



# Strategic Corporate Social Responsibility in the Container Shipping Industry

*A Case Study of the Triple E as part of  
Maersk's Sustainability Strategy*



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# **Strategic Corporate Social Responsibility in the Container Shipping Industry**

*A Case Study of the Triple E as part of  
Maersk's Sustainability Strategy*

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Thesis for MSc Degree in Environment and Natural Resources

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Industry

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## **Abstract**

The oversupply within the Container Shipping Industry in combination with a global trade slowdown of the last decade has set an unprecedented financial pressure on Container Shipping Liners over the world. This expressed itself in the record low shipping rates in 2016 for the Asia-Europe route and ultimately the bankruptcy of Hanjin Shipping in August 2016. Given this context, the present study analyses the relevance of Strategic Corporate Social Responsibility (SCSR) to improve the industry's practices and resilience. This is achieved by a thorough literature review that contextualizes a case study of Maersk's SCSR and its biggest containership, the Triple E. With focus on Maersk Line's innovative Triple E project, this research aims to demonstrate the environmental and overall benefits of the company's full immersion in SCSR practices. This study further analyses the Triple E as the principal factor in the company's greater fulfillment of its SCSR and business objectives. Also, this case study aims to provide a general research model of SCSR implementation in the Container Shipping Industry. The findings comprehensively determine the motivations behind Maersk Group's SCSR implementation and the drivers behind the Triple E's incorporation. Finally, the results provide evidence of the link between SCSR and innovation, business success, and resilience in the Container Shipping Industry. Additionally, the findings link SCSR practices to the improvement of the environmental performance of Maersk Line, particularly by reducing its CO<sub>2</sub> emissions.

Keywords:

CSR, SCSR, Triple E, Maersk, Maersk Group, Maersk Line, Container Shipping Industry, International Shipping, Container Shipping Liner, Containership, Global Trade, Maritime Trade, Freight Transportation, Container Transportation.



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## **Abbreviations and Acronyms**

AIS	Automatic Identification System
ASA	American Standard Association
CSI	Container Shipping Industry
CSL	Container Shipping Line
CSR	Corporate Social Responsibility
GSP	Green Shipping Practices
FCC	Fully Cellular Containership
FEU	Forty Foot Equivalent Unit
FOC	Flag of Convenience
IMO	International Maritime Organization
ILO	International Labor Organization
ISO	International Organization for Standardization
KPI	Key Performance Indicators
NO <sub>x</sub>	Nitrogen Oxides
PM	Particulate Matter
RPM	Revolutions Per Minute
SCSR	Strategic Corporate Social Responsibility
SO <sub>x</sub>	Sulfur Oxides
SPI	Shipping Performance Indexes
TEU	Twenty Foot Equivalent Unit
VTs	Vessels Traffic Services



## Glossary

**Bulk cargo** “Usually refers to commodities such as coal or grain, which can be loaded on a ship in a continuous process without packaging or sorting” (Levinson, 2006, p. 19).

**Container** “Special box to carry freight, strengthened and stackable and allowing horizontal or vertical transfers” (UNECE, 2009, p. 20).

A container follows the next conditions:

- a) Can be defined as of permanent character and accordingly strong enough to be suitable for repeated use;
- b) Specially designed to facilitate the carriage of goods, by one or more mode of transport, without intermediate reloading;
- c) Fitted with devices permitting its ready handling, particularly its transfer from one mode of transport to another;
- d) So designed as to be easy to fill and empty;
- e) Stackable, and;
- f) Having an internal volume of 1 m<sup>3</sup> or more.

(UNECE, 2009, p. 20)

The main sizes of containers are the following:

- 1) 20 Foot ISO container (length of 20 feet and width of 8 feet);
- 2) 40 Foot ISO container (length of 40 feet and width of 8 feet);
- 3) ISO container over 20 feet and under 40 feet of length;
- 4) ISO container over 40 foot long;
- 5) Super high cube container (oversize container)
- 6) Air container (container conforming to standards laid down for air transportation).

(UNECE, 2009, p. 20)

“Containers are normally 8 foot high but other heights also exist  
“High cube containers” are containers with a height of 9.5 foot.  
“Super high cube containers” are containers exceeding the ISO

dimensions. They include container lengths of 45 foot, 48 foot and 53 foot. Containers sizes classified under a) to c) are referred to as large containers.”

(UNECE, 2009, p. 20)

**Containership**

“Ship fitted throughout with fixed or portable cell guides for the exclusive carriage of containers” (UNECE, 2009, p. 112)

For this particular study, the term “containership” will refer to vessels specifically design for the transportation of containers.

**FEU**

“Forty-foot equivalent unit, a standard size inter-modal container” (Altena, 2013, p. xiii, Glossary)

**Panamax**

“A maritime standard corresponding to about 65,000 deadweight tons. It refers to a ship with dimensions that allow it to pass through the Panama Canal: maximum length 295 m, maximum beam overall 32.25 m, maximum draught 13.50 m” (Rodrigue, Comtois, & Slack, 2006, p. 269).

**TEU**

Twenty Foot Equivalent Unit

“A statistical unit based on an ISO container of 20 foot length (6.10 m) to provide a standardized measure of containers of various capacities and for describing the capacity of container ships or terminals. One 20 Foot ISO container equals 1 TEU.

- a) One 40 Foot ISO container equals 2 TEU
- b) One container with a length over 20 and under 40 foot equals 1.50 TEU
- c) One container with a length of more than 40 foot equals 2.25 TEU”

(UNECE, 2009, p. 22)

# 1 Introduction

During the 21<sup>st</sup> century, Container Shipping Liners<sup>1</sup> (CSLs) will face challenges that differ from the previous century. The main challenges will present themselves in the form of more stringent environmental regulations, higher social expectations, and a tougher competition environment. The challenges can already be observed, since the Container Shipping Industry (CSI) is already one of the fastest growing CO<sub>2</sub> emitters (Schøyen & Bråthen, 2015). Additionally, the CSI is projected to become an important factor in affecting local air quality as well as incrementing climate change related risks (Han, 2010). With this in mind, CSLs are already changing their business strategies to cope with the pressing environmental challenges. Such is the case of Maersk Line and the incorporation of the Triple E as a strategic business decision which is the subject of study in this thesis.

In 2011, Maersk Line, the container shipping division of the Maersk Group, requested 20 "Triple E" containerships. The decision of incorporating the Triple E to its fleet is arguably one of the crucial factors that will shape the large scale CSI in the following decades. The environmental relevance of the request relies on the fact that the vessel's design follows three principles: Economy of scale, Energy Efficiency, and Environmental Protection, hence the name "Triple E". Also, the Triple E is expected to play a major role in Maersk Line's global target "to reduce its CO<sub>2</sub> emissions per container moved by 60%<sup>2</sup> by 2020 compared to the 2007 levels" (Maersk Group, 2015a). The incorporation of the Triple E to the fleet is part of an environmental policy designed to achieve social responsibility, hereon referred to as Strategic Corporate Social Responsibility (SCSR).

Due to its environmental relevance, this thesis will focus on Maersk Line's incorporation of the Triple E as part of its SCSR. The present study includes an analysis of the benefits and limitations of the incorporation of the ship to the company's fleet. To

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<sup>1</sup> Container Shipping Liners (CSLs) are shipping companies whose business is entirely based on the maritime container market.

<sup>2</sup> The original goal was to reduce the emissions by 40%. However, the goal was updated in the "Sustainability Report 2015" (Maersk Group, 2015a).

do so, the research will evaluate the relevance of the ship as part of a SCSR policy implemented by the biggest CSL in the world.

## **1.1 Objective**

The main objective of this research is to determine the relevance of Strategic Corporate Social Responsibility to reduce the environmental impact of the Container Shipping Industry. Correspondingly, this study has the following secondary objectives:

- 1) To determine the drivers behind the incorporation of the Triple E to Maersk Line's fleet.
- 2) To evaluate the relevance of the Triple E vessel as part of the company's Sustainability Strategy.
- 3) To scrutinize the Triple E's overall benefits within the company's SCSR from three perspectives: 1) technological improvements; 2) operational changes, and; 3) market-based strategies.

The relevance of Maersk Line's new strategic direction relies on the fact that the implementation of sustainable practices is still seen as barrier for business success and relatively few companies have begun realizing the long term benefits of implementing SCSR (Hart & Milstein, 2003; Holiday, 2001; Som, Hilty, & Köhler, 2009). This is particularly true for the CSI where there is a gap between the economical and technical rationale, and what is actually practiced (Schøyen & Bråthen, 2015).

With this in mind, the launch of the Triple E as part of Maersk Line's goal to reduce its emissions will arguably become a milestone in SCSR within the large scale CSI in the next decades. In other words, Maersk Line's inclusion of the Triple E as part of its SCSR is likely to become a driver that will reshape the way of doing business for Container Shipping Lines (CSLs).

## **1.2 Research Questions**

To properly evaluate the environmental relevance of the Triple E as part of a SCSR corporate policy it is necessary to focus on specific questions. Therefore, this thesis will answer the following research questions:

1. Why did Maersk Group launch the "Sustainability Strategy 2014-2018"?
2. Why was the Triple E incorporated to Maersk Line's fleet?

3. How has the Triple E advanced Maersk Group's efforts to fulfill its Strategic Corporate Social Responsibility goals?
4. How are Maersk Group's Strategic Corporate Social Responsibility and the Triple E influencing the industry to improve its environmental performance?

### **1.3 Structure**

To answer the research questions, this research will be conducted using a *Case Study Method*. Through a particular case, the reader will get an insight to the implementation of SCSR in the CSI. Furthermore, it will provide an understanding of the drivers behind the implementation of specific strategies within a SCSR framework. This will be done through the evaluation of Maersk Group's Sustainability Strategy and the incorporation of the Triple E to the fleet as part of a calculated business decision.

The thesis is divided into six chapters. The first chapter will provide an introduction to the thesis as well as the research questions and structure. In the second chapter, a definition of CSR and SCSR will be determined based on a thorough literature review. This will provide the reader with a panorama of the current status of SCSR practices within the Container Shipping Industry. Overall, this chapter aims to provide an understanding of the challenges of implementing SCSR in a complex and global industry. This is accompanied with a review of the evolution of the CSI. To complement it, the importance of this particular industry in the global market will be reviewed. This will provide the reader with the appropriate context to understand the need for SCSR implementation in the CSI. Then chapter three, focuses on the methodology. This section includes the definition of the school of thought, pragmatism, and research method chosen for this thesis. Additionally, it includes an analysis of similar options to be able to determine the best selection for this particular case study. In this sense, this chapter will set the foundations for a reliable research with the appropriate tools for it.

Afterwards, the fourth chapter will provide the results of the research. This chapter focuses mainly on Maersk Group's Sustainability Strategy and the Triple E. This section will review the company's history and evolution to understand its present role in the global market with regards to environmental practices. With this in mind, this chapter will include a review of the internal and external drivers behind the Sustainability Strategy and behind the decision of incorporating the Triple E as part of the company's SCSR. Furthermore, a section of this chapter will focus entirely on the Triple E. To do

so, the research will analyze the relevance of the ship with regards to environmental performance.

Finally, the results will lead to the discussion section which will be provided separately in the fifth chapter. There, the discussion will be presented in an organized and clear manner. The fifth chapter will provide novel contribution to the subject and will draw the limitations of the study. Also, it will provide a space for new ideas to be developed and ideas for future research. Afterwards, the sixth chapter includes the conclusions in which the academic and practical implications of the study will be explained.

## **2 Literature Review**

During the 21st century, the pressing challenges of climate change will affect the decision making context in a significant manner. This is particularly relevant for the Container Shipping Industry (CSI) which is one of the fastest growing CO<sub>2</sub> emitters (Schøyen & Bråthen, 2015) and is projected to become a factor in climate change-related risks (Han, 2010). Additionally, this is linked to the increasingly intensive scrutiny of the environmental performance of the CSI (Pike, Butt, Johnson, & Walmsley, 2011).

As a consequence, the CSI has the opportunity to face such challenges through innovative business solutions. The first step is to explore new business schemes that drive the industry further than the compliance of regulations and into a leading industry with regards to shipping operations and the environment (Pike et al., 2011). With this in mind, Strategic Corporate Social Responsibility (SCSR) has the potential of becoming a relevant factor for the transition towards new business strategies that benefit from a more intelligent economy of scale, better operational models with a holistic approach that improves the logistic limitations, and the use of technological features to improve the environmental performance of any CSL (Mansouri, Lee, & Aluko, 2015; Pike et al., 2011).

### **2.1 Container Shipping Era**

The containerization of the global markets is a relatively new phenomenon since it began in the mid-20<sup>th</sup> century. However, its impact has been of such magnitude that it reshaped the global economy. This section gives the reader a proper understanding of the rapid evolution of the container shipping era and its relevance for global trade. Also, it provides the background to understand why containerization was introduced at the mid-20<sup>th</sup> century and the reasons behind its success. Additionally, it helps the reader understand the relevance of the CSI in terms of environmental performance particularly because of the expected growth to come for the industry. Finally, it guides the reader towards understanding the background of the Triple E and its current role in the industry.

The container era began in the mid-1950s and set a new precedent for transporting goods in a low-cost at a global scale. The success behind it is simple. “The container made shipping cheap, and by doing so changed the shape of the world economy” (Levinson, 2006, p. 2). However, in comparison to other transportation systems,

container shipping is a relatively new industry. In general terms, and as it will be explained later, it can be said that it was born in the year 1956 with the creation of the first ship specifically designed to carry containers (GDV, 2016; Levinson, 2006; World Shipping Council, 2016b). Since then, the industry has evolved rapidly from the first containerships that could carry no more than 1,000 TEU<sup>3</sup>s to 2013's biggest ship, the Triple E, which can carry up to 18,000 TEUs.

### **2.1.1 Evolution of Containerships**

Before the container era, moving goods by sea was a synonym of slow, difficult and precarious transportation. Standards didn't exist, and the process for loading and unloading cargo was labor intensive (Container-Home-Plans, 2015; World Shipping Council, 2016b). Also, the need of personnel for the loading and unloading process was not only commercially ineffective but represented a high cost for freight handling (Levinson, 2006). This changed with the introduction of standardized containers to the shipping industry.

The use of "boxes" similar to containers was not new (Levinson, 2006). They had been used before "for combined rail and horse-drawn transport in England as early as 1792" and by the "US government (...) [with] small standard-sized containers during the Second World War" (World Shipping Council, 2016b, para. 2). Yet, a standardized use of containers for the shipping industry was not introduced until 1956. The delay was mainly a result of the slow development of cargo handling, which after the Second World War was as labor intensive as it was in the mid-19<sup>th</sup> century (World Shipping Council, 2016a).

The containerization of the world economy begun with voyage of the ship named "Ideal X" from Newark, New Jersey to Port Houston, Texas in the year of 1956. The ship that made the historical voyage was an oil tanker that was modified to carry 58 containers (Levinson, 2006). In addition, and by initiative of Malcom McLean, a trucking executive, modifications were made to the tanker so that it would be able to hold the truck bodies (GDV, 2016; Levinson, 2006; Rodrigue, 2016). The available literature<sup>4</sup> indicates that

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<sup>3</sup> TEU stands for Twenty Foot Equivalent Unit and it is commonly known as a container. For more information go to the section of Abbreviations at the beginning of this document.

<sup>4</sup> For more information see Levinson (2006) and Rodrigue, Comtois and Slack (2006).

the idea of using this type of containers would save McLean's company a considerable amount of money. This would be achieved by loading the complete trucks into the ships instead of unloading the goods from each truck and then loading the cargo individually to the vessel (Levinson, 2006). With his initial success, McLean became a ship owner and created a new shipping company, the Sea-Land Inc. (GDV, 2016).

McLean's idea proved successful, and the first ship specifically designed to carry containers was created. In 1956, the "Maxton" became the first ship designed to be able to carry only containers (Containertech AS., 2008; GDV, 2016). The most relevant innovations in the containers used in the "Maxton" included being "strong, standardized, stackable, easy to load/unload and lockable (which made it theft resistant)" (Container-Home-Plans, 2015, para. 17). However, the modifications also included the trucks themselves. The trucks were divided in two: "a truck bed on wheels and an independent box trailer, or container" (Mayo & Nohria, 2005, para. 7). These modifications set the foundations for the container shipping industry.

In the following decades, the shipping companies found that transporting different sizes of containers translated into a logistic incompatibility between countries. The first containers used by Sea-Land for the trans-Atlantic trip were 35' ASA<sup>5</sup> containers, while other companies from the United States of America (USA), such as the Matson Navigation Company, used 24' ASA containers (Containertech AS., 2008; Tran & Haasis, 2015). The differences were also noticeable between the ASA containers and the 27' containers used in Europe and Japan (GDV, 2016). This situation proved a logistic incompatibility that lasted twenty years.

Eventually, this was solved with international agreements between international shipping companies, European and American Railroads, and American trucking companies (Containertech AS., 2008). The agreements resulted in four ISO<sup>6</sup> recommendations to standardize containers globally. The recommendations focused on dimensions and ratings, identification markings, corner fittings, and the minimum

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<sup>5</sup> The American Standard Association (ASA) sets the standards for containers.

<sup>6</sup> Nowadays, the International Organization for Standardization (ISO) has ISO series on freight containers ISO 668:2013 includes the classification, dimensions and ratings. For more information see the following

webpage:  
[http://www.iso.org/iso/home/store/catalogue\\_ics/catalogue\\_detail\\_ics.htm?ics1=55&ics2=180&ics3=10&number=59673](http://www.iso.org/iso/home/store/catalogue_ics/catalogue_detail_ics.htm?ics1=55&ics2=180&ics3=10&number=59673)

internal dimensions for the general purpose freight containers (Containertech AS., 2008, Towards Standards; ISO, 2016)

As a result, the new ISO standards provided lengths of 10', 20', 30' and 40' with a fixed width of 8' and a height of 8' and 8'6" (Containertech AS., 2008). However, the industry preferred the 20' containers which later became known as a Twenty Foot Equivalent Unit or TEU<sup>7</sup>. The term TEU was first used as a comparative measure in 1969 by a Shipbuilding and Shipping Record (Rodrigue & Slack, 2016) and since then it has become a common reference for containers<sup>8</sup>.

The container standardization provided logistic solutions and by 1960 the first specialized container terminal was built by the New York/New Jersey Port Authority (Rodrigue et al., 2006). This new specialized terminals gave the industry better business opportunities and by 1965 the Sea-Land Company began making regular voyages between North America and Western Europe (Rodrigue et al., 2006). The combination of standardized containers and specialized terminals became a trigger in further developing container shipping. The success continued and in only two decades containerships became the dominant form of freight transportation.

The first decades of containerization proved that economy of scale was now the main driver behind success. This ideology materialized into bigger ships with more carrying capacity which translated into a lower cost per container moved. Such was the success behind the economy of scale, that only during the 1970s the worldwide container capacity saw four years with an increase of more than 20% per year (Levinson, 2006). In numbers, this meant that the total cargo capacity aboard containerships passed from 1.9 million tons in 1970 to 10 million in 1980 (Levinson, 2006).

The industry kept growing and by the 1980s the Container Shipping Liners decided to exploit to the maximum the benefits of economies of scale. To do so, "vertical frameworks were installed to ships to make the staking process more easily" (Altena, 2013, p. 1). With this, the ships evolved to Fully Cellular Container ships<sup>9</sup> (FCC; second generation) (Rodrigue, 2016). However, the size of the containerships remained

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<sup>7</sup> See the Glossary section for more information on TEUs and FEUs.

