studies appear to be more influenced by external pressures rather than internal pressures, though these should not be overlooked. While for the Stage IV case study internal pressure are more important, with the exception of the single external pressure of the state of the world. This indicates significant complications to designing future policy, namely what areas of pressures need to be developed.

Furthermore, the utilisation of three TiSII case studies allows for the identification that even at the same level experiences of institutions and pressure are different, perhaps due to industry fragmentation. Yet, as only one Stage IV was identified and utilised in this study, the experiences of pressures by Fairtransport cannot, responsibly, be used to represent all Stage IV corporations in the shipping industry. Only a hypothesis can be given: Fairtransport operates in a growing niche market, where sustainable shipping corporations are expected to grow along with the market. As such, the pressure experiences will be inherently different to the transitioning case studies which do not experience, or anticipate, immediate increases in customer interest in beyond-compliance. As such, the ability of Fairtransport and alike to maintain economic survival with their extreme beyond-compliance is an example of differences in pressures across the shipping industry.

Finally, the case studies investigate operate internationally, with operations across the globe. As all four case studies have been founded and are based in the Netherlands, at least the headquarters, the prevalence of Dutch institutions as pressure is not unlikely. However, as stated in the introduction, the world is becoming more globalised in part through transportation. As such, the globally operating corporations are expected to be exposed to the various institutions across the world. But which institution will be more influential? Though certain expectations of emissions are globalised across the world, through international law and regulation by the IMO, social institutions that expect certain behaviours cannot be fully encompassed within a single policy. As such, internationally operations corporations such as the case studies will most likely be subjected to various institutions which require prioritisation. As such, heterogeneity within the industry, based upon the case studies, is likely.

In summary, the finding by Van Leeuwen and Van Koppen (2016) that the shipping industry is characterised by heterogeneity is founded based upon this research study’s outcomes. Specifically, Delmas and Toffel’s (2003) identification of conflicting external pressures (thus requiring prioritisation within a corporation) and the operation of a multinational corporations exposure to multiple institutions is applicable to the four case studies.
9.2.3 Four-stage Model and the Identification of Environmental Strategy Transition

The reviewed literature, discussing the 4SM, does not seem to actively consider the transition between stages as an identifiable position for a corporation to hold. In doing so the value of the 4SM to understand the strategies of corporations is reduced. Namely, the model presents the ideal type of environmental strategies. While not recognising strategies as transitioning in the model, solutions like market-based mechanisms are limited in their effectiveness to facilitate changes by corporations. For example, it is clear from Figure 6 (p. 61) that the TiSII case studies have developed some internal characteristics already, namely: ambition and process-integrated technology. If these two characteristics are what initiates the transition, then external pressures should be designed to promote these two characteristics. Yet, if the case studies had been identified only as Stage I rather than transitional this would have not been determined. During the interviews, ambition was identified as key for the case studies to adopt beyond-compliance emission reductions. Thus, if the most important external pressure, namely international law and regulation, was designed to build a more environmentally oriented ambition then perhaps more corporations will follow the lead of Anthony Veder, Case X, Fairtransport, and Vroon.

Previously, in section 8.3 Four-stage Model Environmental Strategy Stage Evaluation (p. 60), it was hypothesised that differences in pressure experienced, perhaps due to conflicting institutions, have led to the transition variations between the investigated case studies. And that today the lack of additional pressures (including opportunities) is restricting further transition. In the context of the 4SM, specifically, the lack of technology available today, limited (economic) opportunities, and internal budget constrains restricts the TiSII case studies capacity to act upon their Stage II ambitions.

For Fairtransport the capacity to operate at Stage IV is dependent upon the fact that the corporation utilises sails as means of propulsion, in comparison the other case studies which utilise mechanical propulsion. Due to the lack of engines Fairtransport can operationally transport emission free, both in means of propulsion but by also using other sources of energy for the crew basic energy requirements. As such the technology (or lack thereof) characteristic under Stage IV is satisfied. Even if the TiSII case studies reduce their emissions from other sources during operations they still require engines to remain competitive with their competitors. Zero-emission engines or fuels are expected in the future but today technology does not allow the case studies to meet the requirements of the Stage IV technology characteristic. Thus, reducing the ability of these case studies to operate a beyond Stage III environmental strategy. This showcases that current pressures may not be the only factor to explain why corporations in the shipping industry are not operating as beyond-compliance. The technology is not readily available within commercial considerations where there are “[…] technologies which can be applied by 2030, but that these will not be cost-competitive without policy measures.” (Verhage & Faber, 2018, p. 34). Shipowners are unable to meet current expectations, in part due to technology limits, a feature of the industry over which they have no control. Anthony Veder, Case X, and Vroon are not expected to be able to transition to utilising sailing ships while maintaining their current transporting capacity. As such they will not make this transition which restricts their capacity to be recognised at an advanced environmental strategy stage. If one cannot be recognised as doing better why would one try to be better? The 4SM assumes that to develop through the environmental strategy stages a corporation is restricted in its ambition, how much budget is made available etc. but forgoes, apparently, other factors. As such identifying a limitation of this model.

And yet, understanding the behaviours and practices, in the context of environmental strategy and the 4SM, could help corporations like the TiSII case studies to identify in what areas they can and/or need to change in order to achieve further emission reductions. Or to achieve the next step in their environmental strategy. Here 4SM could be a tool, not just for researchers to understand current strategies of corporations, but aid to develop future behaviours of corporations. The 4SM highlights the
behaviours which science beliefs are important as part of an environmental strategy. It sets the expectations and as such can help corporations to better understand what is expected as beyond-compliant.

9.3 Research Recommendations

This research study is the first known investigation specifically investigating the pressures behind the adoption of beyond-compliance emission reductions for the shipping industry. Therefore, some suggestions of future research areas can be made based upon the interview results. The following two future research areas have been extrapolated from the discussion:

Firstly, in the future the research should be conducted to better understand the pressures applicable to the shipping industry. This research study conclusion suggests that there is a gap in the IT literature regarding external and internal pressures to explain beyond-compliance behaviour in the shipping industry. Literature does not always analyse why firms are becoming pro-active and not just reactive (Delmas & Toffel, 2004). Hence, the interaction of pressures (such as building ambition and/or reducing commercial concerns) is an important future area of research.

Secondly, the 4SM was used to determine under which environmental strategy the case studies operate and relate their pressure experiences to the eight characteristics of the model. However, future research should be performed to identify how pressure experiences differ between environmental strategies (influencing their capacity to transition to the next stage), and how pressures may be used to promote transition to more sustainable strategies.