<sup>8</sup> Nowadays, Forty Foot Equivalent Units (FEUs) are also a common term in the industry.

<sup>9</sup> A Fully Cellular Container ship (FCC) refers to a ship designed specifically to carry containers.

constrained by the dimensions of the Panama Canal, which became known as the “Panamax Standard” (Levinson, 2006; Rodrigue et al., 2006). The physical limitations imposed by the Panama Canal until 2016<sup>10</sup> were of 294 m in length, 32.2 m in width and 12 m in depth (Tran & Haasis, 2015, p. 243).

The design of the Panamax<sup>11</sup> vessels proved that the construction of ships with bigger capacity didn’t translate into bigger costs. This was a result of new technologies which meant that crew members didn’t increment with ship size and the same happened with the fuel consumption to vessel size ratio (Levinson, 2006). It was during the decade of 1980 that the Panamax vessels saw their climax particularly in the Pacific Ocean (Levinson, 2006). Furthermore, the Panamax ships proved that bigger capacity translates into lower moving costs per TEU (Rodrigue, 2016). Such was the success of this class of ships, that only during the 1980s the Panamax fleet “expanded more than 13 times (...) with the annual rate of 35%” (Tran & Haasis, 2015, p. 244). For the CSLs the Panamax standard became an incentive to explore further the benefits of economies of scale.

It was in 1988 when the first Post-Panamax<sup>12</sup> containership was launched (Levinson, 2006; Rodrigue et al., 2006). This new class of ships had a bigger container capacity which was reached with a 39.40 m wide beam (Tran & Haasis, 2015) and exceeded the 32.2 m width limit of the Panama Canal (Rodrigue, 2016). As Tran and Haasis (2015) mention, the Post-Panamax vessels benefited from the wider beam in terms of stability, capacity, flexibility, easier and faster stowage of containers, and smaller movements for loading and unloading. Also, Levinson (2006) highlights their relevance in busy routes between large and deep harbors where they could transit without dimension constraints. The trend for bigger capacity continued and by the beginning of the 21<sup>st</sup> century containerships were able to carry up to 10,000 TEUs (Levinson, 2006, p. 235).

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<sup>10</sup> The Panama Canal Expansion was completed in 2016. This will be reviewed in the following sections.

<sup>11</sup> The biggest capacity for a Panamax Vessel was of 4,000 TEU and was reached in 1985 (Rodrigue, 2016, para. 2). “The Econ Ships of US Lines became the first ones to reach the maximal panamax size” (Tran & Haasis, 2015).

<sup>12</sup> The term Post Panamax refers to the first new class of container ships that were not able to transit through the Panama Canal. The Post Panamax I and II could hold up to 4,500 TEUs and 8,000 TEUs, respectively (Rodrigue, 2016)

### 2.1.2 Towards the Triple E

The trend of bigger ships continued even after the global financial crisis of 2007-2008 as a response to technological features that offered improved productivity (Brooks, Pallis, & Perkins, 2014). However, the increase in ship size meant to continue excluding the transit of the most innovative vessels through the Panama Canal (Rodrigue et al., 2006). To tackle such barriers and remain a competitive transit, the Authorities of the Panama Canal began its expansion in the year 2007<sup>13</sup> (Autoridad del Canal de Panamá, 2011).

The expansion, inaugurated the 26<sup>th</sup> of June of 2016, enables a new class of containerships to benefit from the Panama Canal. This new class of container ships is already being called the “New Panamax” (NPX) or “Neo Panamax” (Rodrigue & Ashar, 2015, p. 3). The new locks permits the transit of ships up to 366 m long, 49 m wide and 18.3 m deep (Tozer & Penfold, 2007 in Tran & Haasis, 2015, p. 244). As an immediate consequence, this allows CSLs to consider the reallocation of their biggest and most efficient containerships to routes that transit through the Panama Canal.

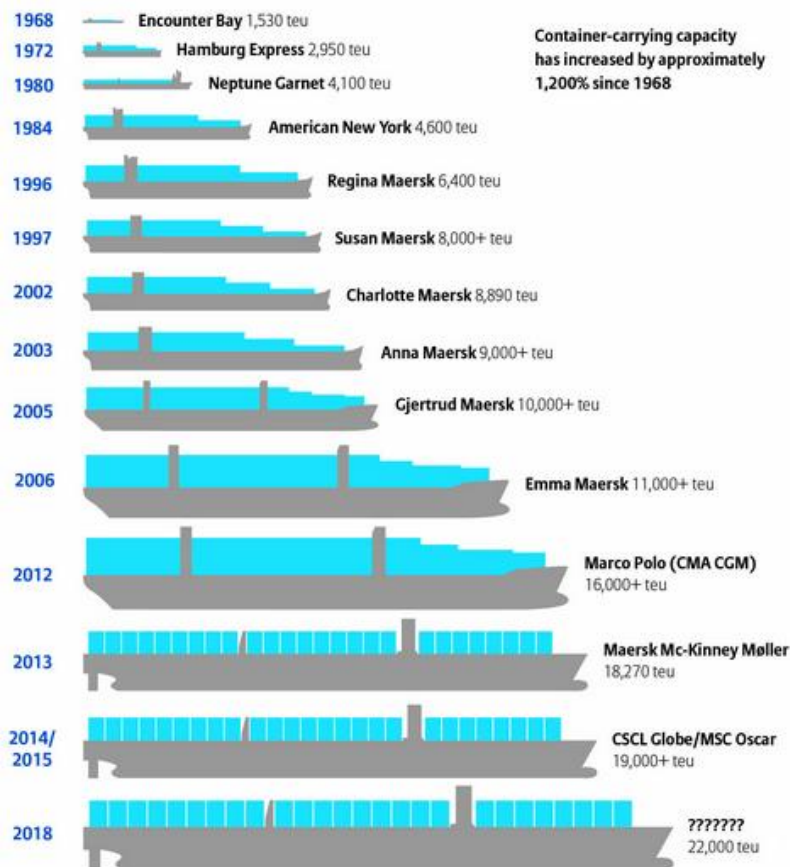
It seems that the size of containerships will continue to increase even further than the new limits achieved with the expansion of the Panama Canal. Such is the case of the “Post New Panamax” ships. The term refers to a generation of containerships that is too wide to cross the new locks of the Panama Canal expansion of 2016 (Maritime Connector, 2016). This vessel category is part of the growth trend that begun in the early 2000s when there was “worldwide order (...) of 110 vessels of between 10,000 and 18,000 TEUs” (Brooks et al., 2014, p. 13). These Post New Panamax vessels with a capacity of up to 18,000 TEUs were introduced in the Asia-Europe route as early as 2013 (Rodrigue & Ashar, 2015). This marked the beginning of the Mega containerships.

Since the introduction of the Post Panamax and Post New Panamax ships, the evolution of the CSI has increased the world container capacity in a fast pace. Between 1990 and 2014 the world’s carrying capacity increased from 3.17 million TEUs (4,772 containerships) to 18.9 TEUs (8,337 containerships) in 2014 (Tran & Haasis, 2015). In other words, and as Tran and Haasis (2015) summarize, in the last three decades the global container capacity increased an average of 8.3% per year which meant that it

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<sup>13</sup> More information about the expansion of the Panama Canal can be found in the following link: <http://micanaldepanama.com/expansion/>

doubled every decade. In general terms, the evolution has been so fast that the carrying capacity of containerships has increased in more than 1,200% since 1968 (figure 1) (Allianz Global Corporate & Specialty, 2016). This growth is the result of the cost advantages that ship size bring to the CSLs (Tran & Haasis, 2015). In other words, new technical and operational features as well as maximized economy of scale fostered the growth of carrying capacity in the CSI.



**Figure 1. Evolution of Containerships**

Source: (Allianz Global Corporate & Specialty, 2016)

Maersk Line acknowledged the economic benefits of bigger containerships and in 2011 ordered 20 “Triple E” vessels from the South Korea’s Daewoo Shipbuilding and Marine Engineering (Ship Technology, 2016). The Triple E falls into the Post New Panamax category with a capacity of 18,000 TEU and is one of the vessels that have begun displacing the Post-Panamax ships (Brooks et al., 2014; Rodrigue, 2016). However, the Triple E differentiates from other Post New Panamax ships because of its

environmental and efficiency oriented design<sup>14</sup>. However, the Triple E is no longer the biggest ship in the world (figure 1). Nevertheless, its relevance relies on the fact that it became the flagship of Maersk Line's SCSR because of its environmental and efficiency focus.

## **2.2 Definition of Strategic Corporate Social Responsibility**

Strategic Corporate Social Responsibility has the potential of becoming a major driver behind business strategies (Chandler & Werther, 2014; Kolk, 2016). This is particularly relevant for the CSI since it can influence its environmental performance whilst playing a major role in its business success (Fafaliou, Lekakou, & Theotokas, 2006). With this in mind, this section introduces the reader to the concept of SCSR. Additionally, it provides a background of SCSR in order to understand its current role within the CSI. Finally, this section provides a definition for SCSR that will be used for this study.

The idea of defining a set of principles for corporations to fulfill its social responsibility was first introduced in the 1950s. However, it was until the late 1970s that it took form as social legislation with the creation of the Environmental Protection Agency (EPA) of the United States of America (USA) (Carroll, 1991a). Carroll (1991) then proposed that corporations have four responsibilities with regards to society: economic, legal, ethical, and philanthropic. This was the first academic approach to a modern Corporate Social Responsibility (CSR) understanding and unified definition.

Since its first introduction as a unified concept by Carroll in 1991, the justifications for CSR have evolved. Nowadays, for Porter and Kramer (2006) there are four prevailing reasons for CSR: moral obligation, sustainability, license to operate, and reputation (Porter & Kramer, 2006). According to Porter and Kramer (2006), these have become the pillars for a modern Corporate Social Responsibility definition. However, these ideas were further developed and complemented by Chandler and Werther in 2014 with the concepts of sustainability, globalization, communication and branding.

Moreso, to determine a globally accepted definition of CSR can prove difficult because the concept in itself has “unclear boundaries and debatable legitimacy” (Lantos, 2001, p. 1). Additionally, CSR “understandings and practices are in constant flux”

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<sup>14</sup> This will be reviewed in chapter 4.

(Trapp, 2012, p. 1). As a result, Lantos (2001) reviewed the state of the art literature in search of a definition of CSR and determined the following:

"CSR entails the obligation stemming from the implicit 'social contract' between business and society for firms to be responsive to society's long-run needs and wants, optimizing the positive effects and minimizing the negative effects of its actions on society. Note the focus on both minimizing harms (*ethical CSR*) and promoting benefits for society (*altruistic CSR* if the firm does not reciprocally benefit and *strategic CSR* if management plans for the firm to profit too)" (Lantos, 2001, p. 9).

In a similar way, Trapp's (2012) definition of a third generation<sup>15</sup> of CSR can be taken into consideration. For Trapp, CSR means that corporations are genuinely concerned about global issues and are driven by ethical grounds (Trapp, 2014). This can be complemented with the European Commission's definition of CSR which expresses it as "the responsibility of enterprises for their impacts on society [while it] outlines what an enterprise should do to meet that responsibility" (European Commission, 2015, para. 2). Additionally, the European Commission's definition (2015) is further developed and includes relevant aspects that must be emphasized such as:

- "Corporations should have a process in place to integrate social, environmental, ethical human rights and consumer concerns into their business operations and core strategy in close cooperation with their stakeholders."
- CSR must focus on creating shared value. In other words, the return on investment can create value for shareholders, stakeholders and society in the long term. This concept also links CSR to business innovation.
- Corporations should "have explicit recognition of Human rights and ethical considerations in addition to social, environmental and consumer considerations."

(European Commission, 2015)

Accordingly, for Lantos (2001) the implementation of CSR is obligatory and hence such argument is legitimate for any corporation, including Container Shipping Liners. His argument is based on the idea that "business and society are equal partners, each

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<sup>15</sup> Trapp (2012) determined three generations of CSR. For the purpose of this study, Trapp's third generation of CSR is more closely related to a general and contemporary understanding of CSR than his definition of first and second generation of CSR.

enjoying a set of rights and having reciprocal responsibilities” (Lantos, 2001, p. 7). In a similar way, Trapp (2012) highlighted the relevance of cross-sector collaboration to address relevant complex issues through a synergetic response (Trapp, 2014).

Even if CSR is not yet mandatory as Lantos (2001) would suggest, several international certifications have been designed to address social responsibility. Such is the case of the ISO 26000. As a complement to the ISO quality and environmental management standards (ISO 9001 and ISO 14001), the ISO 26000 serves as a guideline for the way in which businesses can operate in a socially responsible way. The ISO 26000 will arguably become the reference model for implementing CSR (Castka & Balzarova, 2008). This type of international guidelines and certifications are a clear attempt to highlight the benefits of CSR which are not limited to particular industries.

For Chandler and Werther (2014) a *Strategic CSR* includes four major components: first, the inclusion of the CSR perspective into the company’s strategic planning process; second, any company’s actions are directly related to the core operations; third, companies must incorporate a stakeholder perspective; and fourth, the corporation passes from a short term perspective to a mid and long term planning and management process of the firm’s resources and is inclusive of the key stakeholders (Chandler & Werther, 2014).

Correspondingly, Chandler and Werther's (2014) definition of SCSR adjusts to the purpose of this study. Hence, the definition of **Strategic Corporate Social Responsibility** that will be used for this thesis is the following:

“The incorporation of a holistic CSR perspective within a firm’s strategic planning and core operations so that the firm is managed in the interests of a broad set of stakeholders to achieve maximum economic and social value over the medium to long term.” (Chandler & Werther, 2014, p. 65).

Consequently, it is relevant to highlight that SCSR has the potential of becoming a driver for corporations. This means that it will be beneficial for their business (Lantos, 2001). In fact, SCSR has the potential of reshaping the way of doing business for Container Shipping Liners.

### **2.2.1 Towards SCSR in the Container Shipping Industry**

After reviewing the benefits of SCSR it is clear that it has the potential to improve the environmental performance of Container Shipping Liners. With this in mind, this section will scrutinize the challenges and opportunities of using SCSR in the CSI. Additionally, this section provides an insight on how SCSR can be seen as a step towards a new business strategies for CSLs.

As mentioned before, CSLs are already facing challenges that differ from previous decades. As a consequence, new business strategies will have to focus not only on profits but also on the company's role in society. To do so, the first step is to innovate in the ways of doing business with the focus on achieving a competitive and socially responsible industry. This can be done through SCSR and it can be implemented in the CSI.

Contrary to the early beliefs that CSR would limit companies from their economic goals (Barnes Runquist, 2016), Strategic CSR has the potential of bringing benefits to society at the same time that it increases the company's competitiveness (Porter & Kramer, 2006). Also, SCSR gains relevance by the newest challenges faced by the maritime industry, such as the changes in the economy, dynamic geopolitics, advances in logistics, intermodal transportation, and newer forms of trade and supply chains (Kitada & Ölcer, 2015).

Yet, CSR is not an unfamiliar term for the Container Shipping Industry. In 2013, scholars from diverse institutions presented their results with regards to CSR and the maritime sector. Their findings highlighted the pressing challenges that the maritime shipping faces and the importance of taking action to better position the industry with regards to anticipating sustainability pressures and risk exposure (Coady et al., 2013). To do so, Coady, Lister, Strandberg and Ota (2013) recommended the industry to follow three key actions:

- Establish a Global Centre of Excellence on CSR in Shipping. The aim of this recommendation is to create a global network that links all the major stakeholders in maritime shipping on CSR issues and opportunities. Also, it could function as a research institute and a capacity building hub focused on CSR for the Shipping Industry.

- Develop the core guidelines for the implementation of CSR in the maritime sector. This would include the performance metrics and best practices in stakeholder engagement.
- Develop a global portfolio of projects that can test particular cases. This will help identify key steps for developing new models for the sector.

(Coady et al., 2013)

The recommendations take into consideration the current international regulations, business initiatives, and social pressures. Additionally, in a growing, competitive, and regulated market, combined with increasing social and environmental concerns, it is ever more pressing for corporations to balance their economic and environmental performance (Guide & van Wassenhove, 2009). Consequently, this conditions provide an option for CSLs to rethink their role in society and transform their business strategies.

Furthermore, as long as these initiatives continue to grow and become stronger, the CSI has the potential of becoming a SCSR-oriented industry. Taking into consideration the findings of *The Role of Corporate Social Responsibility (CSR) in the International Shipping Sector* report (2013), SCSR has the potential of transforming the CSI into an integrated and responsible industry in the long term. As the report mentions, this would include sector collaboration, supply chain, and multi-stakeholder engagement in which corporations harmonize and converge on sustainability governance strategies at the same time that it would facilitate regulatory implementation and beyond-compliance improvements. Also, it has the potential of modifying the CSLs' vision to focus on environmental issues, address social pressure and go beyond regulations to prevent and address emerging strategic performance issues (Coady et al., 2013).

Then again, the transformation of the CSI into a SCSR-oriented industry translates into relevant challenges. With regards to the industry as a whole, small to medium size companies will face the biggest challenges to participate in and access the benefits of CSR (Coady et al., 2013). Additionally, despite the fact that the CSI has already undergone a great improvement in operational efficiency, it is facing an industry-wide problem of underutilized fleet capacity (Wu & Lin, 2015). These challenges can be reviewed through a SCSR approach to maximize the use of the fleet while increasing the profits.

In any case, SCSR has the potential of providing the industry with new business strategies that do not necessarily need to be more complex. Considering Guide and Van Wassenhove's (2009) research on Closed-Loop Supply Chain, the goal of implementing SCSR in the CSI should be to develop new business strategies with an integrative and transdisciplinary approach focused on providing market based solutions for the design, control, operation, and market of the future CSLs.

## **2.3 Green Shipping Practices and the need for SCSR**

In the recent decades, Green Shipping Practices (GSPs) have become a driver that have the potential to modify the CSI. However, GSPs have been created and pushed forward in a disassociate manner that does not follow a holistic approach for the industry. Therefore, this section introduces the reader to the most relevant GSPs to differentiate them from SCSR policies. Also, it provides a clear understanding of the evolution of GSPs to understand their current role and the need of SCSR for the CSI.

### **2.3.1 Evolution of Green Shipping Practices**

During the second half of the 20<sup>th</sup> century, governments and international organizations, such as the International Maritime Organization (IMO)<sup>16</sup>, created rules with regards to the environmental impact of shipping (Wuisan, van Leeuwen, & van Koppen, 2012). However, the regulatory framework established by the IMO was only the first attempt to transform the shipping industry into a greener industry. Furthermore, with the evolution of the CSI the regulations have been complemented with incentives and initiatives focused on the relevance of implementing GSPs.

Two of the most important environmental incentives for GSPs are the Green Award Foundation<sup>17</sup> and the Clean Cargo Working Group<sup>18</sup> (CCWG). The former was created in

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<sup>16</sup> IMO's specific resolutions with regards to the environment can be found in the following webpage: <http://www.imo.org/en/KnowledgeCentre/IndexofIMOResolutions/Marine-Environment-Protection-Committee-%28MEPC%29/Pages/default.aspx>

<sup>17</sup> The Green Award Foundation rewards the safety and environmental standards followed by tankers (oil, LNG and chemical), dry bulk carriers and container carriers. For more information see the following webpage: <http://www.greenaward.org/greenaward>

<sup>18</sup> For more information about the CCWG go to the following website: <http://www.bsr.org/en/collaboration/groups/clean-cargo-working-group>

1994 and “certifies ships that are extra clean and extra safe” (Green Award Foundation, 2016, para. 1). The latter was created ten years after and it “is a global, business-to-business initiative dedicated to improving the environmental performance of marine container transport” (BSR, 2013, p. 1). Due to their global relevance, these incentives can be understood as industry-wide approaches to transitioning from GSPs towards a SCSR-oriented industry.

Accordingly, in the last decade the CSI has seen a growing number of practical initiatives, cross-sector governance programs, and better environmental rating schemes (Coady, Lister, Strandberg, & Ota, 2013). The combination of such initiatives, programs and ratings are pushing forward the CSLs to implement fully integrated SCSR. The GSPs with more feasibility to transform the CSI to a SCSR-oriented industry are those that include the biggest number of stakeholders (Table 1).

**Table 1. Green Shipping Practices and Initiatives**

INITIATIVE	SSI	CCWG	GREEN MARINE	WPCI	GREEN SHIP
<b>Practical Application Initiatives</b>	Developing innovative ways to overcome shipping sustainability challenges and scale them up in the industry.	Industry's largest collaborative effort to improve performance and report environmental data on ships.	Evaluate and encourage the shipping industry to adopt best practices in environmental management. (North America)	World ports aiming to improve maritime industry environmental standards.	Encourage environmental sound ships through technology and innovation (Danish-led)
SSI = Sustainable Shipping Initiative; CCWG = Clean Cargo Working Group; WCPI = World Port Climate Initiative.					

*Note.* Adapted from *The Role of Corporate Social Responsibility (CSR) in the International Shipping Sector*, pp. 9-10, by Cody et al., 2013.

Equally important is the creation of indexes that complement the regulations and initiatives. Such is the case of the Shipping Performance Indexes (SPIs). The SPIs indicators were first introduced in 2006 by InterManager, MARINTEK and shipping companies to provide information of several operational areas (Wuisan et al., 2012). The SPIs were designed as a combination of relevant Key Performance Indicators (KPIs) which as a result provide seven measures of performance: Environmental, Health and

Safety, Human Resources Management, Navigational, Operational, Security, and Technical (BIMCO, 2016). Nevertheless, there are other indexes that also focus on environmental shipping.

In 2010, the Environmental Ship Index<sup>19</sup> (ESI) was launched followed by the Shipping Efficiency Initiative (Wuisan et al., 2012). The ESI is a voluntary system that provides a numerical representation of the ship's performance with regards to emissions (WPCI, 2016). The Shipping Efficiency Initiative is focused on increasing “information flows around the energy efficiency of international shipping (...) to help reduce [its] environmental impacts”(Shipping Efficiency, 2016, para. 1). Both of them provide CSLs with tools to measure the vessels environmental impact. In fact, the industry has a wide offer of rating schemes that are practical tools for performance evaluation (Table 2).

**Table 2. Evaluation and Rating Schemes in the Shipping Industry**

RATING SCHEMES	CLEAN SHIPPING PROJECT	Shippingefficiency.org	GREEN AWARD	CCWG	WPCI
<b>Focus</b>	The Clean Shipping Index enables cargo owners to evaluate shipping companies and carriers to verify, benchmark, and improve their environmental performance.	Right Ship's rating System evaluates ship energy efficiency and emissions.	A ship achieves a Green Award certificate on meeting certain environmental criteria above than the legislative minimum.	CCWG Performance Survey enables comparison of a shipping company's environmental performance with other members in CCWG.	Environmental Ship Rating Index identifies seagoing ships that perform better in reducing air emissions than required by the IMO.

*Note.* Adapted from *The Role of Corporate Social Responsibility (CSR) in the International Shipping Sector*, pp. 9-10, by Cody et al., 2013.

As a response to regulations, international trade standards, and social concerns about climate change, many CSLs have begun implementing GSPs. Nevertheless, it is necessary to mention that for the most part “GSP are environmental management practices (...) with an emphasis [mainly] on waste reduction and resource conservation in handling and distributing cargoes” (Lai, Lun, Wong, & Cheng, 2011, p. 631). Besides,

<sup>19</sup> For more information about the ESI and its calculation go to the following webpage:

<http://esi.wpci.nl/Public/Home/ESIFormulas>

and as Lai (2011) observes, they are not common among the industry. In other words, GSPs are mostly focused on improving the ships' performance from a technical and operational perspective. Therefore, it is possible to assert that GSPs are limited to technical efficiency and environmental performance and do not represent a holistic approach to the business strategies of CSLs.

Nonetheless, many CSLs focus on becoming efficient not only in economic terms but also in energy usage and environmental impact (Lun, Lai, Wong, & Cheng, 2015). This can be seen in collaborative initiatives of the CCWG such as the "Beyond Monitoring" environmental group. This particular working group focuses on collaborating with stakeholders to face the challenges of non-compliance of codes and regulations to improve the environmental performance of the shipping community (Lai et al., 2011). Hence, it is possible to understand that one sector of the CSI is already focusing on a stakeholder approach to modify and improve its business approach.

Certainly, it is possible to understand GSPs and initiatives such as the CCWG as the transitioning towards a SCSR-oriented industry. This is particularly consistent with the CCWG mission to "work with business to create a just clean and sustainable world" (Lai et al., 2011, p. 632). Still, these GSPs may be misleading as they do not necessarily translate into changing the business strategies from their core. In this sense, and for the purpose of this research, Green Shipping Practices are not equivalent to Strategic Corporate Social Responsibility. This is mainly because GSPs represent isolated and dissociate actions that do not change the business strategies from their base. Additionally, GSPs do not equate to an integral and holistic business approach which can only be obtained through a SCSR model. However, given the increasing number of GSPs, as well as regulations that highlight the corporate obligations towards society and the environment, it is possible to forecast the future relevance of SCSR for the Container Shipping Industry.

## **2.4 The rationale behind SCSR and its potential for the Container Shipping Industry**

Many CSLs have begun implementing Green Shipping Practices with the aim of improving their environmental performance. However, many companies have acknowledged the additional benefits of SCSR and have begun using it as part of their business strategies. With this in mind, this section will scrutinize the rationale for

implementing SCSR in the Container Shipping Industry. Additionally, this section will provide an understanding of the drivers behind its implementation in the particular context of the CSI.

For Tutore (2013) the most relevant factor that pushes forward the use of SCSR as a strategic business tool is the competitiveness benefits that it brings into the company. In other words, the implementation of SCSR is directly related to the possibility of exploiting long term competitive advantages as an effect of environmental-related capabilities and financial resources (Tutore, 2013). Also, Tutore (2013) recognized the relevance of entrepreneur motivation driven by the ethical attitude of the company's leadership which in turn creates a stronger concern of environmental impact.

Furthermore, Tutore (2013) defined the drivers of SCSR<sup>20</sup> in two terms: starting and pushing drivers. Starting drivers include corporate culture, ethical values, stakeholder pressure, regulation, and legitimation. As a result, the starting factors derive on environmental engagement. Pushing drivers refer to competitiveness, resource management, and corporate capabilities. As a consequence, the combination of starting and pushing drivers result in SCSR (Tutore, 2013).

Likewise, Lozano (2015) defined the drivers behind SCSR<sup>21</sup> as internal and external motivations. His findings show that the main drivers behind SCSR are linked to company leadership and reputation (Lozano, 2015). Not only that, but he determined the internal and external drivers behind SCSR and the connecting drivers<sup>22</sup> between them.

For Lozano (2015), the main internal drivers correspond to proactive leadership, business strategy, the precautionary principle<sup>23</sup>, and reputation. In a similar fashion, he defined as main external factors the stakeholders' interests, legislation and regulation, and higher social expectations (Lozano, 2015). Furthermore, Lozano highlighted the relevance of addressing both internal and external drivers with a holistic perspective of sustainability (Lozano, 2015). However, it is necessary to emphasize that the drivers

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<sup>20</sup> Tutore (2013) refers to SCSR in terms of Pro-active Environmental Strategy. However, this falls into what this thesis defined as SCSR.

<sup>21</sup> Lozano (2015) refers to SCSR as Corporate Sustainability.

<sup>22</sup> Lozano (2015) considers the connecting drivers as part of internal aspects. Therefore, for this research the connecting drivers will be understood as internal factors.

<sup>23</sup> The precautionary principle "aims at ensuring a higher level of environmental protection through preventative decision-taking in the case of risk" (European Union, 2015).

behind SCSR vary according to specific geographical context as well as company-specific characteristics, such as leadership and particular stakeholders (Lozano, 2015).

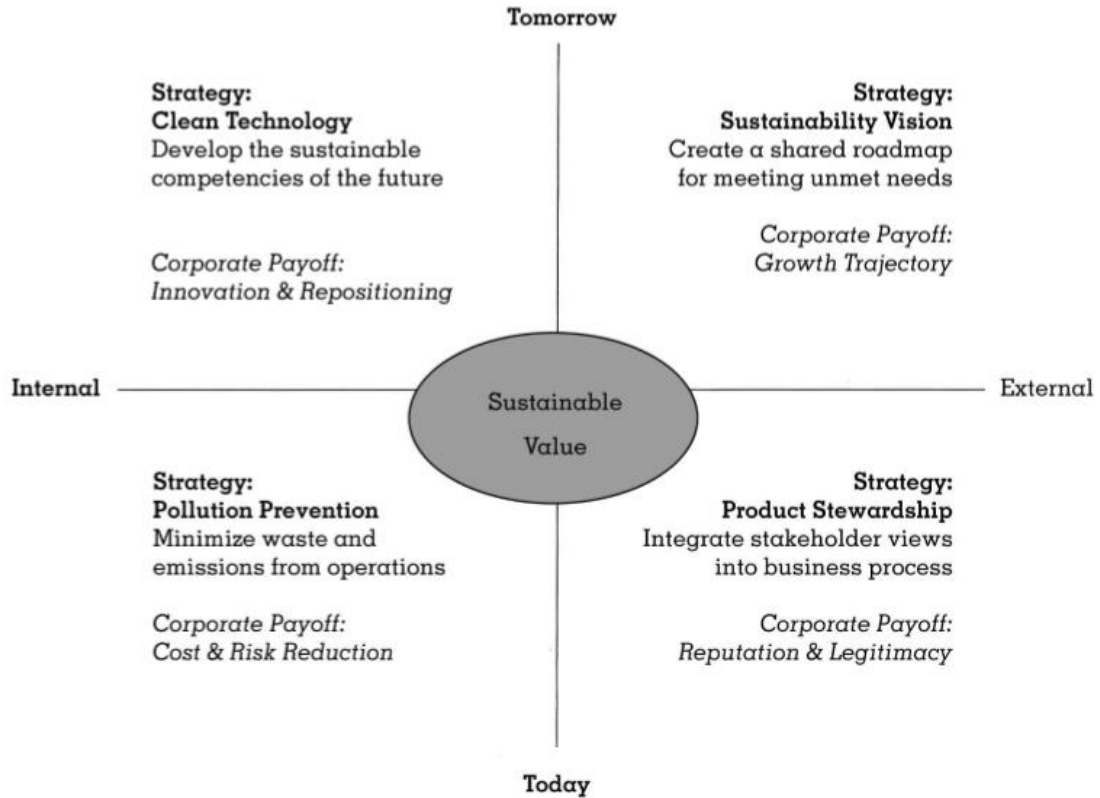
Similarly, Hart and Milstein (2003) proposed a Sustainable-Value Framework to address the multiple dimensions of the pressing challenges<sup>24</sup> of the 21<sup>st</sup> century. To do so, the Framework links the imposing conditions of the future to new business strategies that create shareholder value for firms (Hart & Milstein, 2003). However, the immersion into sustainable practices is still seen as an obstacle for business and only few companies have begun understanding the long term benefits of implementing a sustainability framework (Hart & Milstein, 2003; Holiday, 2001; Som et al., 2009). As a result, there is a gap between the economical and technical rationale, and what is actually practiced in the shipping industry (Schøyen & Bråthen, 2015).

To address the gap, Hart and Milstein's Sustainable-Value Framework (2003) highlights the benefits of SCSR. The framework enables the decision making to consider internal and external factors while reflecting the company's need to focus on today's market context and at the same time address tomorrow's business scenarios (Hart & Milstein, 2003). This way, the company is better prepared to address the future expectations while meeting short term goals. Likewise, the framework permits the corporation realize the relevance of internal organizational factors while introducing external models and knowledge to the company (Hart & Milstein, 2003).

As a result, Hart and Milstein's Framework (2003) produces four dimensions of performance (figure 2), all of them crucial to the creation of shareholder value and maximizing the benefits of SCSR: 1) internal short term drivers: cost and risk reduction; 2) internal long term goals: generating the products and services to meet the future's market needs; 3) external short term aspects: stakeholder's immediate interests; and, 4) external factors linked to future performance: ability to determine an achievable growth trajectory within tomorrow's market context (Hart & Milstein, 2003).

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<sup>24</sup> Hart and Milstein (2003) refer to them as "global sustainability challenges" which include economic, social, and environmental concerns. Such term falls into what this research defined as the challenges that the Container Shipping Industry will face during the 21st century.



**Figure 2. Sustainable Value Framework**

Source: Adapted from Hart and Milstein, 2013, p. 60.

As mentioned by Lozano (2015), Hart and Milstein (2013) and by Tutore (2013), there are two sets of drivers behind SCSR: internal and external. Therefore, the same rationale can be applied to the particular context of SCSR in the CSI. In this case, the internal drivers that influence the organization and management of a CSL are those internal factors that motive change from inside the company. The external drivers are those factors that influence a CSL's business strategy through external pressure and push the company to adapt and change. With this in mind, the following sections 2.4.1 and 2.4.2 will provide an understanding of the driving forces behind the implementation of SCSR in the Container Shipping Industry.

### **2.4.1 Internal drivers**

The beginning of the 21<sup>st</sup> century presents a highly competitive market which drives CSLs into designing specific policies to cope with the dynamic complexity of the Container Shipping Industry (Kitada & Ölcner, 2015). To do so, Container Shipping Liners need to implement a series of changes in their internal operations, structures, and

management. Therefore, the following section defines the internal drivers behind the implementation of SCSR policies and their potential benefits for CSLs.

### ***Innovation***

For any company to be able to maintain and increase its competitive advantages in today's business context it is necessary to perform efficiently while at the same time focus on meeting the future market needs (Hart & Milstein, 2003). To do so, the firms need to maintain a cycle of innovation with regards to skills, competences, and technologies that guarantee the company's continuous reposition in the market (Hart & Milstein, 2003; Tutore, 2013). As a result, the search for innovation is a driver that pushes companies towards new business strategies.

Furthermore, the innovation cycle can result in developing new competitive opportunities and the improvement of the company's Key Performance Indicators (KPIs) while addressing environmental concerns (Agnesson Franzén, Nilsson, & Wikström, 2010; Lozano, 2015; Poulsen, Ponte, & Lister, 2016; Wuisan et al., 2012). This can also be observed in the constant need for improving organizational and operational processes to reduce the environmental impact of a firm's operations (Delmas, Hoffmann, & Kuss, 2011). As expected, the implementation of operations with lower impact, whilst using innovative technology and processes, is particularly relevant for reducing CO<sub>2</sub> emissions.

Moreover, the incorporation of the most advanced ships and novel strategies<sup>25</sup> that benefit from the latest technology is a clear example of how CSLs can reduce their environmental impact (Lai et al., 2011). For instance, this can be achieved through better energy and fuel efficient systems<sup>26</sup> (Coady et al., 2013; Delmas et al., 2011; Pike et al., 2011; Schøyen & Bråthen, 2015) in combination with better fuel quality<sup>27</sup>, new

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<sup>25</sup> For particular examples of the use of innovative technologies and strategies in CSLs refer to the report: *Global Sustainable Shipping Initiaves: Audit and Overview 2011* (Pike et al., 2011).

<sup>26</sup> For Schøyen and Bråthen (2015) an efficient fuel system has to consider the differences in fuel consumption when the containership is empty as well as when it is fully loaded in order to be able to maximize its performance. Accordingly, the aerodynamics and hydrodynamics of the ship vary according to the weight it carries and the container accomodation. Therefore, these aspects have to be taken into account in order to fully maximize the performance of the ship (Schøyen & Bråthen, 2015).

<sup>27</sup> Han (2010) mentions the relevance of using lower Sulfur fuel and exhaust treatment technology to reduce emissions. However, the author mentions that these options focus mainly on the reduction of NOx

developments in the aerodynamic and hydrodynamic design<sup>28</sup> of vessels, and after treatment technology<sup>29</sup>, as well as operational changes<sup>30</sup> (Han, 2010; Lai et al., 2011; Schøyen & Bråthen, 2015; Tran & Haasis, 2015). Additionally, CSLs can use new technologies and apply different strategies to improve the use of ballast water<sup>31</sup>, enhance the use of containers through container life cycle analysis, and maximize the potential of ship recycling and better use of materials (Coady et al., 2013; Delmas et al., 2011; Pike et al., 2011; Poulsen et al., 2016).

Not only that, but CSLs can benefit from operational changes that take advantage of Information Technologies (IT). This is particularly relevant for CSLs because, as the literature mention, ITs can be used remotely and on big scale contexts that eliminate the typical centralized infrastructure (Hart & Milstein, 2003; Schøyen & Bråthen, 2015). Correspondingly, the use of these technologies has helped optimize the logistics in shipping and container allocation.

Furthermore, the use of ITs in logistics has contributed to the change in the macro and micro economic context in which CSLs operate in terms of flexibility and globalization (Hesse & Rodrigue, 2004; Schøyen & Bråthen, 2015). A clear example is the identification of the most efficient fuel and energy routes such as the "Just in Time" strategy implemented by Maersk Line which has resulted in reducing emissions and costs

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and SOx because these are the most strongly regulated air pollutants by international institutions (Han, 2010).

<sup>28</sup> Such type of innovations look to reduce the wind and air resistance of the ship which in turn improves the fuel efficiency. This can be achieved with a particular bow design and changes in the bow line.

<sup>29</sup> Han (2010) mentions the relevance of the reduction of combustion temperatures and the use of an after treatment selective catalytic reduction process to reduce NOx emissions. For reducing SOx emissions, Han mentions the benefits of using lower sulfur marine fuels and the use of seawater scrubbing. Also, Han (2010) mentions the relevance of shore side emission treatment systems that could be connected to the ships exhaust that combine a catalytic reduction system with a sea water scrubber and hence reduce NOx emission up to 95% and SOx and PM emission up to 99%.

<sup>30</sup> Operational changes in ports include the use of on-shore power from clean and renewable sources to provide energy for ships while at berth. As a consequence, the use of on-shore power has great potential to reduce NOx and SOx emissions (Wang, Mao, & Rutherford, 2015).

<sup>31</sup> Poulsen, Ponte and Lister (2016) mention the relevance of the innovation in ballast water treatment systems to prevent the transportation of marine invasive species from one place to another (Poulsen et al., 2016).

(Han, 2010). Additionally, the use of real time information helps CSLs make the best decisions according to the vessel speed, route, wind speed and direction, rudder angle, engine rotation, and weather and sea conditions (Han, 2010).

As can be seen, CSLs can achieve corporate payoff and business success through innovation and the correct application of new technologies (Font, Guix, & Bonilla-Priego, 2016; Hart & Milstein, 2003). Additionally, they can benefit from the benchmarking of individual ships (Poulsen et al., 2016). To take full advantage of these innovations it is necessary to implement adequate business strategies. In this sense, SCSR helps understand what is and will be needed in the market, and as a result can unlock the barriers to innovation (Lun et al., 2015).