9.4 Policy Recommendations

Based upon the four case studies external pressures, including their influence on internal pressures, are key to explaining their beyond-compliance practices and to facilitate future reductions of emissions. Specifically, international law and regulation has been determined a key source of pressure. Yet, as highlighted in Appendix 1 (p. 80), there is only one new policy upcoming, which aims at stricter targets for SOx emissions by the IMO, and two policies will move to the next phase(s) in the future. This seems very little action for the shipping industry if the target of 70-100% emission reductions under the 2015 Paris agreement (Faber, 2017) are to be achieved in a timely fashion. The IMO is currently developing a new strategy to tackle air emissions so there is enough time to incorporate the following policy suggestions.

As identified in the discussion, policy should focus on providing sufficient opportunities for shipowners to make green investments while allowing the companies to remain competitive in their market (Eyring et al., 2010). During interviews of Anthony Veder and Vroon the interviewees, respectively, identified some solutions that can promote additional beyond-compliance emission reductions. As shipowners they face the day-to-day pressures tested in this study and are, as such, considered to be able to best identify what policy needs to promote. Here, the overarching themes are economic opportunities (Anthony Veder interview) and creating a level playing field through law and regulation (KNVR, 17-11-2017; Vroon interview) in the shipping industry. It is difficult to individually stimulate shipowners, as such international law and regulation needs to be updated to incentivise the entire industry to reduce emissions. To meet the new regulations every shipowners price of service goes up as every corporation needs to make investments effectively creating a level-playing field (KNVR, 17-11-2017).

Commercial concerns can be the strongest inhibitor against beyond-compliance emission reductions, as evidenced by the three transitioning case studies. The TiSII case studies appear to be unable to transition further into Stage II as the commercial concerns outweigh their ambition. Thus, the first policy
recommendation is for regulation to provide sufficient opportunities for all shipowners and changing the risks of shipping (e.g. promoting technology subsidies for different engines to be developed) to promote further transition into Stage II. Namely, if regulation takes cue of the early adopters it can facilitate the rest of the industry to change. And by changing the risks of shipping (e.g. promoting subsidies for different engines to be developed) further transition is also expected to be promoted. Therefore, the second policy recommendation is to build economic opportunities to facilitate beyond-compliance emission reductions. Namely, to overcome the commercial concerns of transitioning case studies while also supporting early adopters to maintain their beyond-compliance practices.

The experiences of law and regulation between the transitioning case studies and the Stage IV case study showcase how policy pressures facilitate changes in behaviours differently. For the TiSII case studies external pressures, specifically international law and regulation, are key. Yet the same regulations actually present an obstacle to Fairtransport to achieve full environmental sustainability (Fairtransport interview). The Fairtransport interviewee identified that regulations, e.g. using a tugboat to enter a port forces the release of emissions (Fairtransport interview). This is an indication that policy cannot remain the same over time. If, or optimistically when, the shipowners transition through Stage II-IV policy needs are different than that they are today. As such, once industry wide beyond-compliance is achieved across the industry policy needs will most likely need to change, which should be kept in mind.

In summary, the shipping industry is well aware of the necessity to become sustainable. In order to facilitate changes in the entire shipping industry, the external pressures from law and regulation and increased economic opportunities are essential. Namely, to push shipowners to transition into incorporating beyond-compliance practices rather than facilitating the beyond-compliance practicers (such as Fairtransport) to reduce emissions even further. But policy and economic opportunities should remain adaptable in the future.
References


Kingdom: Sage.


http://www.encyclo.nl/begrip/Concullega


Appendix 1 – Overview Current and Future Policy

Regarding policy, or law and regulation, there are two types of policy relevant in the context of the shipping industry. Namely, the air emission reducing policies currently applicable to Dutch shipowners requiring active compliance today. And secondly, future law and regulation that do not demand changes in practices today. But, in the context of beyond-compliance emission reductions, anticipating future policy brings benefits today. As such future policies are important to highlight as well as current policy.

Currently Applicable Policy

According to Doh and Guay (2006, p. 49) “key institutions include the political, legal, and social institutions at the supranational, national, and sub-national levels”. Of the currently applicable law and regulation, the identified policy functions at the international (or supranational) and national levels. First policies at the global level are presented, hereafter, the European Union level, and finally law and regulation of the Netherlands is identified.

The shipping industry is the only industry with global mandatory rules applying to over 95% of the fleet though the IMO (International Chamber of Shipping, 2015). Specifically, Annex IV of the MARPOL convention (or the International Convention for the Prevention of Pollution from Ships) addresses air pollution from shipping activities. The annex was adopted in 1997 (International Maritime Organization, 2009), with revised requirements that entered into force on July 1st 2010 (International Maritime Organization, 2010). Here four sub-policies are of note:

Firstly, the Energy Efficiency Design Index (EEDI), which entered into force on January 1st 2013 (International Maritime Organization, 2018a; Van Leeuwen & Van Koppen, 2016) and, as a goal-based technical standard, sets operational conditions for new ships with the goal to overall reduce emissions (Bazari, 2016; International Maritime Organization, 2018a). Here shipowners are able to choose which technologies are used to meet the design requirements (Bazari, 2016). In the future, two additional phases will be implemented under this policy in the next few years and are as such discussed under future policy. Secondly, the Ship Energy Efficiency Management Plan (SEEMP) made the development of ship specific management plans for internationally traveling vessels a requirement (Bazari, 2016), which entered into force on January 1st 2013 (International Maritime Organization, 2018a). It is seen as a tool for a company to improve the energy efficiency across its fleet, namely through a continuous cycle of planning, implementing, monitoring, self-evaluation and improvement by shipowners (Van Leeuwen & Van Koppen, 2016). Potential efficiency measures could be in the area of fuel-efficient operations or hull maintenance (Van Leeuwen & Van Koppen, 2016).

Thirdly, Regulation 14 of Annex VI sets regulations regarding Emission Control Area’s and SOx emission limits (International Maritime Organization, 2016). Since January 1st 2012 the global SOx cap is set at 3.50% mass by mass (m/m) (International Maritime Organization, 2016). However in some area’s additional emission control (ECA’s) restrictions are imposed, namely reducing the SOx cap to 0.10% m/m, since January 1st 2015 (International Maritime Organization, 2016). These areas are located in: the Baltic Sea area, the North Sea area, the North American area, and the United States Caribbean Sea area (International Maritime Organization, 2016). Shipowners with operations that travel through the ECA’s are required to reduce the air emissions of their ships further.

And fourthly, the Data Collection System for Fuel Oil Consumption of Ships (Regulation 22a of Annex VI). This policy is the global collection and reporting of ship fuel oil consumption data (International Maritime Organization, 2018c), specifically CO2 emissions from large ships (Van Leeuwen & Van Koppen, 2016). This regulation entered into force on March 1st 2018 (International Maritime Organization, 2018c). Here ships owners, with ships of 5.000 gross tonnage and above, are required to
collect and report fuel type, among other data points. The information collected through Regulation 22a is utilised in the development of a Long-term Strategy Roadmap (since 2017) (International Maritime Organization, 2018c). Otherwise discussed as a “Comprehensive IMO strategy on reduction of GHG emissions from ships” (International Maritime Organization, 2018c) the goal is to build a global IMO GHG strategy to be implemented in 2018. It serves as a basis to build short-, mid-, and long-term ship energy efficiency developments and direct the vision of the IMO regarding additional measures and regulation from 2023 onwards (International Maritime Organization, 2018c).

At the other international level, namely that of the EU, is one policy regarding emission reductions of the shipping industry key. Namely, the Monitoring, Verification, and Reporting (MVR) regulation, which started in 2015 (Van Leeuwen & Van Koppen, 2016). This regulation is to monitor and report CO$_2$ emissions and other relevant information (European Commision, 2018b; European Union & Council of the European Union, 2015). Upon this regulation is the previously mentioned IMO’s data collection based, though the EU’s regulation collects more detailed information (Van Leeuwen & Van Koppen, 2016). Ships owners are required to develop a monitoring plan ships of 5.000 gross tonnages and above, where the first year to be reported upon started on January 1st 2018 (European Commision, 2018a). The MVR regulation is coined as the first step to include shipping industry in the EU’s commitments to GHG reductions. The EU namely has the 2030 binding target to reduce domestic emissions by 40% across all sectors which pushes the need for knowledge and information regarding current emissions (European Union & Council of the European Union, 2015).

Finally, at the national level the Wet Voorkoming Verontreiniging door Schepen (or Law Prevention Pollution by Ships) is applicable to the Dutch case studies specifically. This covers the Dutch territorial sea’s (or Exclusive Economic Zone) of the Netherlands (Oude Elgerink, 2016). Here the law sets general requirements of preventing and limiting operational releases of harmful substances such as GHG emissions. And includes cross-references with the conventions such as MARPOL, the Netherlands has been part of the IMO since 1949 (International Maritime Organization, 2018b). The law is applicable globally to ships that fall under the Dutch flag, and non-Dutch flagged ships that are operating in the EEZ of the Netherlands (Oude Elgerink, 2016).

**Upcoming Policy**

Only at the international level have upcoming policy been identified. They include a global sulphur cap and the tightening of current policies, thus shipowners know for an extended time what is coming.

Under Appendix VI, the IMO will set progressively stricter limits on the sulphur content of fuel oils used by ships, through setting a stricter global cap. Here compliance with the future regulation requires changes in the fuel oil used by ships (both for main and auxiliary engines and boilers) or using “approved equivalent methods” such as scrubbers. This is to meet the 0.50% m/m SOx global cap (International Maritime Organization, 2010) that comes into force on January 1st 2020 (International Maritime Organization, 2016). Furthermore, two additional phases of the EEDI, as previously identified, will be implemented in 2020 and 2025 respectively. Here the cut-off limits of the operational standards are reduced to achieve the goal of 30% emissions released by new ships in 2025 (Bazari, 2016; Van Leeuwen & Van Koppen, 2016).

Finally, in regards to the MVR regulation of the EU, from 2019 onwards annual data of each individual is reported (on April 30th) by the shipowner and related documentation of compliance is required to be carried by each ship (from June 30th) (European Commision, 2018a, 2018b).
### Appendix 2 – Overview Conducted Interviews

<table>
<thead>
<tr>
<th>Corporation or Organisation</th>
<th>Name Interviewee</th>
<th>Department/Job Description</th>
<th>Type of Interview</th>
<th>Date of Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthony Veder</td>
<td>Mr. Benne van Engelen</td>
<td>Manager Operations</td>
<td>Case Study</td>
<td>21-11-2017</td>
</tr>
<tr>
<td>Case X</td>
<td>Interviewee X</td>
<td>Environmental Strategy</td>
<td>Case Study</td>
<td>19-1-2017</td>
</tr>
<tr>
<td>Fairtransport</td>
<td>Mr. Jorne Langelaan</td>
<td>Founder</td>
<td>Case Study</td>
<td>23-11-2017</td>
</tr>
<tr>
<td>Vroon</td>
<td>Mr. Jeroen Hollebrands</td>
<td>Project Engineering Supervisor</td>
<td>Case Study</td>
<td>5-12-2017</td>
</tr>
<tr>
<td>Koninklijke Vereniging van Nederlandse Reders (KNVR)</td>
<td>Mr. Nick Faber</td>
<td>Senior Policy Advisor Environmental Affairs</td>
<td>Expert</td>
<td>17-11-2017</td>
</tr>
<tr>
<td>CE Delft</td>
<td>Dr. Jasper Faber</td>
<td>Theme leader Air- and Shipping Transportation</td>
<td>Expert</td>
<td>27-11-2017</td>
</tr>
</tbody>
</table>
Appendix 3 – Case Study Interview Questions

Case Study [A] Interview

Locatie van Interview: Datum van Interview:
Interviewer: Interviewee:

Vraag permissie om het interview op te nemen.

Interview Instructies:
Goede morgen/middag

Bedankt dat ik vandaag u kan interviewen. Voor mijn thesis ben ik aan het onderzoeken welke factoren leiden tot praktijken die broeikasgas emissies verminderen voorbij de wat regel- en wetgeving verplichten. Dit onderzoek doe ik onder de supervisie van Dokter Judith van Leeuwen, professor bij de Wageningen Universiteit.

De afgelopen weken heb ik binnen de literatuur verschillende mogelijke factoren geïdentificeerd die toepasbaar zouden zijn tot bedrijven. Binnen dit interview zou ik graag u willen vragen of deze factoren tot u en uw bedrijf toepasselijk zijn en in welke mate. Verder zou ik uw de mogelijkheid willen geven om andere factoren te identificeren die ik misschien gemist heb of als u nog iets verder zou kunnen of willen vertellen.