### ***Cost Savings***

Likewise, one of the main drivers behind the implementation of new strategies is the reduction of costs as well as to improve the financial capabilities of the company. This is particularly true for CSLs because the nature of their business is mostly based on economies of scale. For this sector, the ability of producing low-cost services means that reliability and costs are key performance parameters (Altena, 2013; Arat, 2011; Tran & Haasis, 2015). Therefore, it is possible to say that cost savings is a major driver behind the business strategies of CSLs due to their particular competitive environment and reliance on economy of scale.

In the first place, cost savings could be maximized through the implementation of SCSR (Font et al., 2016; Lozano, 2015). Not only that, but the implementation of new business concepts and tools, such as SCSR, can help companies approach Pareto-Optimality<sup>32</sup> (Mansouri et al., 2015). For this reason, many CSLs are making business decisions through SCSR to take advantage of technological advances, operational changes, and new market directions focused on cost reductions and efficient allocation of resources.

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<sup>32</sup> The Pareto Optimality state is reached when changes in an economic system cannot make an improvement without causing a damage (London, n.d.). Mansouri, Lee, and Aluko (2015) analyze the Pareto Optimality in shipping with the aim of highlighting the potential use of Multi-Objective-Optimization for decision making to improve the sustainability performance of the Maritime Shipping Industry.

Furthermore, the reduction of costs has always been a driver behind freight transportation and has been achieved through operational breakthroughs based on logistics (Hesse & Rodrigue, 2004). Nowadays, cost savings can result from increased precision in operations (Schøyen & Bråthen, 2015) in combination with the scale enlargement of ships and terminals for longer corridors, particularly for the Europe-Asia route (Altena, 2013; Tran & Haasis, 2015; Wu & Lin, 2015).

When it comes to market based decisions, global trade sets a specific market environment for shipping companies. For example, an increase in the flow of goods in a route has been linked to cost savings for CSLs (Hesse & Rodrigue, 2004). Correspondingly, shipping companies can benefit from a Life Cycle Analysis (LCA) of the movement of cargo and energy use to reduce its costs and environmental impact (Coady et al., 2013). CSLs can also reduce operational costs by improving the relation between slot utilization, dead weight allocation on board, vessel's actual speed<sup>33</sup>, and energy efficiency (Schøyen & Bråthen, 2015; Tran & Haasis, 2015). However, the need of cost reduction can have negative consequences. Han (2010) is especially assertive when he highlights that in the search for reducing costs, some CSLs have decided to use cheaper degraded heavy oils<sup>34</sup> that result in higher amounts of emissions of PM, NO<sub>x</sub>, unburned Hydrocarbons (UHC), SO<sub>x</sub>, CO, and CO<sub>2</sub>.

### ***Meeting the global trade demand***

As any company, CSLs are driven by the need of meeting the current demand of services for existing customers or to immerse into unserved markets (Hart & Milstein, 2003; Lozano, 2015). In the case of CSLs, their main business purpose is to satisfy the demand of freight transportation at a low cost (Arat, 2011; Hesse & Rodrigue, 2004). However, as Guyatt (2008) mentions, nowadays consumers focus not only on price, but also on quality and convenience. As a result, CSLs are driven to implement internal policies, such as SCSR, to help them maintain the low prices while fulfilling the customer's expectations with regards to service quality, sustainable transportation performance, and time and location convenience (Guyatt, 2008; Lozano, 2015).

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<sup>33</sup> Schøyen & Bråthen (2015) mention that the differences between speed order, vessel's actual speed, and optimal speed make it harder for containerships to achieve energy efficiency while on route.

<sup>34</sup> Degraded heavy oils contain high levels of carbon residues, sulfur, and metallic compounds that result in higher polluting emissions (Han, 2010).

Furthermore, the projected growth of population will result on a higher demand of global trade (Hart & Milstein, 2003). As a result, the Container Shipping Industry is expected to grow further to meet the increasing demand of trading services and freight transportation (Hesse & Rodrigue, 2004). Consequently, there will be a need for expanding the carrying capacity of the sector which can be achieved with bigger ships and terminals (Altena, 2013). Global trade is driven by demand which influences directly on business strategies. Therefore, CSLs need to implement new internal policies, such as SCSR, to achieve flexibility in the dynamic customer driven markets in which they operate now and to be prepared for the future (Hesse & Rodrigue, 2004; Kolk, 2016).

SCSR, from its definition, has the potential of helping shipping companies meet the global market demands. It provides a flexible and strategic business approach that helps CSLs adapt to different types of cargo, the complex trade distribution patterns, uneven distributed market concentrations, ship ownership and leases, dynamic contract lengths, and bargaining power from mega shippers<sup>35</sup> (Poulsen et al., 2016). For these reasons, shipping companies that have SCSR models in place are able to cope better and more efficiently with the complexity of maritime trade.

### ***Materialization of the Business Strategy***

As any firm, CSLs are in a continuous search for improving their strategies and be able to materialize their goals. To do so, companies benefit from the use of SCSR as a business direction (Tutore, 2013) to further integrate their strategies and realize their objectives (Font et al., 2016). The implementation of SCSR<sup>36</sup> improves the corporate governance and management systems (Coady et al., 2013; Kitada & Ölcer, 2015) while it strengthens the mid and long term competitiveness of the company (Agnesson Franzén et al., 2010; Hart & Milstein, 2003). Furthermore, SCSR incorporates environmental concerns into the decision making and helps close the loop in shipping management (Lai et al., 2011).

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<sup>35</sup> Companies such as IKEA, Nike and Walmart are known as mega shippers. The magnitude of their operations corresponds to a great part of the market in which CSLs operate. Therefore, SCSR policies help shipping companies create strategic alliances with these particular type of customers that may have great influence in the market environment of the Container Shipping Industry (Lai et al., 2011).

<sup>36</sup> Hart and Milstein (2003) recommend the use of "Real-options thinking" as part of SCSR policies.

Moreover, the realization of strategic objectives through SCSR helps CSLs<sup>37</sup> face challenging market circumstances (Altena, 2013) while providing them with tangible economic results (Arat, 2011; Fafaliou et al., 2006). After all, the materiality principle is of outmost relevance for the success of business strategies (Calabrese, Costa, & Rosati, 2015). SCSR helps companies benefit from the combination of prior knowledge to assimilate and integrate new knowledge into the decision making (Delmas et al., 2011; Kitada & Ölcer, 2015). Also, SCSR is significantly relevant for the transfer of the corporate ideology of sustainability concepts to workers and helps eliminate the human barrier to strategy implementation (Kitada & Ölcer, 2015). It is understandable then, that CSLs look at the concept of SCSR for better ways to integrate and materialize their business strategies. In fact, the need for integrating the direction of a CSL to be able to achieve its strategic goals is a driver for the implementation of sustainable practices.

### ***Precautionary Principle***

CSLs participate in a dynamic context which has predictable and unpredictable market changes. For example, the variability of oil prices, trade demand, extreme weather conditions, and regional stability are external factors that affect shipping companies. Additionally, international policies are pushing the shipping industry towards the reduction of environmentally-related risks (Arat, 2011). To face these circumstances, CSLs benefit from implementing SCSR policies to address risk reduction and management (Font et al., 2016; Kolk, 2016; Poulsen et al., 2016).

With the variety of external risks surrounding the CSI, the search for the efficient implementation of the precautionary principle becomes a major internal driver behind the business rationale for CSLs (Lozano, 2015; Som et al., 2009). Correspondingly, through SCSR, CSLs are better prepared to address risks related to spills, coastal health and impact on marine species<sup>38</sup>, piracy, and employee related aspects such as health, education, and personnel security (Coady et al., 2013; Roe, 2013). Also, transnational shipping companies face the risks of participating in regulated and unregulated market environments (Kitada & Ölcer, 2015; Pike et al., 2011; Roe, 2013). Therefore, SCSR

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<sup>37</sup> Some of the biggest and most relevant Container Shipping Liners in the world have already adopted SCSR as a business strategy. Such is the case of NYK, COSCO and Mitsui OSK (Kitada & Ölcer, 2015).

<sup>38</sup> It is important to realize that the environmental impact caused by maritime transportation is also produced by the underwater noise of the propellers (Coady et al., 2013).

provides CSLs with the tools to implement efficient strategies that address the precautionary principle in a holistic manner.

### ***Corporate Culture***

For many companies, performing responsibly is a moral driver behind its corporate culture (Tutore, 2013). Correspondingly, the implementation of SCSR has been linked to upper management leadership committed to ethical practices (Lozano, 2015). Not only that, but it has been proved that proactive leadership and organizational values contribute to materialize business goals (Agnesson Franzén et al., 2010; Kolk, 2016). Additionally, the implementation of responsible and ethical corporate culture helps prioritize relevant aspects such as employee health and safety (Fafaliou et al., 2006). However, the benefits of SCSR and corporate culture go beyond these factors.

For instance, proactive leadership and commitment can result in active and positive workers whose motivation translates into the long term improvement of the company (Agnesson Franzén et al., 2010). Consequently, proactive companies can achieve a higher role in ethical activities and improve trust and legitimacy (Kitada & Ölcer, 2015; Kolk, 2016; Lozano, 2015). Additionally, the leadership role is of outmost relevance to close the gaps in organizational structures (Kitada & Ölcer, 2015). For these reasons, it is understandable that proactive companies are in the constant search of improving their corporate culture through new business strategies, particularly through SCSR.

For CSLs, corporate culture plays a major role in the implementation of innovations and change management into the day to day operations (Kitada & Ölcer, 2015; Lai et al., 2011). The responsibility of behaving in an ethical way reinforces the corporate influence of its individual workers with regards to complying with legislation and internal policies (Tutore, 2013). This is of relevance for CSLs because they face aspects such as environmental protection, bribery, piracy, product security, worker participation and safety, minority employment, and unregulated market environments (Kolk, 2016). Given these points, it is clear that moral responsibility and corporate culture play a significant role behind the implementation of SCSR in the Container Shipping Industry.

### ***Environmental Commitments***

In recent decades, external pressures such as higher social expectations, stakeholder's interests, and regulations have become important factors that drive companies into addressing the environmental aspects of their business operations. These factors are

combined with the increasing public concern with regards to air quality degradation associated to shipping emissions<sup>39</sup> (Han, 2010). As a consequence, many firms have begun implementing Green Shipping Practices. However, for environmental engagement to be effective, it has to be part of the core business strategy of the company (Agnesson Franzén et al., 2010). Therefore, the use of SCSR policies becomes relevant for CSLs to achieve their environmental commitments.

In the first place, environmental performance has become an important parameter for the International Shipping Industry (Altena, 2013). As Coady (2010) mentions, CSLs have an influence on land use as well as an impact on marine ecosystems which can have negative consequences. Additionally, the Container Shipping Industry is one of the fastest growing CO<sub>2</sub> emitters (Schøyen & Bråthen, 2015) and is expected to have a significant impact on air quality as well as on climate change (Han, 2010). For example, the CSI can produce negative environmental impact from SO<sub>x</sub>, NO<sub>x</sub>, and PM emissions, underwater noise, and the transportation of non-native species on ballast water tanks (Poulsen et al., 2016).

With this in mind, and with the current tendency for more stringent legislation, CSLs will have to change their internal processes and modify their services to mitigate their environmental impact (Delmas et al., 2011). To do so, CSLs are improving the relation between capacity utilization, speed, the use of raw materials, and energy and fuel efficiency (Schøyen & Bråthen, 2015). As expected, these operational changes go hand in hand with the use of technology and IT processes which help maximize the overall environmental performance (Som et al., 2009). However, CSLs can benefit even more from a full immersion to SCSR to address these concerns with a holistic perspective (Pike et al., 2011).

### ***Social Engagement***

For some companies, social engagement is seen as a barrier to competitiveness. However, this is the result of the lack of understanding of the human element and its relevance for business success (Kitada & Ölcer, 2015). Nevertheless, in the recent decades there has been an increase in the public expectations with regards to the social

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<sup>39</sup> Polluting emissions from shipping activities mainly affect coastal areas. This is because ships only spend 20% of their time far from land while 55% correspond to time at harbour and 25% to near coast operations (Han, 2010).

responsibilities of firms. However, social engagement only results from the company's acceptance of their responsibility within and towards society. When this happens, corporations can achieve a positive influence on the socio-economic context in which they operate. Moreover, companies can create shared value by helping society in a way that promotes and facilitates wealth creation and distribution (Hart & Milstein, 2003).

In fact, the positive relation between business and society has been linked to corporate trade-off (Agnesson Franzén et al., 2010). The interaction can be seen in the form of training and education, the improvement of labor and living conditions, the increase of local hiring and community involvement, the addressing of human rights, and the implementation of anti-corruption systems (Coady et al., 2013; Kitada & Ölcner, 2015). Correspondingly, companies can evaluate the benefits of social engagement through a Value Chain Social Impact Analysis (Agnesson Franzén et al., 2010).

Furthermore, CSLs can benefit from implementing SCSR policies to participate actively in their social context. For instance, SCSR has been linked to improve the relations with the society and governmental institutions (Fafaliou et al., 2006). Also, it helps companies address the human element through organizational theories while it closes the structural gaps between the upper management and workers (Kitada & Ölcner, 2015). Correspondingly, SCSR policies create a sense of community within the firm which translates into internal motivation, teamwork, fulfilment, and productivity (Lantos, 2001). Given these points, it is clear that CSLs would benefit from the implementation of SCSR policies to address the human element in their operations.

#### **2.4.2 External drivers**

CSLs are affected by external and dynamic factors such as weather, oil prices, market variations, and socio-economic stability in the regions they operate. As expected, these factors are out of the direct control of the company. However, the implementation of SCSR helps companies address externalities and even drives them into new specific business directions. This is particularly relevant for CSLs to be able to achieve legal and regulatory compliance as well as legitimacy and reputation (Hart & Milstein, 2003). Not only that, but SCSR helps companies engage with its stakeholders towards common goals and improve its approach to future market needs (Lozano, 2015). Equally important, it allows companies to remain competitive and push forward better industry standards (Tutore, 2013). With this in mind, this section will provide the reader with an

insight on the external drivers behind the implementation of SCSR and its benefits for the CSI.

### ***Branding***

When it comes to branding, successful companies are aware of the benefits of creating a name and maintaining their reputation over the pass of time. As such, a brand not only represents the firm's core values, but can help the brand's business strategy. SCSR helps companies keep and increase its trademark value in a continuous way (Arat, 2011). In fact, branding and enhancing the corporate image is one of the main drivers behind the implementation of SCSR (Lozano, 2015). This is of significance for any company since the external perception affects consumer habits as well as stakeholder's sensitivity.

Through SCSR companies can modify the external opinion which influences the corporate brand in the long term (Font et al., 2016). Additionally, it allows firms to address the stakeholders' interests and consequently it improves the branding and repositioning of the company (Hart & Milstein, 2003; Lantos, 2001). Additionally, these concepts are of great relevance for business strategies since they are linked to long term corporate pay-off by increasing the brand value (Hart & Milstein, 2003). Likewise, the search for quality and for creating sustainable value added is a driver linked to branding and relocation which can be achieved through SCSR (Lubin & Esty, 2010; Pike et al., 2011; Prajogo, 2016; Rusmanto & Williams, 2015).

Given these points, CSLs can benefit from implementing SCSR as part of their marketing strategy (Arat, 2011). As a matter of fact, it can help firms make a name of its own and define their particular corporate standards (Coady et al., 2013). In addition, evidence shows that firms use trends such as sustainable practices to differentiate themselves as a model (Lubin & Esty, 2010). However, this can only be achieved through the proper implementation of strategic actions. Therefore, it can be said that SCSR would help CSLs with their brands which is of outmost relevance to retain and increase their market share.

### ***Competitiveness***

To remain competitive in an ever changing market is one of the main challenges that any CSL faces. Nowadays, this is particularly relevant with the fast development of technologies, increasing knowledge diffusion, and capability improvements (Prajogo, 2016). Furthermore, companies need to use their competitive imagination with the help

of their stakeholders to address the external factors that may affect their business (Hart & Milstein, 2003). However, the influence of these factors, as well as externalities such as fuel prices, market balance, and competitors can be managed through SCSR which help companies focus on improving the competitiveness and establish a benchmark in their industry.

First of all, SCSR provides companies with long term profitability which translates into competitive advantage (Bansal & Roth, 2000). This is of outmost relevance for CSLs because they rely on low cost services to remain competitive within their sector (Arat, 2011). Also, sustainable practices have evolved into becoming an economic priority in the CSI which is another driver for adopting an innovative approach to business (Lai et al., 2011; Mansouri et al., 2015). Additionally, through SCSR firms can maintain and improve their competitiveness by monitoring and evaluating their impact, and ultimately by setting their own operational standards (Fafaliou et al., 2006).

Furthermore, proactive CSLs can influence other companies by initiating change and participating in the development of industry standards (Delmas et al., 2011). Additionally, when big companies adopt SCSR as a business direction it translates into higher sector standards and a highly competitive market (Kitada & Ölcer, 2015). Consequently, industry wide standards become a driver for shipping companies to comply with the sector average performance or even to go beyond (Poulsen et al., 2016). Correspondingly, highly dynamic industries are more likely to drive firms to innovate in their operations and generate progress in comparison with environments with low dynamism (Prajogo, 2016).

The before mentioned activities, in combination with common SCSR policies, is relevant and desirable for the CSI because better collaboration helps maintain business value and competitiveness (Coady et al., 2013; Font et al., 2016). Also, partnerships and alliances for innovation help the members outsmart the competition (Delmas et al., 2011). This can be observed with the CCWG<sup>40</sup> which is pushing forward higher industry

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<sup>40</sup> The CCWG members work together to improve the methodologies and performance management tools. Additionally, the Group encourages the collaboration in Methodology, Reporting, and Verification (MRV) processes at regional and global scale for the Maritime Shipping Industry (BSR, 2015). Also, as the 2015 BSR-CCWG Progress Report mentions, the Group members benefit from tools such as the Environmental Performance Survey (EPS), the Intermodal Carbon Calculator, and the CCWG Scorecard as well as standardized industry approved methodologies such as the CCWG CO<sub>2</sub> which are specifically made for the Industry.

standards<sup>41</sup> through its voluntary reporting and collaboration with the aim of improving the environmental performance of the sector (BSR, 2015).

Additionally, through access to performance monitoring and reporting, as well as access to best practices, the CCWG increases the stakeholder and consumer awareness and representation (BSR, 2015). Similarly, cross sector thinking and the adoption of external practices has been linked to improving the competitive advantages of companies (Roe, 2013). With this in mind, it is possible to understand that a major driver behind the implementation of SCSR is to remain competitive and to be able to go beyond the industry standards that are being set by big companies and working groups.

Similarly, Tran and Haasis (2015) have linked the use of bigger ships to better competitive advantages. The development of megaships have triggered a size race to maintain competitiveness in the CSI in the recent decades<sup>42</sup> (Tran & Haasis, 2015; Wu & Lin, 2015). These trend, in combination with working groups and higher industry standards, have been defined as Non-State-Market-Driven (NSMD) Governance for international shipping, which is usually more flexible and dynamic than governmental regulation (Wuisan et al., 2012). Then, SCSR provides CSLs the tools to remain competitive by addressing these NSMDs in a holistic manner.

### ***Social Expectations***

The beginning of the 21<sup>st</sup> century has been marked by the growing number of social networks and social media along with the development of more precise ITs. As a consequence, companies worldwide are now subject to higher social scrutiny in terms of community influence, humanitarian aid, employee health and safety, environmental impact, among others aspects (Coady et al., 2013). Moreover, social media has become a reference for pinpointing issues such as oil spills, chemical dumping in oceans, industrial

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<sup>41</sup> There are many other non-state actors that are pushing forward higher industry standards. The CCWG is the only one specifically mentioned in this section because Maersk Line participates actively in it. However, it is relevant to mention other working groups and alliances such as the Green Award Foundation, the Shipping Performance Indexes (SPIs), Keep it Blue, Treship, and the Clean Shipping Project.

<sup>42</sup> The growth in carrying capacity through bigger ships aims to reduce operational and overall transportation costs, which in turn would help CSLs to remain competitive. However, as Tran and Haasis (2015) explain, the increase in size can result in the reduction of freight rates which can have adverse results for the CSI.

and air pollution, and food safety (Kolk, 2016; Lubin & Esty, 2010). As a result, higher social expectations and scrutiny have become major drivers behind sustainable and responsible business practices for the Container Shipping Industry (Han, 2010; Hart & Milstein, 2003; Poulsen et al., 2016).

Historically, international regulatory bodies, such as the ILO<sup>43</sup>, have set a precedence of promoting responsible and ethical business models (Arat, 2011). However, NGOs and the social sector have also become relevant driving factors for responsible practices and environmental proactivity (Kolk, 2016). Furthermore, with the help of social networks and ITs, civil associations and NGOs have become important monitoring and enforcing actors for higher environmental standards (Hart & Milstein, 2003).

NGOs have become a source of important information that complements the governmental and academic sectors. For example, the International Council on Clean Transportation (ICCT), a research non-profit organization, has projected that the growth of the maritime industry by 2050 will result in a rise of the emissions of NO<sub>x</sub> by 30%, SO<sub>x</sub> by 18%, and CO<sub>2</sub> by 3% (ICCT, 2007). The same can be said of the academic community which is pushing forward better business practices through research and publications. For example, the Journal of World Business has become a driver behind the implementation of SCSR by demonstrating its financial, social, and environmental benefits (Kolk, 2016).

Furthermore, social actors, such as customers and NGOs, have set higher public expectations with regards to the environmental performance of corporations (Agnesson Franzén et al., 2010). For CSLs it is relevant to address these expectations to be able to achieve public recognition and improve their reputation (Han, 2010). Not only that, but this sector face specific public concerns with regards to atmospheric and marine pollution (Lai et al., 2011; Poulsen et al., 2016).

Accordingly, CSLs tend to adopt SCSR to face the requests from customers and society to reduce the environmental impact of the transportation of goods (Lai et al., 2011; Poulsen et al., 2016). This is supported by the fact that SCSR helps companies address the pressure from NGOs and the social sector (Lozano, 2015). Likewise, non-profit initiatives have contributed to the use of eco-labeling and voluntary certifications

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<sup>43</sup> The International Labor Organization (ILO) has developed 50 conventions and recommendations with regards to the Maritime Transportation Industry which are commonly known as the "International Seafarers Code" (Arat, 2011).

that help society identify the transportation companies that follow sustainable practices and comply with the existing MARPOL regulations (Pike et al., 2011). This of course, is a driver behind the implementation of SCSR in the Container Shipping Industry.

### ***Growth***

A major driver behind business decisions is to unblock the company's operational limits and improve its growth and trajectory (Lozano, 2015). To do so, firms depend on higher demand of services and products to develop in a particular market (Agnesson Franzén et al., 2010). In the case of global trade, the approach to developing economies has become a driver for growth for shipping and trading companies (Kolk, 2016). This is relevant for CSLs, since the CSI is expected to continue growing (Altena, 2013).

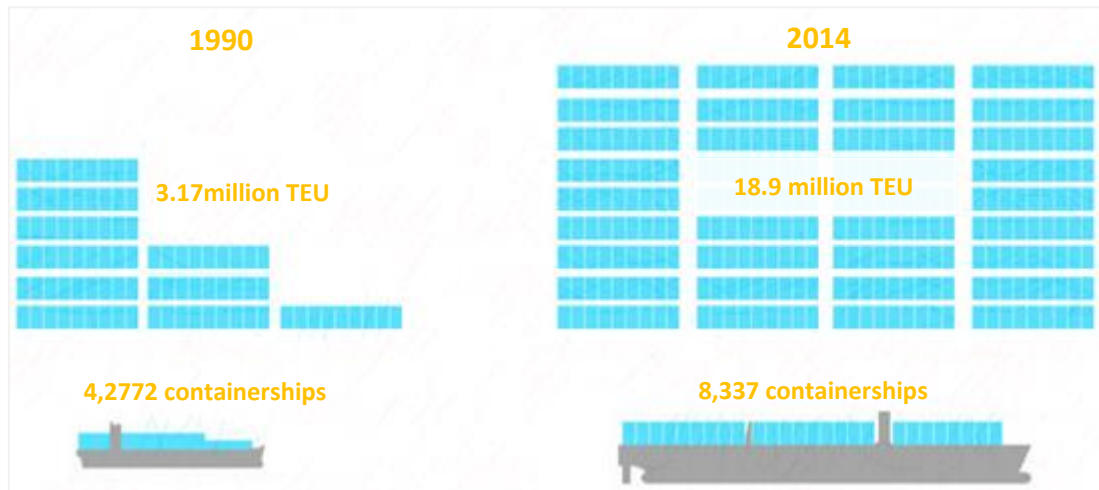
To be able to face the increasing demand of trade services, CSLs need to implement innovative and competitive policies. It is relevant to highlight that SCSR provides companies of any sector with a scheme and sustainability vision which translates into corporate payoff in terms of improving their growth trajectory and for meeting unfulfilled market needs (Hart & Milstein, 2003). Correspondingly, it provides companies with a visualization of their progress path and trajectory which can translate into a better planning and eventual growth (Hart & Milstein, 2003).

CSLs compete in a highly complex market environment which may limit their growth. However, the most relevant CSLs, such as NYK, COSCO, and Maersk Line, have found the benefits of SCSR to help maintain and even increase their market share. This is of outmost relevance for CSLs, because the ability to continue growing is a major driver for companies that operate in dynamic and complex market environments (Prajogo, 2016).

Furthermore, innovative strategies help CSLs impact their performance and give them financial leverage to compete, which in turn translates into growth (Prajogo, 2016). Additionally, strategic policies help CSLs handle the increasingly large volume of cargo flow in global trade which as a result helps them achieve a healthy progress (Lai et al., 2011).

Also, it is important to realize that the global carrying capacity has passed from 3.17 million TEUs in 1990 to 18.9 million in 2014 (figure 3) (Tran & Haasis, 2015). As Tran and Hassis (2015) mention, this exponential growth is the result of the increase of the

carrying capacity of the top 20 CSLs (e.g. Maersk Line grew 28 times in this period) (Tran & Haasis, 2015). Therefore, it is only logical that CSLs need to grow at the same pace as the market in order to remain competitive. Then it is clear that growth is a major driver behind the business rationale of CSLs.



**Figure 3. Growth of the Container Shipping Industry in the period between 1990 and 2014**

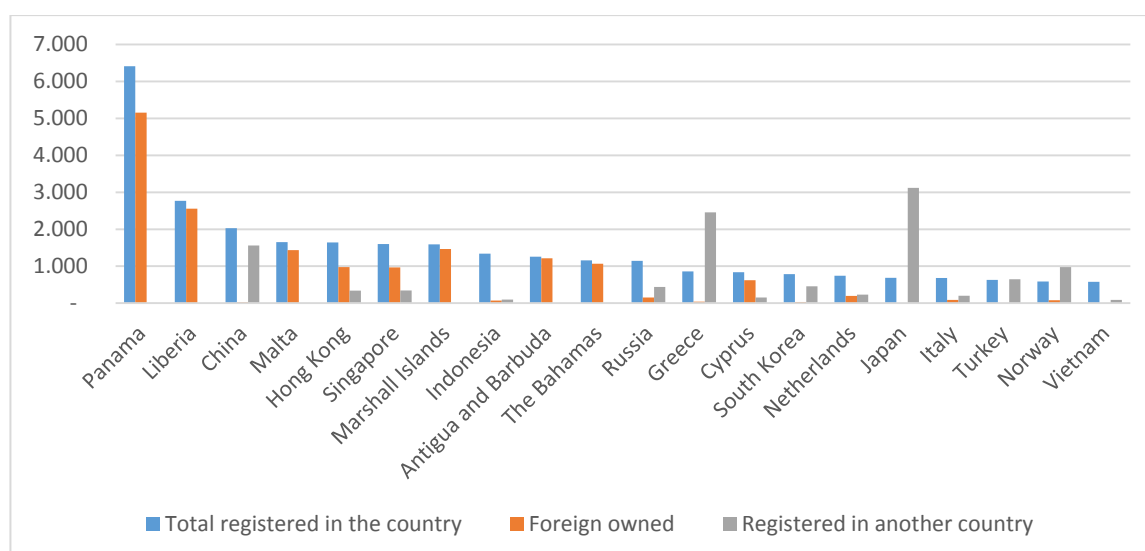
Source: Adapted from Allianz Global Corporate & Specialty (2016) and Tran and Hassis (2015).

### ***Legislation***

A significant concern for international regulatory bodies is the fact that the maritime industry has been linked to taking advantage of the local and regional legal framework through the use of flags of convenience<sup>44</sup> (FOCs) (Roe, 2013). In general terms, the use of FOCs is linked to shipping companies that seek to avoid strict regulations and policies as well as high taxes (Fan, Luo, & Yin, 2014). Furthermore, the distribution of flags of convenience demonstrate that maritime transportation firms tend to follow the least stringent regulatory framework (figure 4).

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<sup>44</sup> A flag of convenience is the practice in which a vessel is registered to a country other than the corresponding nationality of the owner company with the aim to operate under a less stringent framework.



**Figure 4. Freight and Cargo Ships Registered by Country**

Source: Adapted from the CIA World Factbook with information of 2010 (CIA, 2010).

*Notes:* The graph shows the 20 countries with higher number of registered freight and cargo ships.

**Foreign-owned** refers to ships that fly the flag of one country but belong to owners of another country (CIA, 2010). For example, a ship that is registered in Panama and operates under a Panamanian Flag but is owned by a Japanese Company.

**Registered in other countries** refers ships that belong to owners in one country but fly the flag of another country (CIA, 2010). For example, a ship that is owned by a Panamanian company but it is registered in Japan and operates under a Japanese Flag.

As seen above, figure 4 shows the 20 countries with the higher number of registered freight and cargo ships. With this, the graph gives a clear idea of the use of flags of convenience. Furthermore, from the figure it is possible to observe that the majority of ships are registered in countries commonly known for their lax regulations, such as Panama. The distribution shows that most of the vessels registered in such countries are from foreign origin (e.g. Panama has 6,413 registered ships from which 5,157 are owned by external companies). Moreover, the FOCs have increased in percentage since the 1970s and as a consequence the international community has stressed concerns with regards to the environmental impact that can result from this practice (Fan et al., 2014). As a response, international institutions are enforcing policies to reduce the environmental impact of the maritime transportation worldwide which can influence the business strategies of shipping companies (Lai et al., 2011).

For example, the IMO and the ILO have created policies and instruments focused on reducing the environmental impact of the shipping industry (Arat, 2011). The most

relevant effort comes in the form of the International Convention for the Prevention of Pollution from Ships, commonly known as MARPOL. Since its adoption in 1973 it has become an international reference focused on pushing the shipping industry towards better environmental practices. To do so, the Convention contains six annexes:

- Annex I. Regulations for the Prevention of Pollution by Oil (entered into force 2 October 1983).
- Annex II. Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk (entered into force 2 October 1983).
- Annex III. Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form (entered into force 1 July 1992).
- Annex IV. Prevention of Pollution by Sewage from Ships (entered into force 27 September 2003)
- Annex V. Prevention of Pollution by Garbage from Ships (entered into force 31 December 1988)
- Annex VI. Prevention of Air Pollution from Ships<sup>45</sup> (entered into force 19 May 2005)

(IMO, 2016)

These policies are complemented with the Marine Environment Pollution Committee (MEPC) which is a sub-organization of the IMO responsible for defining the regulations to prevent marine and air pollution from international shipping (Han, 2010). Additionally, within the International Safety Management Code (ISM), the IMO has defined a section focused on Safety of Life at Sea (SOLAS) which is focused on guaranteeing the safe operation of vessels (Arat, 2011). Likewise, the International Chamber of Shipping and the International Shipping Federation are pressuring CSLs into adopting sustainable strategies (Lai et al., 2011).

These efforts are of great relevance because rising regulatory pressures drive CSLs into adopting better sustainable practices that even extend to their supply chains (BSR, 2013; Fafaliou et al., 2006; Kolk, 2016; Roe, 2013). Furthermore, legislation that addresses SCSR can become a relevant factor for improving the environmental

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<sup>45</sup> Annex VI has been modified to include a reduction in SOx emissions in a gradual manner until 2020 and more stringent control of NOx emissions based on USA's TIER III design standards for engines made after the 1<sup>st</sup> of January, 2016 (Han, 2010).

performance of international shipping (Roe, 2013). However, it is imperative that CSLs support responsible public policies so that they compete in a responsible way (Guyatt, 2008).

As can be seen, CSLs operate in several countries as a result of their commercial nature. This means that CSLs have to comply with different legal environments which can make their operations more complex. Therefore, proactive CSLs focus on improving the performance of the company in an overarching manner to comply with the most stringent legislation in which they operate. This is consistent with the proactive corporate behavior achieved through SCSR which helps companies meet national and international treaties, laws and regulations (Lozano, 2015). Hence, it can be said that local and international regulations become relevant drivers behind the implementation of sustainable practices and SCSR in the CSI.

### ***Legitimacy***

Even though a corporate brand is of great relevance for companies, it has to be accompanied with the legitimacy to operate. Lozano (2015) highlights that a major driver behind strategic policies is to achieve and restore trust, in other words, to obtain social acceptability. This is particularly relevant in the current context of social networks. Nowadays, social media creates higher pressure on companies to maintain their reputation. As a consequence, firms need to operate in a transparent and responsive manner with constant reports to keep their active stakeholders informed and hence maintain the legitimacy of their operations (Hart & Milstein, 2003).

Social legitimation corresponds to a positive image of the brand which is a sign of responsible business (Arat, 2011). Moreover, SCSR permits firms to achieve legitimacy accompanied with additional benefits such as: survival skills, social and legal license to operate, anticipation of fines and penalties, risk reduction, and employee satisfaction (Bansal & Roth, 2000).

This is particularly relevant for the CSI because the effort to reduce operational costs has had negative effects on aspects such as employee safety and environmental protection and in turn has resulted on adverse reputation and public image for the sector (Arat, 2011). However, some alliances and groups have focused on improving the environmental performance of the industry and the legitimation of responsible CSLs.

That is the case of the collaboration between the Clean Cargo Working Group (CCWG) and the Business for Social Responsibility (BSR).

The alliance between the CCWG and BSR has resulted in annual performance reports as well as specific tools for measurement and evaluation of the CSI. Correspondingly, its open reporting provides reliable data and easy access tools<sup>46</sup> for the stakeholders of the sector (BSR, 2015). Then again, SCSR helps companies take advantage of these type of tools which in turn translate into long term benefits. Not only that, but the application of indexes and evaluations that are based on scientific and professional knowledge has been linked to long term legitimacy (Wuisan et al., 2012).

This is of outmost relevance for CSLs because SCSR addresses concepts such as required and perceived commitment which have an influence on customer behavior, loyalty, and customer-company identification (Calabrese et al., 2015; Fafaliou et al., 2006). Moreover, through SCSR shipping companies can improve in terms of legitimacy from implementing their own policies that include internal and external audits in combination with the release of periodical sustainability reports (Delmas et al., 2011; Font et al., 2016).

In a similar way, companies that raise their standards and those of their supply chain improve their reputation and legitimacy in the long term (Fafaliou et al., 2006). Furthermore, firms can achieve a better level of trust, and ultimately legitimacy, by obtaining international certifications (Szczuka, 2015). This is relevant for any CSL in order to obtain and maintain customer's loyalty while improving its stakeholders trust.

Coady (2007) links SCSR to improving the way in which companies approach the complexity of operating in diverse regulatory environments through transparency and constant reporting. This is particularly relevant for CSLs because in their transnational nature they face diverse social, economic, and legal environments that imply additional challenges to achieve and maintain legitimacy. As a result, this type of companies benefit from SCSR with a focus on transparency and disclosure, anti-corruption, and government payment disclosure (Coady et al., 2013; Rusmanto & Williams, 2015).

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<sup>46</sup> The CCWG has measurement and reporting tools such as the Environmental Performance Survey (EPS), the Intermodal Carbon Calculator, and the CCWG Scorecard (BSR, 2015).

## ***Stakeholder Engagement***

Stakeholder engagement plays a major role in helping CSLs understand what the market and the public expects from them. Stakeholders are relevant forces that are driving firms to prioritize social and environmental aspects in their business strategies (Agnesson Franzén et al., 2010). Furthermore, engaging in strategic activities with them helps corporations create shared value and as a result foster the repositioning of the brand (Font et al., 2016; Hart & Milstein, 2003). Therefore, it is relevant to realize that SCSR helps firms engage with its stakeholders and materialize their interests (Font et al., 2016).

In recent decades, sustainability has become more important for companies who want to make their products and services as "green" as possible and differentiate themselves from the competition (Altena, 2013). With this in mind, through SCSR companies benefit from interpreting and managing the stakeholders' interests while it helps align the business strategies accordingly to benefit from market opportunities (Calabrese et al., 2015). Additionally, proactive firms that engage and interact with their stakeholders have been linked to better financial results (Coady et al., 2013; Delmas et al., 2011).

In fact, final consumers have taken a strong focus on the quality of the products they buy by associating them with sustainability practices even while being transported (Altena, 2013). This is of great significance for the CSI because the maritime transportation of goods represents up to 70% of the environmental impact of such goods (BSR, 2013). This is relevant for CSLs because they might lose customers to other companies that have better environmental approach. Therefore, shipping companies can benefit from implementing SCSR which helps them engage in a win-win relation with their stakeholders (Arat, 2011).

Furthermore, through SCSR companies can consult their stakeholders to improve the strategic decisions and prioritize the critical issues that must be addressed (Brooks et al., 2014). Similarly, CSLs can benefit from participating in sector collaborative groups which can help them understand their customers' expectations and influence their supply chain in order to allocate resources more efficiently (BSR, 2015). Additionally, working groups provide dialogs among carriers, shippers, and third party logistics providers as well as with regulators which help them learn from best practices to face environmental concerns and compliance (BSR, 2013; Kolk, 2016).

Likewise, initiatives such as the CCWG, provide stakeholders with performance indexes and push the industry for better practices (BSR, 2013). However, stakeholder

feedback is relevant for improving the implementation of SCSR policies and to achieve the materialization of their expectations (Calabrese et al., 2015). This can be complemented with internal and external audits, including supply chain audits, that help stakeholders understand the functioning of the firm (Delmas et al., 2011). Moreover, for the CSI stakeholder collaboration is imperative for successful environmental strategies (Han, 2010).