Maar voordat ik het interview begin zou ik de voorwaarden van vertrouwelijkheid willen bespreken. De verzamelde gegevens zullen worden gebruikt voor mijn masteronderzoek. Ik realiseer me dat bepaalde stukken informatie gevoelig kunnen zijn om te bespreken. Mijn scriptie wordt alleen intern gepubliceerd binnen de universiteit, waar de onbewerkte gegevens ook ter plaatse worden opgeslagen. Ik zou uw naam en/of uw functieomschrijving kunnen anonymiseren binnen mijn scriptie. Het is belangrijk om uw bedrijf te kunnen identificeren aangezien het een casestudy is voor mijn onderzoek. Verder zou mijn supervisor mijn onderzoek en gegevens mogelijk kunnen gebruiken in een groter internationaal onderzoek. Dit onderzoek, gecoördineerd door de Universiteit van British Columbia, onderzoekt het bestuur en innovatie voor een duurzame scheepvaart keten. Met betrekking tot mijn gegevens zou ik de data kunnen verzenden met de opmerking dat de betrokkenheid van u en/of uw bedrijf niet beschikbaar mag worden gemaakt. En omdat mijn supervisor deel uitmaakt van het onderzoeksproject, kan ze garanderen dat dit gebeurd. Tot slot wil ik u een voorlopige samenvatting van het interview van vandaag sturen om ervoor te zorgen dat mijn waarnemingen kloppen waar u, indien nodig, mijn verkeerde interpretaties kunt corrigeren voordat ik begin met de data analyse. Wat vindt u prettig?

Ik wil dit interview graag beginnen met een paar vragen over u en uw bedrijf. Hierna wil ik u verschillende standaardvragen of bepaalde externe en/of interne druk factoren die ik geïdentificeerd heb effect hebben op u en uw bedrijf. Hierbij zou ik u ook kunnen vragen tot hoeverre een factor effect heeft op de praktijken van het bedrijf en hoe u deze druk voelt. Hierna wil ik u een aantal bredere vragen stellen over de besproken factoren.

Pre-interview Vragen
1. Wat doet uw bedrijf?
2. Wat doet u binnen het bedrijf?
3. Wat zijn uw verantwoordelijkheden?
Interview Deel I

4. Waarom beoefen u en uw bedrijf luchtemissie verlagende praktijken?
5. Welke luchtemissie verminderende praktijken implementeert uw bedrijf?
6. Gebruikt uw bedrijf praktijken die luchtemissies verlagen voorbij wat vereist is door wet- en regelgeving?
7. Wat voor klimaatoorden heeft het bedrijf voor zichzelf gesteld?
8. Wat voor milieumanagement strategieën worden gebruikt voor luchtemissies van uw schepen?

Interview Deel II
Externe factoren

9. Tot hoeverre stimuleert nationale wet- en regelgeving de initiatieven tot luchtemissie vermindering?
   a. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?
   b. Kunt u een voorbeeld geven van de manier waarop nationale wet- en regelgeving invloed had?
10. Tot hoeverre stimuleert internationale wet- en regelgeving de initiatieven tot luchtemissie vermindering?
    c. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?
    d. Kunt u een voorbeeld geven van de manier waarop internationale wet- en regelgeving invloed had?
11. Zijn er akkoorden of maatregelen vanuit de scheepsvaart industrie zelf die de luchtemissie verlagende praktijken stimuleren?
    e. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?
    f. Kunt u een voorbeeld geven van de manier hoe scheepvaart industrie maatregelen invloed had?
12. Wat is de invloed van aandeelhouders op uw bedrijf in het stimuleren van luchtemissie verlagende praktijken van rederijen?
    g. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?
    h. Kunt u een voorbeeld geven van de manier waarop aandeelhouders invloed hadden?
13. In hoeverre wordt er druk vanuit de Nederlandse maatschappij beoefend op uw bedrijf tot stimulatie van luchtemissie verminderende praktijken?
    i. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?
    j. Kunt u een voorbeeld geven van de manier waarop de Nederlandse maatschappij invloed had?
14. Word het gebruikt van luchtemissie verlagende praktijken gestimuleerd door druk om erkenning binnen industrie te bouwen?
    k. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?
    l. Kunt u een voorbeeld geven van de manier hoe de druk van erkenning binnen de industrie invloed had?
15. In hoeverre speelt concurrentie met andere bedrijven in het stimuleren van luchtemissie verlagende praktijken voor uw bedrijf?
    m. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?
    n. Kunt u een voorbeeld geven van de manier hoe concurrentie invloed had?
16. In hoeverre speelt concurrentie met andere transport sectoren in het stimuleren van luchtemissie verlagende praktijken voor uw bedrijf?
o. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?
p. Kunt u een voorbeeld geven van de manier hoe concurrentie invloed had?

17. In hoeverre speelt druk vanuit consumenten en klanten in het stimuleren van luchtemissie verlagende praktijken voor uw bedrijf?
q. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?
r. Kunt u een voorbeeld geven van de manier hoe consumenten en klanten invloed hadden?

18. In hoeverre spelen burgergroepen of NGOs in het stimuleren van luchtemissie verlagende praktijken voor uw bedrijf?
s. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?
t. Kunt u een voorbeeld geven van de manier hoe burgergroepen of NGOs invloed had?

19. Wat denkt u dat de belangrijkste externe druk factoren naar rederijen toe zijn om hun praktijken te stimuleren?
u. Bv. nationale en internationale wet- en regelgeving, industrie maatregelen, de Nederlandse maatschappij, aandeelhouders, erkenning bouwen, concurrentie, consumenten en klanten, en burgergroepen of NGOs.

20. Zijn er externe factoren die ik heb gemist die rederijen stimuleren in het gebruiken van luchtemissie verlagende praktijken?

Interne Factoren

21. In hoeverre speelt de persoonlijke morele overtuiging van een manager in het stimuleren en gebruik van luchtemissie verlagende praktijken voor uw bedrijf?
a. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?
b. Kunt u een voorbeeld geven van de manier hoe de persoonlijke morele overtuiging van een manager invloed had?

22. Denkt u dat het gebruik van luchtemissie verlagende praktijken van rederijen stimuleren een milieustrategie is?
a. En als uw zou moeten aangeven hoeveel invloed een milieustrategie had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?
b. Kunt u een voorbeeld geven van de manier hoe emissie vermindering als strategie invloed had?

23. In hoeverre worden praktijken die luchtemissies verminderen gezien als een bijdrage aan de verbetering van uw bedrijfs effect op het milieu?
a. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?
b. Kunt u een voorbeeld geven van de manier hoe bijdrage tot vermindering milieueffecten invloed had?

24. In hoeverre worden praktijken die luchtemissies verminderen gezien als een bijdrage van uw bedrijf aan de verbetering van de samenleving?
a. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?
b. Kunt u een voorbeeld geven van de manier hoe bijdrage tot vermindering milieueffecten ter bijdrage aan van de verbetering van de samenleving invloed had?