Additionally, CSLs have become a matter of public concern because of the air pollution associated with ships while at berth<sup>47</sup> (Han, 2010) as well as their overall environmental impact. For this reason, it is particularly relevant for CSLs to address the stakeholders' environmental outlooks. Furthermore, higher social expectations and mega shippers<sup>48</sup> have pushed CSLs towards the certification of their operations (Lai et al., 2011). This has become a driver behind SCSR implementation to meet and exceed the social expectations and improve the trust and relations with business partners, suppliers, consumers, and regulators (Lozano, 2015). Equally important, SCSR helps CSLs develop common goals with its business partners which is of great relevance in the competitive market in which they operate (Lubin & Esty, 2010).

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<sup>47</sup> The term berth "is a designated location in a port or harbour used for mooring vessels when they are not at sea" (Wikipedia, 2016a). And "a mooring refers to any permanent structure to which a vessel may be secured" (Wikipedia, 2016c).

<sup>48</sup> Mega Shippers such as IKEA and Walmart have begun requiring their freight providers to have better environmental practices while handling their shipments (Lai et al., 2011).

### 3 Methodology

The methodology constitutes the basis for the development of a reliable research. Therefore, it is necessary to address the research questions following a specific school of thought, theory, and to choose the proper research method in order to be able to obtain trustworthy results. In this section it will be explained why this research follows the *Environmental Philosophy* school of thought as understood by Robert (2000). Also, why the chosen research theory is *Environmental Pragmatism* as understood by Tapio (1996) and as defined by Robert (2000). Also, it will be explained why the study follows the *Case Study Method* as understood by Stake (1978) and as defined by De Massis and Kotlar (2014). Then, this section will scrutinize the weaknesses and strengths of each choice to conclude that it is the best fit to conduct the research at hand. Finally, it will provide an insight on the case selection as well as the content analysis and interview methods used once the case was delimited.

Because of the nature of this study, the research follows the *Environmental Philosophy* school of thought. This is a direct consequence of its relation to questions of environmental ethics such as "how does intellectualism manifest in environmental ethics?" (Robert, 2000, p. 194). This is of relevance because the main objective of this research is to explain the rationale behind SCSR in a particular case.

More specifically, the present research follows what Robert (2000) defines as *Environmental Pragmatism*<sup>49</sup>. This is because the study falls into the Pragmatism paradigm of decision-making as a "practical testing of theoretical ideas" (Tapio, 1996, p. 457). The relevance of Robert's considerations relies on the fact that this research examines the environmental considerations behind the use of the Triple E as part of a corporate strategy. This means that it follows the *Environmental Pragmatism's* purpose of making environmental philosophy relevant to environmental policy and corporate decision making (Robert, 2000). Additionally, pragmatism permits to elaborate the investigation without limitations with regards to the research method (Tapio, 1996).

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<sup>49</sup> For practical purposes what Robert (2000) defines as "wild ontology" will be referred to as "environmental pragmatism". This is done with the purpose of maintaining integrity among diverse literature that focus on the same subject.

The benefits of following the chosen school of thought and paradigm overcome other similar schools and theories such as the *Positivism* and the *Realism* schools of thought (Creswell, 2003). Even though *Positivism* and *Realism* provide research frameworks that might be useful for some type of research, they fall short when it comes to the analysis of CSR strategies with an environmental foundation. For example, *Positivism* follows the ‘best fit’ mathematical model for the research while *Realism* follows a ‘what if’ method. On the other hand, *Pragmatism* has the advantage of following the research method(s) that are best agreed on (Tapio, 1996).

Moreover, following the *Pragmatism Paradigm* has specific benefits that other theories cannot provide for this particular research. It is relevant to emphasize the benefits of such theory as defined by Tapio (1996):

- a) It does not limit the research to one method, on the contrary, the chosen method (s) are those best agreed on.
- b) There is interaction between the parts of the method.
- c) The explanatory factors include both, internal and external factors in decision making.
- d) The explanatory factors follow possible trends of the external factors and desirable trends of the internal aspects.
- e) It does not limit the policy alternatives.

(Tapio, 1996, p. 465)

According to the philosophical line of thought and the theoretical framework chosen, the best research method for this particular investigation is the *Case Study Method* as understood by Stake (1978) and as defined by De Massis and Kotlar (2014). The advantages of using such type of analysis are of importance for the subject in hand because case studies play a relevant role among the qualitative methods for organizational studies (De Massis & Kotlar, 2014). Not only that, but it is a rigorous tool that helps describe complex situations, develop new theories, or advance existing ones (De Massis & Kotlar, 2014).

For this thesis, the research method is used to evaluate the effect of using a new containership as part of a CSR strategy through the evaluation of a particular case. This helps analyze why a new ship became a flagship of a company's SCSR and determine how the addition of the new ship helps materialize Maersk Group's SCSR objectives. The

relevance of using the *Case Study Method* relies on the fact that it is "more suited to expansionist than reductionist pursuits" (Stake, 1978, p. 7). This is particularly relevant for this research because its objective is to emphasize the relevance of a business strategy for the container shipping sector. Correspondingly, the best use for this method is "for adding to existing experience and humanistic understanding" (Stake, 1978, p. 7). Therefore, the research method is used as a tool to evaluate the company's CSR Strategy and to reveal the rationale behind it and its influence on the industry.

After analyzing the available schools of thought, theories and research methods for conducting environmental research the following was found. The use of the *Environmental Philosophy* school of thought is the most appropriate for the research in hand because it allows the researcher to address questions of environmental ethics that must be taken into consideration before selecting a business strategy. Afterwards, the research will follow the *Environmental Pragmatism's* ideal of transforming environmental philosophy to environmental policy and corporate decision making (Robert, 2000). Following a *pragmatic* paradigm allows the research to be done without the limitations with regards to the research method (Tapio, 1996). The advantages of the chosen framework were scrutinized in comparison to other schools of thought and paradigms which resulted in the confirmation of it being the best option. Finally, when it comes to the research method, the best choice is the use of the *Case Study Method*. This research method was chosen because it fits perfectly with the objective of the present study: to evaluate a CSR strategy with the use of a new ship through a specific case. As expected, the chosen philosophy, paradigm, and research method provide the proper tools to obtain trustworthy results.

### **3.1 Case selection**

This study aims to evaluate the role of SCSR in the Container Shipping Industry through a case study. The thesis will evaluate the incorporation of the Triple E to Maersk Line's fleet. The selection of this company was based on its historical corporate culture as well as its current ranking as the largest Container Shipping Liner in the world (Maersk Line, 2015a). This section will explain the rationale behind the case selection and its delimitation for study.

Maersk Group was founded in 1904 and is now a worldwide conglomerate headquartered in Copenhagen, Denmark (Maersk Group, 2016c). Nowadays, the Group

operates in 130 countries and employs more than 88,000 people and in 2015 alone it had a revenue of 40.3 billion USD (Maersk Line, 2016b).

It is relevant to mention that the organizational structure of Maersk Group was modified in 2016 and this change entered into effect in October 1<sup>st</sup>, 2016. However, even when the structural changes came into effect in late 2016, the top executives that collaborated with this study confirmed that the Group's SCSR policies will remain the same in the near future. This confirmation makes this study even more valuable because it has the potential to point out specific areas of the Group's SCSR policies that can be further improved or modified in this transitioning period.

The changes came with a new vision: "The Maersk Group is an integrated transport & logistics company with multiple brands and is a global leader in container shipping and ports" (Maersk Group, 2016c, para. 1). This reorganization meant a transition towards two main branches: *Transport & Logistics* and *Energy*. Transport & Logistics includes Maersk Line, APM Terminals, Damco, Svitser, and Maersk Container Industry (Maersk Group, 2016c). Energy includes Maersk Oil, Maersk Drilling, Maersk Supply Service and Maersk Tankers (Maersk Group, 2016c).

Since the focus of this thesis is the analysis of SCSR in the Container Shipping Industry, this case study will be limited to Maersk Line which is the company's Container Shipping Liner and the largest operating unit of Maersk Group. Maersk Line was founded in 1928 and became the world's largest container shipping company in 1996 (Maersk Line, 2016b). Nowadays, Maersk Line has 32,705 employees and a fleet of 630 vessels with a capacity of 3.1 million TEU which in 2015 meant an approximate 12 million full containers shipped (Maersk Line, 2016b). This corresponds to 59,000 customers in 121 countries and a profit of 1.3 billion USD in 2015 (Maersk Line, 2016b).

Furthermore, the case study will focus entirely on the Triple E vessel which was incorporated to Maersk Line's fleet in 2013. The selection of Maersk Line and the Triple E follows two ideas. First, Maersk Group launched in 2013 its new SCSR policy under the name "Sustainability Strategy 2014-2018" to give the Group a new business direction (Maersk Group, 2015b). This was complemented with the incorporation of the Triple E to Maersk Line's fleet the same year. The combination of the new SCSR policies and the biggest and most technologically advanced containership in the world

were the result of the company's ambitious target to reduce CO<sub>2</sub> emissions by 60% by 2020. This is of great relevance from an environmental perspective as well as from a business perspective. This could mean that CSLs can achieve ambitious environmental targets while improving its business.

Other authors have analyzed the benefits of SCSR for the Maritime Transportation Industry (Arat, 2011; Coady et al., 2013; Font et al., 2016). However, their analysis has been mostly done from a business perspective and have not provided an in-depth analysis of the drivers behind SCSR as well as the effects of its implementation for this particular sector. Arat (2011) does a literature review of the use of CSR in shipping companies, Coady, Lister, Strandberg and Ota (2013) analyze its role and implications in the industry while Font, Guix and Bonilla-Priego (2016) evaluate its benefits for creating shared value. Therefore, the chosen case provides a closer perspective of the implementation of SCSR through the analysis of the incorporation of the Triple E to Maersk Line. This will deliver a particular panorama of SCSR motivations as well as the materialization of strategic goals in the context of the Container Shipping Industry making it a unique research.

### **3.2 Data collection and analysis**

The first part of the data collection and analysis was focused on the gathering of information from secondary sources. The information was found in state of the art literature on aspects such as CSR, container shipping, logistics, and innovation and sustainability in shipping. The majority of the material was found on renowned scientific journals and databases and its selection consisted on the value of the information as well as the year of publication. The newest articles were given priority in order to keep this investigation as up-to-date as possible. The use of information from secondary sources provided a solid foundation for the case study through an objective perspective.

The second part of the data collection and analysis was obtained from primary sources in the form of the company's sustainability reports, informal interviews, and personal communication with top executives from Maersk Group and Maersk Line from the areas of Environment, Sustainability, and CSR. The reports were found on Maersk Group's and Maersk Line's websites while the informal interviews were conducted through telephone calls and complemented with personal communication in the form of emails. Even when the interviews were done via telephone and in an informal way, I took notes

that helped in the analysis process. The interviews and personal communication were done with an informal format by request of the Group's top executives that collaborated with this study. Additionally, these executives provided reports and information as well as the confirmation of data obtained from secondary sources. On their request, their names and positions will remain anonymous and confidential.

The data analysis process begun with the literature review which set the foundations for the case study. After reviewing the most recent literature on the subject it became clear that the general drivers behind CSR could be similar to the rationale behind SCSR in the CSI. With this in mind, the data analysis focused on exploring this idea further and with the help of some of the company's top executives, mainly at director level, it was possible to confirm that the general CSR motivations found in the literature can be linked to the rationale behind SCSR implementation in the CSI. Also, through the informal interviews it was possible to identify new key areas that needed to be analyzed, particularly the concept of innovation in business strategies. Correspondingly, the information obtained from primary and secondary sources was prioritized with the help of the company's executives in order to make the case study as accurate as possible. The use of both, primary and secondary sources, became a key aspect for reaching the main findings of the research. This helped maintain the case study as objective as possible by comparing internal and external information. However, this case study is limited to the available information on the subject and with regards to the company itself. Therefore, the reader should keep in mind that further research will have to be conducted to achieve more accurate conclusions on the subject. The same can be said of Maersk Group which is currently undergoing structural changes. Then, any analysis on the company's strategy will have to be updated in the mid-term.

## 4 Results

In 2011, Maersk Line requested 20 Triple E ships with the purpose of improving the company's environmental performance whilst achieving cost savings through better energy efficiency. Later on, in the year 2013 Maersk Group published the "Sustainability Strategy 2014-2018" with the particular goal to *unlock growth* (Maersk Group, 2015b). It is no coincidence that the launch of the Sustainability Strategy was the same year that the first Triple E was incorporated to the fleet. Therefore, this section explores why the Triple E became the flagship of Maersk Line's Sustainability Strategy. Additionally, it includes an analysis of the drivers behind the incorporation of the containership to Maersk Line's fleet. Furthermore, this chapter scrutinizes the relevance of the Triple E in fulfilling the company's SCSR goals from three perspectives: technical features, operational changes, and market based decisions.

Since 2009, Maersk Group begun identifying areas of opportunity to better address the challenges<sup>50</sup> that will be present in the 21<sup>st</sup> century, particularly with regards to the Group's environmental impact. To do so, the Group begun carrying out impact studies and collaborations with key stakeholders. Consequently, this translated into the identification of three major areas of opportunity to *unlock growth*: Environmental, Economic, and Social (Maersk Group, 2015b).

It was until 2013 that the company decided to launch a new strategy. With this in mind, Maersk Group consulted 38 key stakeholders which included investors, regulatory bodies, Non-Governmental Organizations (NGOs), academic experts, and key opinion leaders (Maersk Group, 2016b). This was done to understand the stakeholders' expectations with regards to the key areas to unlock growth. Later, the results became the foundations for the "Sustainability Strategy 2014-2018".

This engagement exercise gave Maersk Group a clear idea of its stakeholders' perceptions and expectations. In terms of perception, the results indicated that Maersk Group was executing well in overall sustainability performance, anti-corruption policies, environmental performance particularly in the container shipping sector, and human rights and labor standards (Maersk Group, 2016b). With regards to the stakeholders' expectations, the results can be summed in four main ideas:

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<sup>50</sup> Maersk Group refers to the challenges as "Sustainability Challenges" (Maersk Group, 2015b, p. 3).

1. The Group should move from relative efficiency improvements to absolute reduction of CO<sub>2</sub> emissions.
2. The Group should improve its communication and engagement, with emphasis on the local context.
3. The Group could be more vocal on industry-critical issues.
4. The Group could have a better role in addressing barriers to trade<sup>51</sup>.

(Maersk Group, 2016b)

After the consultation and a thorough design and planning process, Maersk Group introduced the Sustainability Strategy in the year 2014 with a four year scope. This included a new sustainability vision for the Group which is:

“We aspire to unlock growth – for society and Maersk. We will achieve this through the core strengths of our businesses and by being a responsible business partner.” (Maersk Group, 2015b, p. 3)

Correspondingly, Maersk Group reinforced its participation in environmental certifications, management systems and international cross-sector working groups. The most relevant ones with regards to SCSR are the following:

- ISO 9001 for quality management systems and ISO 26000 for social responsibility. Additionally, all vessels are certified and audited under the ISO 14001 for environmental management. Furthermore, all suppliers are expected to be certified under these key ISO standards as well.
- UN Global Compact Working Group to further Sustainable Corporate Policies.
- Global Compact LEAD Group that provides input to the United Nations Sustainable Development Goals (SDGs) and guidance material for integration of sustainability in organizations.
- UN High-level Advisory Group on Sustainable Transport.

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<sup>51</sup> The stakeholders stressed that an increase in trade does not necessarily translate into better sustainable results (Maersk Group, 2016).

- Clean Cargo Working Group (CCWG) as part of a cross-sector business-to-business initiative focused on improving the environmental performance of the marine container transport.

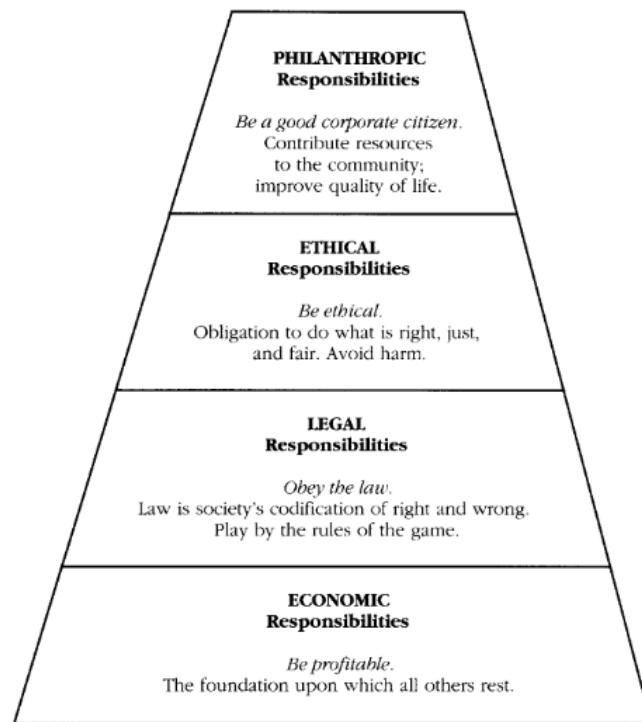
(Maersk Group, 2015a)

Furthermore, the decision of adopting a new Corporate Social Responsibility policy through the Sustainability Strategy must be understood as a business strategy. Accordingly, the incorporation of the Triple E can be explained as a calculated decision within the business strategy keeping in mind that it will help reduce emissions while providing cost savings. However, to fully understand the relevance of the Triple E within the Sustainability Strategy it is first necessary to evaluate the strategy itself.

#### **4.1 Maersk Group and the Sustainability Strategy**

The Triple E is arguably one of the most relevant factors advancing Maersk Group efforts to fulfill its sustainability goals. Accordingly, it is no coincidence that the first Triple E vessel to incorporate into the fleet did so the same year that the Sustainability Strategy was announced in 2013. Therefore, this section explores Maersk Group's Sustainability Strategy from a Strategic Corporate Social Responsibility perspective. Also, it scrutinizes the most relevant characteristics of Maersk Group's *Sustainability Governance Framework*. This will provide the reader with in-depth understanding of the company's implementation of SCSR as part of its business strategy while it will define the context in which the Triple E participates.

To properly evaluate the "Sustainability Strategy 2014-2018", first it is necessary to review Maersk Group's activities from a SCSR perspective. To do so, it is relevant to refer to Carroll's (1991) Pyramid of Corporate Social Responsibility (figure 5). With the Pyramid, Carroll determined four major responsibilities for the existence of any company: 1) the economic responsibilities that correspond to the foundation in which the other levels of the pyramid rest; 2) the legal responsibilities that every company needs to follow; 3) the ethical responsibilities that shape the company's behavior beyond the law-abiding duties; and, 4) the philanthropic responsibilities of the company with regards to its contribution to improve the quality of life of society.



**Figure 5. Pyramid of Corporate Social Responsibility**

Source: (Carroll, 1991b)

Maersk Group has in place Corporate Social Responsibility policies. Such is the case of the "Sustainability Strategy 2014-2018" that is coupled with the annual "Sustainability Reports". From them, and with relation to Carroll's Pyramid, it is possible to assess that the company operates beyond its economic and legal responsibilities. Furthermore, the company's objective to go beyond the second level of the CSR pyramid can be clearly observed in the company's own perception of *being a good corporate citizen* (Maersk Group, 2013).

In the case of Maersk Group, *being a good corporate citizen* is the result of several activities that can be categorized in the third level of Carroll's Pyramid of CSR, within the ethical responsibilities. These activities form part of what the Group calls the "Governing progress on sustainability" and include the promotion of responsible practices with the company's partners as well as its global supply chain (Maersk Group, 2013). Such promotion of ethical responsibilities is observed in the Group's "Third Party Code of Conduct", which highlights the efforts on improving areas of human rights, labor standards, work against corruption, and the environment.

Equally important as the Code of Conduct, are the activities related to social aspects. For example, during 2015 Maersk Group invested in 111 projects across nine business

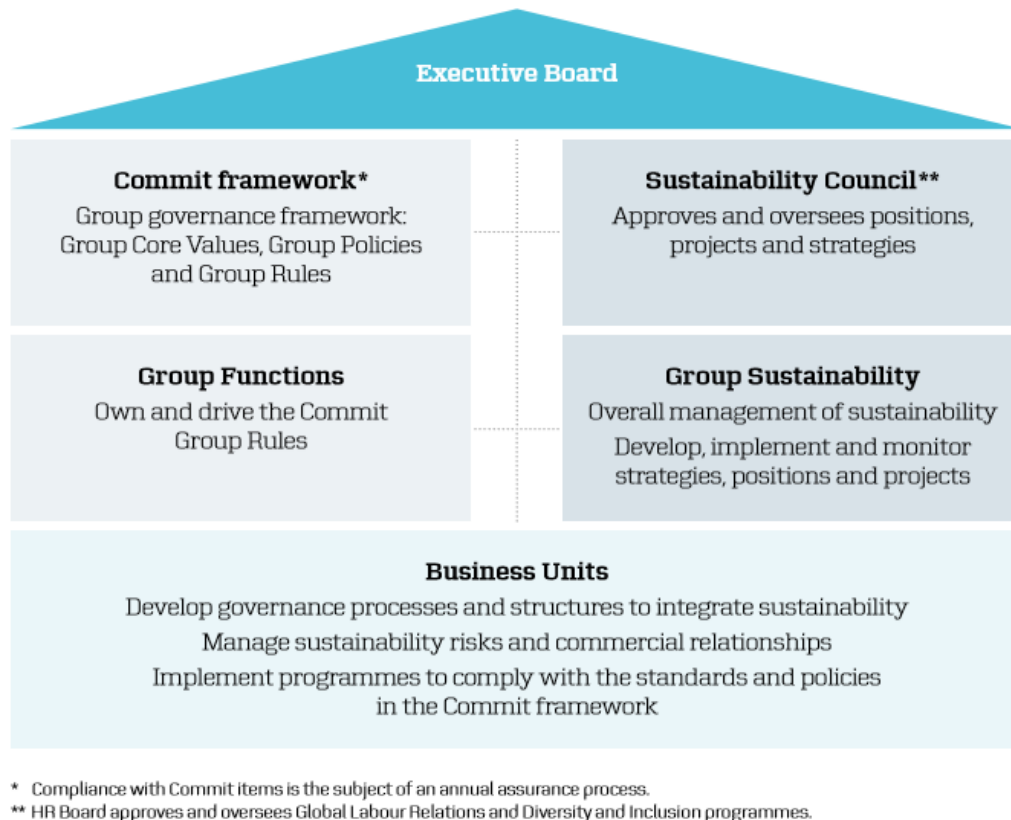
sectors and 33 countries (Maersk Group, 2015a). The projects were mainly focused either on local community projects or on human resources initiatives that include university scholarships. Additionally, since 2010 Maersk Group is a member of the Logistics Emergency Team which provides global help in case of natural disasters. Not only that, but in the years 2014 and 2015 Maersk Group provided assistance in rescuing more than five thousand refugees in the Mediterranean Sea.

Furthermore, all the activities related to *being a good corporate citizen* are guided by a Sustainability Council. The main function of the Council is to oversee and guide the progress of Maersk Group's Sustainability Strategy (Maersk Group, 2015a). To do so, the Sustainability Council is responsible for the following activities:

- Oversee the compliance of the internal and external sustainability standards.
- Endorse sustainability strategies and positions across Maersk Group.
- Guide the execution of the Group's approved strategies.
- Prioritize and approve projects related to the execution of the "Sustainability Strategy 2014-2018" within the investment framework established by the Group.

(Maersk Group, 2015a, p. 2)

To properly address the Sustainability Strategy, the Sustainability Council is supported by a Governance Framework (figure 6) which provides the necessary tools to correctly implement the Sustainability Strategy across the Group's companies. This is achieved through diverse business units that develop the processes and address the sustainability risks with the implementation of the standards and policies established in the Commit Framework (figure 6).



**Figure 6. Sustainability Governance Framework**

Source: (Maersk Group, 2015a, p. 3)

For Maersk Group the sustainability risks are both environmental and corporate related. The environmental risks mainly refer to oil spills, ballast water, and polluting emissions. Corporate related risks include the effect of irresponsible business conduct, either by Maersk Group or by any part of its supply chain (Maersk Group, 2015a). However, it is relevant to highlight that for Maersk Group, both types of risks are business related. This is explicitly stated in the Sustainability Report of 2015 where it explains that environmental risks, such as oil spills, cause a negative impact on the company's reputation while it becomes stressful for the employees involved (Maersk Group, 2015a). Also, the report clearly mentions that for Maersk Group neither of these risks is acceptable.

To mitigate and address the potential risks while at the same time maintaining its competitive edge, Maersk Group's activities are guided by the Sustainability Strategy. The strategy follows three key priority areas to *unlock growth*: Environmental, Economic, and Social (figure 7). In this sense, the Sustainability Report of 2015 defines the updated approach towards each area (Maersk Group, 2015a). As the report mentions,

the attitude towards *Environment* is to address climate change. Particularly, with the objective of decoupling economic growth from CO<sub>2</sub> emissions while achieving cost savings. With regards to the *Economic* area, the report specifies economic development through trade. In other words, it implies the generation of economic development through a wider access to global markets. Finally, when it comes to the *Social* area, the Sustainability Report approaches it with education and employment opportunities through relationship building for the group (Maersk Group, 2015a).



**Figure 7. Key Priority Areas to Unlock Growth**

Source: (Maersk Group, 2015a, p. 5)

By focusing on the key priority areas to unlock growth, the Sustainability Strategy aims at obtaining long-term benefits. In other words, with the new business strategy Maersk Group perceives itself as addressing systemic challenges even outside its particular sphere (Maersk Group, 2015b). To do so, the Strategy focuses on becoming an industry-wide driver that affects all of its stakeholders by creating shared value. Not only that, but the Sustainability Strategy has a clear definition of how to address the barriers to growth.

To address the systemic barriers to growth, the Sustainability Strategy determined a series of phases with regards to "what" Maersk Group needs to do and "how" to do it. First, the strategy defines that the Group's operations and performance has to improve with regards to its environmental impact. According to the Sustainability Reports, this has already been addressed in the first two years (2014 to 2016) of the strategy with the implementation of effective models to design, update, and start new projects. The second step, is to expand the best practices to the industry and partners. This means that in the middle years of the strategy's scope there will be a focus and selection of such practices. After the selection, the best practices will be extended globally to other sectors of the Group. Correspondingly, the adoption of the new practices will begin to have an industry

impact which will translate into long-term growth for Maersk Group and society (Maersk Group, 2015b).

As a result, it is clear that for Maersk Group the engagement in activities which correspond to a full immersion of Strategic Corporate Social Responsibility is a business strategy, or in the company's words a "New Strategic Direction" (Maersk Group, 2015b). Therefore, it is possible to conclude that SCSR has proven to be the best option for the company in order to address the sustainability challenges of the 21<sup>st</sup> century. Furthermore, all the three areas to unlock growth are linked to business benefits.

Maersk Group also perceives itself as a driving force for positive change with regards to sustainable trade within the industry (Maersk Group, 2015b). To highlight the company's intentions to lead the way in better sustainable trade practices, Maersk Line integrated the Triple E to its fleet in the year 2013. As a result, it is possible to assert that the incorporation of the new ship was a calculated business decision to reinforce the Group's Sustainability Strategy. Therefore, it can be understood that Triple E is expected to become one of the most relevant factors to advance the company's efforts to achieve its Sustainability Goals.

For these reasons, and to fully understand why SCSR became the chosen path for Maersk Group to engage its business activities within the CSI, it is necessary to explore the reasons behind the decision of making the Triple E the flagship of the Sustainability Strategy. Additionally, understanding the current role of the Triple E within the company's SCSR will establish the proper context to be able to address the research questions of this study.

## **4.2 The internal drivers behind the Triple E**

Since 2006 Maersk Line began ordering container ships with a capacity of up to 15,500 TEUs with the objective of reducing the CO<sub>2</sub> emissions of its fleet (Gonderman, 2016). However, it was until 2013, when the Triple E was launched, that the company addressed the absolute reduction of CO<sub>2</sub> emissions (Maersk Line, 2015c). Therefore, this section analyses the internal and external drivers behind the Triple E's integration to the fleet. This will help the reader understand the incorporation of the vessel as a strategic decision linked to the company's Sustainability Strategy.

With the new Sustainability Strategy came new goals. With regards to environmental performance, Maersk Group set the goal to reduce CO<sub>2</sub> emissions per container moved by 60% by the year 2020 in comparison to the 2007<sup>52</sup> emission levels (Maersk Group, 2015b). This meant maximizing the fleet's environmental performance. With this in mind, it is possible to understand that Maersk Line saw the Triple E as an opportunity to improve the fleet's environmental impact while increasing its carrying capacity in the Europe-Asia route where the ship currently operates. Additionally, the new containership presented itself as an opportunity to reduce direct costs through fuel and energy efficient systems while becoming the biggest containership of the world at the moment of its launch (Maersk Group, 2015b).

Certainly, internal and external factors influenced the decision of incorporating the Triple E to the fleet. Therefore, the drivers behind it need to be evaluated to fully realize the impact of such decision from a SCSR perspective. To do so, it is relevant to take into consideration the drivers behind environmental Pro-activity proposed by Tutore (2013), the Sustainable-Value Framework proposed by Hart and Milstein (2003), as well as Lozano's Corporate Sustainability Drivers (2013). It is important to realize that these perspectives will be used as the basis for the analysis since they fall into the definition of Strategic Corporate Social Responsibility used for this research. Nevertheless, an extensive literature analysis<sup>53</sup> will complement it.

First, it is necessary to point out that SCSR policies are not generic, and have to be tailor made for each firm. This is the result of company-specific characteristics, such as proactive leadership, market share, financial situation, specific goals, and particular stakeholders (Lozano, 2015). For this reason, the following section will scrutinize the internal drivers behind the incorporation of the Triple E to Maersk Line as a step to fulfill the goals set by the Sustainability Strategy.

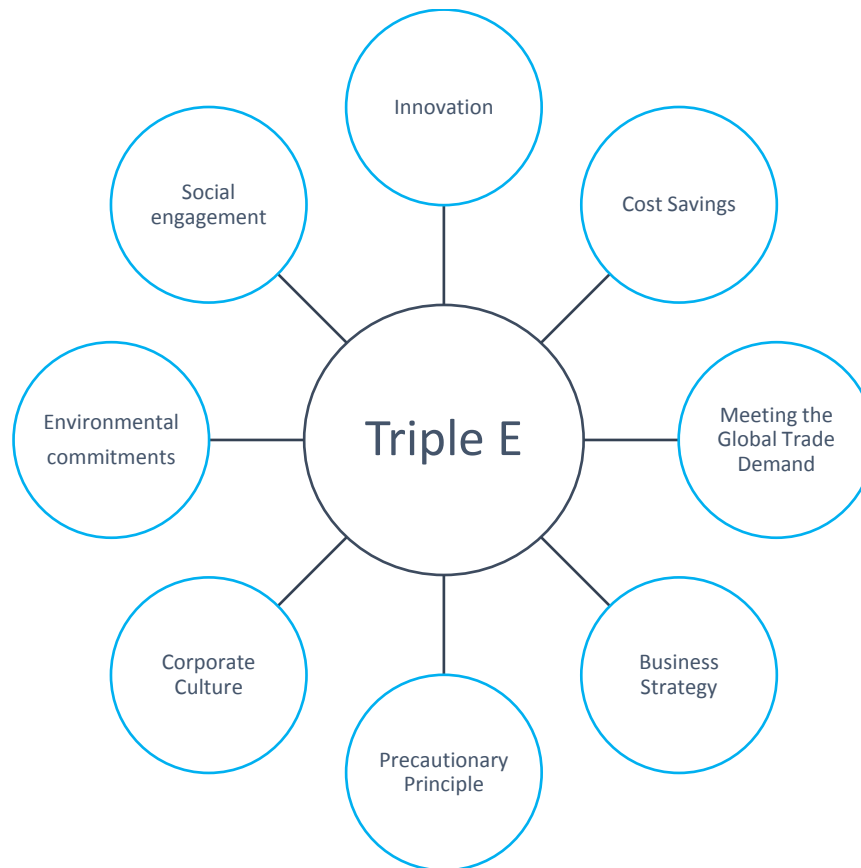
The information obtained from primary and secondary sources provided enough material to determine the internal motivations behind the incorporation of the Triple E to Maersk Line's fleet. Furthermore, the information gave enough evidence to determine

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<sup>52</sup> Using 2007 as a baseline year seems to respond to the fact that the E-Class containerships (e.g. Emma Maersk) were launched in 2006. Hence, the year 2007 would provide enough data with regards to the reduction of CO<sub>2</sub> emissions linked to the incorporation of the E-Class vessels.

<sup>53</sup> The literature analysis includes the drivers behind Green Shipping Practices, including technological innovation, operational changes, cost savings and environmental concerns in maritime transportation.

eight internal drivers (figure 8). Additionally, high level executives from Maersk Group contributed with the definition and prioritization of the drivers according to the Group's interests.



**Figure 8. Internal Drivers behind the Triple E**

Developed by the author of the thesis.

#### 4.2.1 Innovation

In the case of Maersk Line, the Triple E can be seen as accelerating the innovation and the repositioning of the company with the help of the latest technologies and strategies. This is of great relevance to maintain the cycle of innovation from a SCSR perspective (Hart & Milstein, 2003). To begin with, the ship exploits the concept economy of scale which in turn reduces the costs and environmental footprint per unit moved<sup>54</sup> (Tran &

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<sup>54</sup> According to Lai, Lun, Wong and Cheng (2011) Maersk Line has abandoned the use of refrigerated containers that use CFCs and replaced them with more environmentally friendly containers. Also, by 2011

Haasis, 2015). However, to be able to achieve this, Maersk Line had to push forward a series of innovations.

For example, the Triple E has an innovative and unique hull design as well as a twin propeller system focused on reducing fuel consumption and costs as well as increasing the fleet's carrying capacity. Additionally, the containership is equipped with 2,800 sensors for real time monitoring. This makes the Triple E more advanced in comparison to other ships currently on service and permits the company to make real time decisions. This will be further analyzed in section 4.3 The Triple E.

The motivation behind the incorporation of the Triple E can be understood as the need to achieve the company's SCSR goals. However, to be able to achieve the 60% reduction of CO<sub>2</sub> emissions set by the leadership, Maersk Line needed to innovate in the way the company transports goods. Therefore, the design of a new ship provided the opportunity to innovate the company's way of doing business and setting a benchmark. This way, through innovation the company was able to reposition itself and outsmart the competition through the benefits of the most advanced containership in the world.

It can be understood that the need for improving the company's cycle of innovation was a major driver behind the incorporation of the Triple E to the fleet. It is then possible to assert that a vessel with the latest technological advances helps Maersk Line improve their operations and reduce costs. As a result, it can be said that the company expects the Triple E to materialize into the benefits of innovation and hence it fits into helping achieve the goals of the company's Sustainability Strategy.

#### **4.2.2 Cost Savings**

Maritime freight transportation has evolved thanks to the reduction of costs and the maximization of economies of scale. This has been achieved through operational breakthroughs based on logistics and technological advances (Hesse & Rodrigue, 2004). Nowadays, cost savings can result from increased precision in operations (Schøyen & Bråthen, 2015) in combination with the scale enlargement of ships and terminals for longer corridors, particularly for the Europe-Asia route (Altena, 2013; Tran & Haasis, 2015; Wu & Lin, 2015).

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the company had already produced more than 10,000 containers with floorboards made of bamboo (Lai et al., 2011).

This can be clearly seen with the incorporation of bigger ships to Maersk Line, which indicates that the company will exploit new economic scenarios through the firms's existing hub and spoke network (Fremont, 2007; Tran & Haasis, 2015). Additionally, the company is already implementing a total transport package model<sup>55</sup> which benefits from the economics of scale (Altena, 2013).

Furthermore, cost savings is a major driver behind the strategic directions that CSLs need to make to remain competitive<sup>56</sup>. When it comes to the Triple E, it becomes clear that remaining competitive is exactly what Maersk Line has in mind. The flagship will improve the company's carrying capacity by including additional cargo slots to the fleet. Also, it will improve the company's environmental performance thanks to the twin propeller system specifically designed for slow steaming (Tran & Haasis, 2015). In turn, this will decrease the fuel consumption per TEU moved which in the mid and long term will translate into an important amount of cost savings. In fact, by 2015 the Triple E's transportation costs per TEU moved were 26% lower than the comparable containerships in service (Tran & Haasis, 2015).

Additionally, the Triple E is equipped with the latest monitoring and operating technology to improve its performance based on real time information (Tran & Haasis, 2015). With this, the ship will be able to maximize its operations and hence reduce its costs. This comes in combination to a bigger carrying capacity which will reduce the costs per TEU moved. Given this points, it is clear that cost savings is an important driving force behind the decision of incorporating the Triple E to Maersk Line's flotilla. Not only that, but the company publicly states that the increase in container capacity and the improvement in fuel efficiency, both related to cost savings, were the main drivers behind the Triple E (Maersk Line, 2015b).

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<sup>55</sup> This model is also called "Carrier Haulage" and it has bigger cost advantages than the "Merchant Haulage" because of its complete life cycle maximization of economics of scale (Altena, 2013).

<sup>56</sup> Tran and Haasis (2015) highlight that cost savings from mega containerships come not only from the vessel itself. Therefore, CSLs would benefit from complete supply chain analysis that focuses on the reduction of costs in all the stages. This is of relevance because shipping costs are divided in: sea transportation (20%), terminal operations (17%), inland/feeder transportation (35%), and inventory-related (28%) (Tran & Haasis, 2015).

### **4.2.3 Meeting the Global Trade Demand**

When it comes to Maersk Line, it is clear that incorporating bigger ships to the fleet follows the need to fulfil the current market needs as well as its expected growth. Also, this goes hand to hand with the company's expectation of growing 80% in trade volume by 2020 in comparison to 2007 (Maersk Line, 2014a). Furthermore, the firm made an investment of \$1.9 billion USD for the order of the first ten Triple E vessels (Tran & Haasis, 2015). An investment of such magnitude can only come after years of planning and can be understood as a strategic business decision that is expected to have corporate payoff. In other words, the investment reflects the company's confidence in the Triple E to help achieve the SCSR goals established in the Sustainability Strategy with tangible results.

At the time of its launch in mid-2013, the Triple E became the biggest, longest and widest containership in service and immediately became a benchmark for the Container Shipping Industry (Tran & Haasis, 2015). For Maersk Line, this meant an increase of 2,500 TEUs capacity in comparison to the Emma Maersk, the next biggest containership in the fleet. With this in mind, the incorporation of the biggest containership in the world to run in the busiest trading route (Europe-Asia) makes sense as part of a financial strategy. Therefore, it is possible to conclude that to meet the current and future needs of the market was a major driver behind the incorporation of the Triple E to the fleet. Not only that, but Maersk Line has confidence on the Triple E to satisfy the growing demand of trading services in that specific route and will help the company expand its market share.