25. In hoeverre zijn mogelijke economische kansen door luchtemissie verlagende praktijken stimulerend voor het gedrag van uw bedrijf?
a. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal van 1-5, hoe belangrijk is deze druk factor dan?

b. Kunt u een voorbeeld geven van de manier hoe economische kansen invloed hadden?

26. In hoeverre worden luchtemissie verlagende praktijken van rederijen gebruikt worden omdat het hoort bij de tijd?

a. Zo ja, hoort alleen voldoen aan wet- en regelgeving bij de tijd of nog meer emissie
   verlaging?

b. En als uw zou moeten aangeven hoeveel invloed bij de tijd horen had op een schaal
   van 1-5, hoe belangrijk is deze druk factor dan?

c. Kunt u een voorbeeld geven van de manier hoe de druk van bij de tijd horen invloed
   had?

27. Tot in hoeverre hebben mogelijke milieueffecten in het verleden invloed op de huidige
   luchtemissie verlagende praktijken van uw bedrijf?

a. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal
   van 1-5, hoe belangrijk is deze druk factor dan?

b. Kunt u een voorbeeld geven van de manier hoe oude milieueffecten invloed had op
   tegenwoordige praktijken?

28. Tot in hoeverre heeft de verbetering van uw bedrijfs reputatie leidend tot verandering
   van de luchtemissie verlagende praktijken?

a. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal
   van 1-5, hoe belangrijk is deze druk factor dan?

b. Kunt u een voorbeeld geven van de manier hoe het verbeteren van reputatie invloed
   had?

29. Tot in hoeverre is het risico tot vermindering van uw bedrijfs reputatie door luchtemissies
   leidend tot verandering van de luchtemissie verlagende praktijken?

a. En als uw zou moeten aangeven hoeveel invloed deze druk factor had op een schaal
   van 1-5, hoe belangrijk is deze druk factor dan?

b. Kunt u een voorbeeld geven van de manier hoe de risico van een lagere reputatie
   invloed had?

30. Wat denkt u dat de belangrijkste interne druk factoren naar rederijen toe zijn om hun praktijken
    te stimuleren?

a. Bv. managers persoonlijke overtuiging, strategie, verbeteren milieueffecten, verbeteren
   samenleving, economische kansen, hoort bij de tijd, verleden milieueffecten, reputatie
   bouwen, risico mindere reputatie.

31. Zijn er interne factoren die ik heb gemist die rederijen stimuleren in het gebruik van emissie
    verlagende praktijken?

Interview Deel III

32. Wat is belangrijker, in uw mening, externe of interne druk in de stimulatie van luchtemissie
    reducerende praktijken?

a. Waarom?

33. Zijn er druk factoren die ik heb gemist die invloed op rederijen in het gebruiken van
    luchtemissie verlagende praktijken?

a. Zo ja, welke druk factoren?

b. Hoe hadden deze druk factoren effect op u emissie verlagende praktijken?

Probes/Follow-up Questions (general format)

• Kunt u een voorbeeld van druk A geven?

• Hoe reageerde u opdat ...?
• Kunt u daar verder op ingaan ...?

Na het Interview
Bedankt voor uw tijd vandaag. De gegevens die ik via dit interview heb verzameld zijn cruciaal voor mijn onderzoek. Aan de hand van de opname, en de transcriptie hiervan, zal ik uw antwoorden analyseren om mijn onderzoeksvraag te beantwoorden.

Zoals ik aan het begin van dit interview vertelde zal ik u binnenkort een voorlopige samenvatting e-mailen, hierin probeer ik uw beschreven positie accuraat te reflecteren. En als mijn interpretatie van uw antwoorden incorrect is waardeer ik het zeer als u deze fouten verbetert.

Natuurlijk zal ik ook een definitieve versie van het proefschrift zal digitaal beschikbaar stellen aan u.
Appendix 4 – Expert Interview Questions

Expert Nick Lurkin Interview

Locatie van Interview:  
Datum van Interview:
Interviewer:  
Interviewee:

Vraag permissie om het interview op te nemen.

Interview Instructies:
Goede middag Meneer Lurkin,

Bedankt dat ik vandaag u kan interviewen. Voor mijn Master scriptie ben ik aan binnen de scheepvaart industrie aan het onderzoeken welke factoren leiden tot praktijken die broeikasgasemissies verminderen voorbij wat regel- en wetgeving verplichten. Dit onderzoek doe ik onder de supervisie van Dokter Judith van Leeuwen, professor bij de Wageningen Universiteit.

De afgelopen weken heb ik binnen de literatuur verschillende druk factoren geïdentificeerd die toepasbaar zouden zijn tot bedrijven om hun praktijken te veranderen. Binnen dit interview zou ik graag uw mening als expert over deze factoren willen bespreken. Verder zou ik uw de mogelijkheid willen geven om andere factoren te identificeren die ik misschien gemist heb of als u nog iets verder zou kunnen of willen vertellen.

Maar voordat ik het interview begin zou ik de voorwaarden van vertrouwelijkheid willen bespreken met u. De verzamelde gegevens zullen worden gebruikt voor mijn masteronderzoek. Ik realiseer me dat bepaalde stukken informatie gevoelig kunnen zijn om te bespreken. Mijn scriptie wordt alleen intern gepubliceerd binnen de universiteit, waar de onbewerkte gegevens ook ter plaatse worden opgeslagen. Ik zou uw naam en/of uw functieomschrijving kunnen anonimiseren binnen mijn scriptie. Tot slot wil ik u een voorlopige samenvatting van het interview van vandaag sturen om ervoor te zorgen dat mijn waarnemingen kloppen waar u, indien nodig, mijn verkeerde interpretaties kunt corrigeren voordat ik begin met de analyse. Wat vindt u prettig?

Ik wil dit interview graag beginnen met een paar vragen over u en uw organisatie. Hierna wil ik u vragen of bepaalde externe en interne druk factoren die ik geïdentificeerd heb effect hebben op rederijen. Hierna wil ik u een aantal bredere vragen stellen over de besproken factoren.

Pre-interview Vragen
1. Wat doet uw organisatie binnen de scheepvaart industrie?
2. Wat is het doel van uw organisatie?
3. Wat doet u binnen de organisatie?
4. Wat zijn uw verantwoordelijkheden?

Interview Deel I
Externe factoren

5. Denkt u dat Nederlandse rederijen luchtemissie reductie praktijken ondernemen verder dan wat wettelijk verplicht is?
   a. Zo ja, wie?
   b. Hoe doen ze dat?
6. Wat zijn de belangrijkste nationale wet- en regelgeving voor rederijen rondom luchtemissies en klimaatverandering?
7. Wat zijn de belangrijkste internationale wet- en regelgeving voor rederijen rondom luchtemissies en klimaatverandering?
8. Hoe beïnvloed wet- en regelgeving de initiatieven tot luchtemissie verlaging van de scheepsvaart industrie?
9. Zijn er akkoorden of maatregelen vanuit de scheepsvaart industrie zelf die luchtemissie verlagende praktijken stimuleren voor rederijen?
10. Wat is de invloed van aandeelhouders in het gebruik van luchtemissie verlagende praktijken?
11. Word het gebruik van luchtemissie verlagende praktijken gestimuleerd door druk naar rederijen toe om erkenning binnen industrie te bouwen?
12. In hoeverre speelt concurrentie met andere bedrijven in het stimuleren van luchtemissie verlagende praktijken voor rederijen?
13. In hoeverre speelt druk van consumenten en klanten in het stimuleren van luchtemissie verlagende praktijken voor rederijen?
14. In hoeverre spelen burgergroepen of NGOs in het stimuleren van luchtemissie verlagende praktijken voor rederijen?
15. Zijn er externe factoren die ik heb gemist die rederijen stimuleren in het gebruik van luchtemissie verlagende praktijken?
   c. Zo ja, welke?
16. Wat denkt u dat de belangrijkste externe druk factoren naar rederijen toe zijn om hun praktijken te stimuleren?
   o Bv. nationale en internationale wet- en regelgeving, industrie maatregelen, de Nederlandse maatschappij, aandeelhouders, erkenning bouwen, concurrentie, consumenten en klanten, en burgergroepen of NGOs.

Interne Factoren

17. In hoeverre speelt de persoonlijke morele overtuiging van een manager in het stimuleren van luchtemissie verlagende praktijken van rederijen?
18. Denkt u dat het gebruik van luchtemissie verlagende praktijken van rederijen gestimuleerd wordt door een rederij’s eigen milieustrategie?
19. In hoeverre worden praktijken die luchtemissies verminderen gezien als een bijdrage aan de verbetering van de rederij’s effect op het milieu?
20. In hoeverre worden praktijken die luchtemissies verminderen gezien als een bijdrage aan de verbetering van de samenleving?
21. In hoeverre zijn mogelijke economische kansen door luchtemissie verlagende praktijken stimulerend voor het gedrag van rederijen?
22. In hoeverre worden luchtemissie verlagende praktijken van rederijen gebruikt omdat het hoort bij de tijd?
   c. Zo ja, hoort alleen voldoen aan wet- en regelgeving bij de tijd of nog meer luchtemissie verlaging?
23. Tot in hoeverre hebben mogelijke milieueffecten in het verleden invloed op de huidige luchtemissie verlagende praktijken van rederijen?
24. Tot in hoeverre heeft de verbetering van een rederij’s reputatie geleid tot verandering van de luchtemissie verlagende praktijken van rederijen?
25. Tot in hoeverre is het risico tot vermindering van een rederij’s reputatie door luchtemissies leidend tot verandering van de luchtemissie verlagende praktijken van rederijen?
26. Zijn er interne factoren die ik heb gemist die rederijen stimuleren in het gebruik van luchtemissie verlagende praktijken?
   d. Zo ja, welke?
27. Wat denkt u dat de belangrijkste interne druk factoren van rederijen zijn die luchtemissie verminderende praktijken stimuleren?
Bv. managers persoonlijke overtuiging, strategie, verbeteren milieueffecten, verbeteren samenleving, economische kansen, hoort bij de tijd, verleden milieueffecten, reputatie bouwen, risico mindere reputatie.

**Interview Deel II – bredere vragen**

28. Wat is belangrijker, in uw mening, de externe of de interne druk in de stimulatie van luchtemissie reducerende praktijken?
29. Hoe denkt u dat de Nederlandse maatschappij kijkt naar rederijen en hun emissies?
30. Zijn er verwachtingen naar rederijen toe qua luchtemissie vermindering vanuit de Nederlandse maatschappij?
   
   b. Welke zijn dit?
31. Wat denkt u dat een belangrijke vraag die ik aan een rederij moet stellen binnen hun gebruik van luchtemissie verlagende praktijken die ik vandaag niet gesteld heb?
32. Op het moment doe ik onderzoek naar de rederijen Case X, Anthony Veder, Fairtransport, en Jumbo. Wat is uw mening over deze bedrijven?
33. Is er nog iemand anders die ik zou moeten spreken in het kader van dit onderzoek?

**Probes/Follow-up Questions (general format)**

- Kunt u een voorbeeld van factor A geven?
- Hoe reageerde u opdat ...?
- Kunt u daar verder op ingaan ...?

**Na het Interview**

Bedankt voor uw tijd vandaag. De informatie die ik via dit interview heb verzameld is cruciaal voor mijn onderzoek.

Zoals ik aan het begin van dit interview vertelde zal ik u binnenkort een voorlopige samenvatting e-mailen, hierin probeer ik uw beschreven positie accuraat te reflecteren. Als mijn interpretatie en samenvatting van uw antwoorden incorrect is waardeer ik het zeer als u deze fouten verbetert.

Natuurlijk zal ik ook een definitieve versie van het proefschrift zal digitaal beschikbaar stellen aan u.
Appendix 5 – First Electronic Contact

Anthony Veder

Beste mevrouw De Bakker,

Ik heb gisteren uw email adress gekregen van een collega van uw omdat u mij misschien zou kunnen helpen, of anders mij zou kunnen doorsturen naar iemand anders. Mijn naam is Will van Wijlen, ik ben een tweedejaars Master student aan de Wageningen Universiteit en Research waar ik Climate Studies studeer. Ik benader u vandaag op aanbeveling van Mr. Elco Leemans omdat hij dacht uw bedrijf interessant zijn voor mij. Ik ben namelijk op het moment bezig met mijn master scriptie onder de supervisie van Dr. Judith van Leeuwen (ook van de Wageningen universiteit).

Mijn onderzoek is gericht op het begrijpen waarom sommige bedrijven in de scheepvaart industrie duurzame praktijken gebruiken, waarbij ik focus op praktijken die de emissies van schepen verminderen. Jaarlijks groeit de scheepvaartindustrie, evenals de wereldwijde kennis over de invloed van klimaatverandering op onze aarde. Hoewel de industrie wordt gekenmerkt als een effectieve manier van nationaal en internationaal transport, blijft er nog veel te bereiken met betrekking tot broeikasgas emissiereducties.

Door de enorme omvang van de industrie richt ik me op rederijen in Nederland, die ik wil onderzoeken door middel van een kwalitatief onderzoek (interviews). De centrale onderzoeks vraag van mijn studie is: Wat zijn de interne en externe aansporing voor [casus A/B/C/D] in de scheepvaartindustrie om te gaan van een crisisgerichte strategie naar duurzamer, maar vrijwillig ingezet, gedrag in Nederland?

Ik wil deze onderzoeksvraag met uw hulp beantwoorden omdat Anthony Veder actief bezig is om de uitstoot van broeikas emissies te verminderen. Ik zou graag de gelegenheid hebben om u, of iemand anders die werkt binnen milieu en management, te interviewen. Dit is om beter te begrijpen wat u en uw bedrijf ertoe hebben gebracht om uw milieueffecten (emissies) te verminderen. Ik beseft dat u geen verplichting hebt om mij te helpen in mijn onderzoek, maar ik zou u een uur van uw tijd voor mijn interview zeer waarderen.

Alvast bedankt voor uw tijd en ik kijk ernaar uit om van uw terug te horen.

Met vriendelijke groeten,

Will van Wijlen

Case X

Goede dag Interviewee X,

Mijn naam is Will van Wijlen, ik ben een tweedejaars Master student aan de Wageningen Universiteit en Research waar ik Climate Studies studeer. Ik heb uw naam gekregen van Mr. Elco Leemans bij zijn presentatie op het VVM Cafe op 20 September omdat hij dacht u en uw bedrijf interessant zijn voor mij. Ik ben namelijk op het moment bezig met mijn master scriptie onder de supervisie van Dr. Judith van Leeuwen (ook van de Wageningen universiteit).

Mijn onderzoek is gericht op het begrijpen waarom sommige bedrijven in de scheepvaart industrie duurzame praktijken gebruiken, waarbij ik focus op praktijken die de emissies van schepen verminderen. Jaarlijks groeit de scheepvaartindustrie, evenals de wereldwijde kennis over de invloed van klimaatverandering op onze aarde. Hoewel de industrie wordt gekenmerkt als een effectieve manier
van nationaal en internationaal transport, blijft er nog veel te bereiken met betrekking tot emissiereducties.

Door de enorme omvang van de industrie richt ik me op rederijen in Nederland, die ik wil onderzoeken door middel van een kwalitatief onderzoek (interviews). De centrale onderzoeksvraag van mijn studie is: Wat zijn de interne en externe aansporing voor [casus A/B/C/D] in de scheepvaartindustrie om te gaan van een crisisgerichte strategie naar duurzamer, maar vrijwillig ingezet, gedrag in Nederland?

Ik wil deze onderzoeksvraag met uw hulp beantwoorden omdat Case X actief bezig is om de uitstoot van broeikas emissies te verminderen. Ik zou graag de gelegenheid hebben om u te interviewen, om beter te begrijpen wat u en uw bedrijf ertoe hebben gebracht om uw milieueffecten te verminderen. Ik besef me dat u geen verplichting hebt om mij te helpen in mijn onderzoek, maar ik zou een uur van uw tijd voor mijn interview zeer waarderen.

Met vriendelijke groeten,

Will van Wijlen

**Fairtransport**

Dear Mr. Langelaan and Mr. Lackner,

My name is Will van Wijlen, I am a second-year Master student at Wageningen University and Research where I am studying climate studies. I received your contact information from Shimra Golan, an employee onboard of one of your ships.

I am currently undertaking my master thesis through a qualitative research study under the supervision of Dr. Judith van Leeuwen. My research is aimed at understanding why some corporations in the shipping industry are utilising sustainable practices. Every year the shipping industry grows, as does the global knowledge regarding the impacts of climate change to our planet. Though the industry is characterised as being an effective mode of national and international transport there remains much to achieve regarding emission reductions.

Due to the vastness of the industry I want to focus on practices performed by shipowners in the Netherlands. The central research question of my study is the following: What are the internal and external pressures in place for [case study A/B/C/D] in the shipping industry to move from a crises-oriented strategy towards more sustainable, but voluntarily initiated, behaviours in the Netherlands?

According to my research your transport activities are aimed not to release any greenhouse gasses thus I would like to answer this research question with your help. I would like the opportunity to interview you, this is to better understand what led you and your company to operating with your current environmental practices. I realise that you have no obligation to help me in my research but I would really appreciate an hour of your time for my interview.

Thank you in advance for you time and I look forward to hearing back from you.

With kind regards,

Will van Wijlen
Vroon

Goede morgen Meneer/Mevrouw,

Mijn naam is Will van Wijlen, ik ben een tweedejaars Master student aan de Wageningen Universiteit en Research waar ik Climate Studies studeer. Ik ben op het moment bezig met mijn master scriptie onderzoek onder de supervisie van Dr. Judith van Leeuwen (ook van de Wageningen universiteit).

Mijn onderzoek is gericht op het begrijpen waarom sommige bedrijven in de scheepvaart industrie duurzame praktijken gebruiken, waarbij ik focus op praktijken die de luchtemissies van schepen verminderen. Jaarlijks groeit de scheepvaartindustrie, evenals de wereldwijde kennis over de invloed van klimaatverandering op onze aarde. Hoewel de industrie wordt gekenmerkt als een effectieve manier van nationaal en internationaal transport, blijft er nog veel te bereiken met betrekking tot broeikasgas emissiereducties.

Door de enorme omvang van de industrie richt ik me op rederijen in Nederland, die ik wil onderzoeken door middel van een kwalitatief onderzoek (interviews). De centrale onderzoeksvraag van mijn studie is: Wat zijn de interne en externe aansporing voor [casus A/B/C/D] in de scheepvaartindustrie om te gaan van een crisisgerichte strategie naar duurzamer, maar vrijwillig ingezet, gedrag in Nederland?

Ik wil deze onderzoeksvraag met uw hulp beantwoorden. Ik zou graag de gelegenheid hebben om iemand die werkt binnen milieu en management te interviewen. Dit is om beter te begrijpen wat u en uw bedrijf ertoe hebben gebracht om uw milieueffecten (luchtemissies) te verminderen. Ik besef me dat u geen verplichting hebt om mij te helpen in mijn onderzoek, maar ik zou een uur van uw tijd voor mijn interview zeer waarderen.

Alvast bedankt voor uw tijd en ik kijk ernaar uit om van uw terug te horen.

Met vriendelijke groeten,

Will van Wijlen
Appendix 6 – Case Study Interview Preliminary Research Abstract

Every year the shipping industry grows, as does the global knowledge regarding the impacts of climate change. And though the shipping industry is considered to be more efficient than other transport industries, mitigation implementation remains possible. Several of these options have been identified in the literature. But, according to Van Leeuwen and Van Koppen (2016), most companies in the shipping industry are operating with the strategy to meet the bare minimum of environmental practices that are legally required. And yet, there are some companies that practice mitigation strategies beyond the legal requirements as identified by Lun et al. (2016). This master thesis proposal incorporates a qualitative research study that is aimed at understanding why some corporations in the shipping industry are utilising sustainable practices beyond their legal obligations. Due to the vastness of the industry a focus shall be given to the Netherlands and transport corporations that own the ships utilised. The central research question of the proposed study is the following: What are the key internal and external pressures in place for the case study corporations Fairtrade, Anthony Veder, Vroon, and Case X in the shipping industry to move from a crises-oriented strategy towards more sustainable, but voluntarily initiated, behaviours in the Netherlands?

The research question proposed is studied through a qualitative research methodology. Three main data sources are utilised, a literature review to build a conceptual theory of theoretical pressures behind emission reduction in the shipping industry. And these factors are then evaluated and analysed through in-depth semi-structured interviews with individuals from the case study corporations, as well as relevant literature, documents, and expert interviews. The case studies are analysed to determine the most relevant factors or motivations behind emission reductions by shipowners in the Netherlands. Which then could be used to build recommendations for policymakers to further stimulate green practices in the shipping industry in the Netherlands.
Appendix 7 – Pressure Ranking

Before highlighting what is contained within the pressure ranking table below, it is important to identify how the rankings are represented. As Fairtransport is classified in a different stage (Stage IV) it is separated from the other cases, as the case study experienced, and related ranking of pressures, could influence the average ranking. Here average ranking is used to identify a ‘transitioning into Stage II’ rank (TiSII), to showcase a standard of sorts of how the pressure experience is for the TiSII case studies. Not all interviewees were able to identify a rank between 1 to 5 for certain pressures. Here NP indicates that ‘no pressure’ is felt, NA indicates that the ‘pressure is not applicable’, and NR indicates the pressure was ‘not possible to rank’. Rank ranges multiple ranks under a single pressure indicates different types of pressure sources with different levels of pressure experienced within one category. ° indicated that the pressure customer and consumers where considered, and ranked, as two separate pressures (except by Fairtransport).

Table 11. Overview of the tested theoretical external and internal pressure rankings from 1 (very low pressure) to 5 (very high pressure) by the four case studies investigated, with an average rank for the three transitioning into Stage II case studies.

<table>
<thead>
<tr>
<th>External Pressures</th>
<th>Anthony Veder</th>
<th>Case X</th>
<th>Vroon</th>
<th>Average Rank</th>
<th>Fairtransport</th>
</tr>
</thead>
<tbody>
<tr>
<td>National law &amp; regulation</td>
<td>2</td>
<td>5</td>
<td>1-2</td>
<td>3.3</td>
<td>NP</td>
</tr>
<tr>
<td>International law &amp; regulation</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>4.3</td>
<td>NP</td>
</tr>
<tr>
<td>Industry agreements</td>
<td>4</td>
<td>4.5</td>
<td>5</td>
<td>4.5</td>
<td>NP</td>
</tr>
<tr>
<td>Dutch Society</td>
<td>1</td>
<td>NR</td>
<td>1</td>
<td>0.7</td>
<td>NP</td>
</tr>
<tr>
<td>Build legitimation within industry</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>2.7</td>
<td>NP</td>
</tr>
<tr>
<td>Competition within the industry</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>NP</td>
</tr>
<tr>
<td>Competition between transport industries</td>
<td>2</td>
<td>NR</td>
<td>1</td>
<td>1</td>
<td>NP</td>
</tr>
<tr>
<td>Consumers°</td>
<td>2</td>
<td>NA</td>
<td>1</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Customers°</td>
<td>3</td>
<td>4</td>
<td>2-3-5</td>
<td>3.4</td>
<td>NA</td>
</tr>
<tr>
<td>Citizen groups and NGOs</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1.3</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internal pressures</th>
<th>Anthony Veder</th>
<th>Case X</th>
<th>Vroon</th>
<th>Average Rank</th>
<th>Fairtransport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>2-3</td>
</tr>
<tr>
<td>Environmental strategy</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Shareholder influence</td>
<td>2</td>
<td>1 &amp; 3</td>
<td>3</td>
<td>2.3</td>
<td>NP</td>
</tr>
<tr>
<td>Economic opportunities</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>4.3</td>
<td>5</td>
</tr>
<tr>
<td>Modern business practice</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>3.3</td>
<td>5</td>
</tr>
<tr>
<td>Poor environmental record</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>2.7</td>
<td>2-3</td>
</tr>
<tr>
<td>Contribution to improve the impacts on the environment</td>
<td>4</td>
<td>NR</td>
<td>2</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Contribution to improve the impacts to society</td>
<td>4</td>
<td>NR</td>
<td>2</td>
<td>2</td>
<td>NA</td>
</tr>
<tr>
<td>Improve corporation’s reputation</td>
<td>2</td>
<td>NR</td>
<td>1 &amp; 3</td>
<td>1.5</td>
<td>5</td>
</tr>
<tr>
<td>Risk worse reputation</td>
<td>2</td>
<td>NR</td>
<td>1 &amp; 3</td>
<td>1.5</td>
<td>5</td>
</tr>
</tbody>
</table>

As indicated in Table 11 there are some ranks where two or three case studies gave the same rank. Here the internal pressures of economic opportunities and of having an environmental strategy was ranked
by Case X, Vroon and Fairtransport or Anthony Veder, respectively, at the same level of pressure experienced. Furthermore, six different external and internal pressures were ranked the same by various combinations of two case studies. From Table 11 it is noticeable that Anthony Veder often shares a ranking, mostly with Vroon, despite being of different size and shipowner type. And the experience of Fairtransport, expressed as the ranking, is not often shared with the other three case studies.

Some general trends between the different case studies, can also be noted. There are no external pressures of the theoretical identified pressures for Fairtransport that lead to further stimulation of emission reduction, as indicated with ‘no pressure’ (NP) and ‘not applicable’ (NA). The interviewee of Case X also struggled to express a level of pressure in several instances, as indicated with ‘not possible to rank’ (NR). However, this is due to ‘society’ being too broad with too many actors to be expressed in a single rank as detailed in later personal email correspondence by the Case X interviewee (personal communication, January 8, 2018).