### **4.2.4 Business Strategy: Integration and Materialization**

Maersk Group has acknowledge the benefits of SCSR to integrate and materialize their business strategies. In fact, the need for integrating the direction of the company towards strategic goals is overseen by a Sustainability Governance Framework. Furthermore, the Group's decisions follow the Sustainability Framework as well as the Sustainability Strategy. Therefore, the Group's specific and strategic decisions can be seen as a way of integrating its business strategies and materializing its goals. This is particularly true with the incorporation of the Triple E to Maersk Line's fleet.

To begin with, the Sustainability Strategy has a clear vision of incorporating sustainability aspects in the operations while improving the performance levels of the

company. With this Maersk Line expects to assimilate an increasing share of the growing trade (Maersk Group, 2015b). Then, it is possible to assume that the incorporation of the Triple E vessels to the fleet will help in the integration of the new direction of the company while increasing its carrying capacity.

In general terms, the Triple E presents itself as an opportunity for representing the company's Sustainability vision in one flagship. This is mainly because the incorporation of the containership meant an increase in carrying capacity, the use of the latest technologies, an improvement in operational capabilities, and an enhanced environmental performance. Additionally, the concepts behind the three "E"s can be seen as major factors for translating the strategic focus of the company into tangible results<sup>57</sup>. Then, it can be concluded that the Triple E will help materialize the company's business goals (Lantos, 2001). Therefore, there is no doubt that the integration and materialization of the Sustainability Strategy were major drivers behind the incorporation of the Triple E to the fleet.

#### **4.2.5 Precautionary Principle: Risk Reduction and Risk Management**

As any CSL, Maersk Line operates in a context that has particular risks. Correspondingly, the company sees the risks as environmental and business related and faces them through the Governance Framework. This is of great relevance from a SCSR perspective because the precautionary principle is a major driver behind business rationale (Lozano, 2015; Som et al., 2009). Also, this concept helps CSLs address risks related to spills, coastal and marine impact, piracy, and employee related aspects (Coady et al., 2013; Roe, 2013).

Furthermore, CSLs need to implement new strategies that include changes in operational processes to be able to reduce risks (Delmas et al., 2011). In the case of Maersk Line, the Sustainability Strategy addresses the reduction and management of the sustainability risks through a Governance Framework (Maersk Group, 2015a). For the company, the environmental risks are related to oil spills, ballast water, and polluting

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<sup>57</sup> This will be further developed in chapter 4.3 The Triple E.

emissions while the corporate-related risks include the effect of irresponsible business behavior<sup>58</sup> by any part of its supply chain (Maersk Group, 2015a).

Correspondingly, the Sustainability Strategy has a clear vision for risk reduction and is clearly supported by a Governance Framework that oversees the implementation of the policies. Given this, it is possible to realize that any decision made by the Group follows the Sustainability rationale behind the SCSR policies of the company. Such is the case of the incorporation of the Triple E to the flotilla.

In general terms, the Triple E will help Maersk Line reduce risks. This is emphasized with its focus on improving the company's environmental performance. It will be achieved with the use of the latest technological features in combination with operational differentiation. Besides, the use of the newest technological advances in combination with real time monitoring makes the Triple E more reliable in comparison to other ships currently on service. Additionally, the vessel is the company's flagship. This means that Maersk Line has to pay particular attention to any aspect related to the Triple E in order to reduce risks that might result in negative corporate payoff.

For these reasons, it is possible to consider that improving the implementation of the concept of precautionary principle was a major driver behind the Triple E. Not only it will improve the environmental performance of the fleet, but it will provide real time monitoring of its operations. Moreover, its particular position as Maersk Line's *flagship* will make the company even more concerned to reducing risks related to the containership. As the company's flagship, any negative aspect of the containership could result on a loss of confidence from the stakeholders.

#### **4.2.6 Corporate Culture: Proactive Leadership and Ethical Values**

In the case of Maersk Group, and hence Maersk Line, its strong corporate culture can be linked to its historical proactive leadership. The company's values and business practices are the main reference to its reputation (Kampf, 2007). Similarly, Kampf (2007) mentions that Maersk Group has set a new standard for corporate self-governance instead of relying entirely on legislation. This can be clearly seen in the Sustainability Strategy which includes a new set of aspects with regards to the Group's Corporate Governance.

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<sup>58</sup> Kolk (2016) highlights the complex situation that multinational companies face with regards to bribery, corruption and child labor. Therefore, the implementation of SCSR policies, such as a code of ethics, are important tools to reduce the risks related to this practices (Kolk, 2016).

As mentioned in the previous section, Maersk Group has established company-wide policies for addressing sustainability. Furthermore, its continuous search for *being a good corporate citizen* is backed up with a Sustainability Governance Framework. With this, the Group has a complete integration of SCSR policies which guides the business direction of the firm. Furthermore, in 2003 five guiding values were introduced to the Group: constant care, humbleness, uprightness, our employees, and our name (Maersk Group, 2014). Since then, these became the ethical principles guiding the corporate culture of Maersk Group and became the foundations for its Governance Framework.

In practical terms, this means that every decision made is backed up by a Governance Framework in charge of achieving the goals set in the Sustainability Strategy. Accordingly, the Triple E comes as a result of a particular context of corporate culture. Therefore, it is possible to assess that the flagship not only follows the company's values but that it will reinforce them. It can be understood that the incorporation of the containership to the fleet was a business decision backed up by the Group's Sustainability Governance Framework.

Furthermore, the Triple E follows the concepts of *efficiency*, *economy of scale*, and *environment*. Through these aspects, it is possible to link the benefits of the Triple E to help the company *unlock growth* in the three key areas: Environmental, Economic, and Social. Then, it is possible to observe that the ship will help the company advance in the search for growing in the priority areas.

With regards to the *environmental* area, the Triple E is designed to reduce the ecological impact of the fleet through the reduction of emissions per TEU moved. When it comes to the *economic* growth, the flagship has a bigger carrying capacity than any other containership in service which will translate into a lower cost per unit transported for the fleet. Finally, with regards to the *social* aspects, the incorporation of the vessel will include specialized training and investment in high-growth markets which can be linked to the social goals established on the Sustainability Strategy (Maersk Group, 2015b). Consequently, the reinforcement of Maersk Group's corporate values can be understood as a major driver behind the decision of incorporating the Triple E to the company. Also, when the Triple E became the *flagship* for the Sustainability Strategy it became clear that the containership represents what the company wants to express in terms of corporate values.

#### 4.2.7 Environmental Commitments

For Maersk Line, environmental engagement begins with the reduction of fuel consumption which is directly linked to the decrease of CO<sub>2</sub> and other polluting emissions (Han, 2010). This could be clearly seen with the introduction of the E-Class containerships to the fleet, such as the Emma-Maersk. The incorporation of these containerships in 2006 marked the beginning of the reduction of the total emissions of the fleet. Furthermore, the company set the goal to reduce by the year 2020 up to 60% its CO<sub>2</sub> emissions per container moved in comparison to its 2007 emissions (figure 9) (Maersk Line, 2014a). To achieve this major reduction in emissions in only thirteen years meant changing the company's approach to business and operations.



**Figure 9. Maersk Line's CO<sub>2</sub> Emissions Reduction Target**

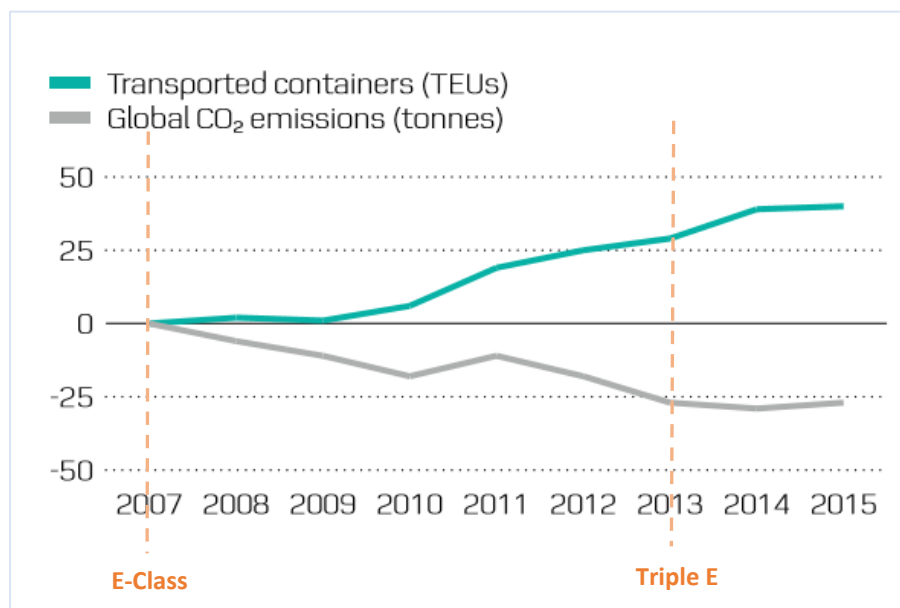
Source: Adapted from "Sustainability 2014", Maersk Line (2014).

First, Maersk Group created a Sustainability Council in charge of overseeing the compliance of company standards, policies, and goals set by the Sustainability Strategy (Maersk Group, 2015a). Then, the company launched the "Third Party Code of Conduct" with a strong focus on improving the suppliers' and contractors' environmental performance (Maersk Group, 2013). Afterwards, the Group determined four steps for reducing its supply chain CO<sub>2</sub> emissions: 1) assess the supplier's CO<sub>2</sub> performance; 2) benchmark the suppliers; 3), select the appropriate supplier, and; 4) share the best practices (Maersk Line, 2014a).

Furthermore, these organizational changes were accompanied with strategic business decisions to materialize the sustainability goals of the company. Such was the resolution of designing an eco-friendly flagship for Maersk Line, the Triple E. Not only the containership would help materialize economic goals through its bigger carrying capacity, but it represented the environmental ambitions defined on the Sustainability Strategy. In fact, the containership focused on three concepts which can be linked to

reducing the company's environmental impact: Efficiency, Economy of Scale, and Environment.

First, by improving *efficiency*, the fleet will consume less fuel and as a consequence emit less polluting gases to the atmosphere. Then, by maximizing the *economy of scale* and increasing the carrying capacity of the fleet, the CO<sub>2</sub> emissions per TEU moved will decrease. Finally, by focusing on the *environment*, the flagship will help Maersk Line reduce its environmental impact by decoupling the volume transported and the CO<sub>2</sub> emissions (figure 10) (Maersk Group, 2015a). It can be concluded that the concept behind the Triple E is principally based on the environmental concerns the Group.



**Figure 10. Maersk Line's Volume Transported and CO<sub>2</sub> Emissions**

Source: Adapted from "Sustainability Report 2015", Maersk Group (2015a, p. 11).

Note: "The graph shows actual development in absolute reductions in CO<sub>2</sub> emissions at growing volumes transported by Maersk Line" (Maersk Group, 2015a, p. 11)

Given these points, it is clear that the desire to reduce the company's environmental impact is the one of the most important drivers behind Maersk Group's new business direction. This particular focus came in the form of a Sustainability Strategy with the environment as one of its key priority areas. Therefore, the fulfillment of environmental goals can be understood as the one of the main drivers behind the incorporation of the Triple E to Maersk Line's fleet.

#### 4.2.8 Social Engagement

CSLs can benefit from implementing SCSR policies to participate actively in the society. Additionally, SCSR helps improve the relations with the society and governmental bodies (Fafaliou et al., 2006). Additionally, SCSR policies advances internal motivation, teamwork, fulfilment, and productivity within firms (Lantos, 2001). With this in mind, it is no surprise that the Sustainability Strategy defined social engagement as a one of its core concepts in the new business direction for the Group.

For Maersk Group, its social commitments translate into making responsible use of its size and scale to impact industry standards and influence better practices in the company's supply chain (Maersk Group, 2015a). Correspondingly, the Sustainability Strategy defined as one of the key goals to *unlock* social growth. To do so, the Strategy focuses, on one hand, to increase the number of skilled workers to fulfill the projected demand of job creation, particularly for developing countries (Maersk Group, 2015b). On the other hand, it focuses on expanding trade and access to global markets to stimulate economic development and its inherent benefits (Maersk Group, 2015b).

Furthermore, *unlocking* social growth is expected to bring specific benefits for Maersk Line. The main benefits for the company include increasing its share in the growing trade market, improving its processes and cost efficiency, and generating profitable niche markets (Maersk Group, 2015b). For these reasons, it is important to realize that the incorporation of the Triple E will help the firm achieve these goals as well as to address the risks of negative social impact determined in the Sustainability Strategy<sup>59</sup>.

To begin with, the Triple E benefits from the latest technologies on board and on shore. For example, the containership is monitored with 2,800 sensors which transmit real time information to the fleet's control center (Maersk Line, 2014a). As a result, Maersk Line has a set of trained workers, both as part of the vessel's crew at sea, and as part of the company's global monitoring center in Mumbai, India (Maersk Group, 2015a; Maersk Line, 2014a). Also, if the projected growth of the trade market materializes, this

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<sup>59</sup> The Sustainability Strategy determined ten categories with the highest risk of negative social or environmental impact which include: assets under construction, manning and crewing agencies, security companies, chemicals and paint, cleaning and canteen services, classification and certification, warehousing and distribution, promotional items, logistics and transportation, and raw materials (Maersk Group, 2015b).

will increase the creation of specialized jobs for the incorporation of additional Triple E containerships.

With these activities, Maersk Line is focusing on increasing the number of skilled workers and improving its processes, both part of the Group's social goals. Additionally, the Triple E represents an increase of carrying capacity that can be linked to the company's goal of growing its share in the trade market and developing profitable niche markets. Furthermore, Maersk Group has set safety goals that are reported annually in terms of fatalities. Even when the number of deaths reported for Maersk Line has been only one between the years 2013 to 2015 (Maersk Group, 2015a), it is possible to understand employee safety as a major driver behind the company's decisions.

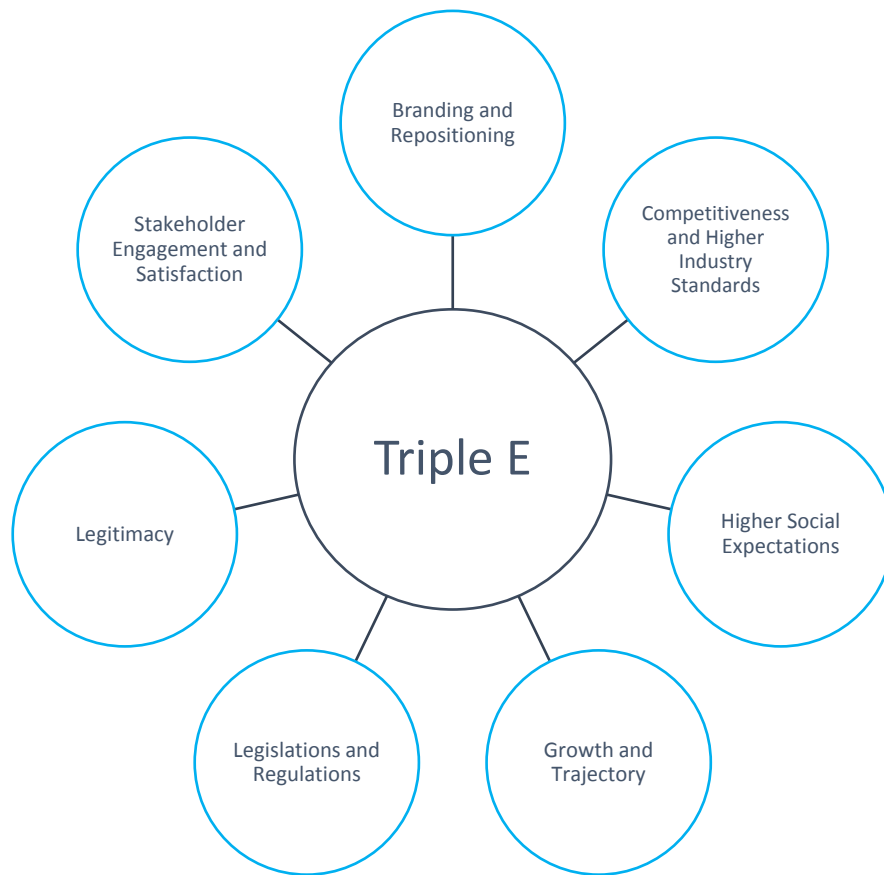
Given these reasons, it is possible to determine four major drivers behind the social engagement of Maersk Line: safety, job creation, increase the company's share of the trade market, and development of profitable niche markets. Therefore, the Triple E can be seen as part of the ways in which the company will fulfill these driving factors. In other words, social engagement and proactive social policies can be understood as part of the drivers behind the incorporation of the containership to the fleet.

### **4.3 The external drivers behind the Triple E**

Maersk Line operates in a global scale which means that its activities can be affected by external and dynamic factors such as weather conditions, oil prices, market variations, safety and regional socio-economic stability. These factors are of great relevance because they can have direct and indirect influence in Maersk Line's business success. However, the company has acknowledged the benefits SCSR for addressing them and launched the Sustainability Strategy. Likewise, these factors can be addressed through strategic decisions that strengthen the company's stability in the market. Such is the case of the Triple E. Therefore, this section analyses the external drivers behind the incorporation of the flagship to Maersk Line's fleet. This will help the reader understand the incorporation of the vessel as a strategic decision linked to the company's Sustainability Strategy.

Additionally, the implementation of SCSR is particularly relevant for Maersk Group in order to be able to materialize the goals established in the Sustainability Strategy. Therefore, the following section evaluates the seven external drivers behind the incorporation of the Triple E to the fleet as part of the company's new business direction

(figure 11). With this analysis, the reader will understand the driving forces behind the incorporation of the containership to Maersk Line's fleet.



**Figure 11. External Drivers behind the Triple E**

Developed by the author of the thesis.

#### **4.3.1 Branding and Repositioning**

In the case of Maersk Line, the company has made evident branding efforts in the last decades to reposition itself as a model of sustainable practices within the industry. The firm has focused principally on becoming a *good corporate citizen* with a strong approach to environmental and social aspects. To do so, the company took strategic steps towards the repositioning of the firm.

For example, in 2006 Maersk Line relocated itself in the industry with the introduction of the E-Class containerships which were equipped with the Waste-Heat Recovery

System<sup>60</sup> (Han, 2010). Correspondingly, this was reinforced with the introduction of new operational strategies such as Maersk Line's route planning program, the Voyage Efficiency System (VES) (Han, 2010; Lai et al., 2011). However, it was not until 2011 with the order of 20 Triple E's that the company would ultimately reposition itself.

The Triple E was not only the biggest containership in the world at the time of its launch, but it represented Maersk Group's efforts to become a model as a *good corporate citizen*. On one hand, it addressed environmental concerns by improving the overall efficiency of the fleet. On the other hand, it focused on achieving economic and social growth. Moreover, the vessel was later accompanied with the Sustainability Strategy which became the company's new business direction since 2013.

As expected, the Triple E became the flagship for Maersk Line and for the Sustainability Strategy. However, this was the result of the company's strategic planning which begun in 2009 with the objective of reducing the Group's environmental impact (Maersk Group, 2015b). Given the decision of taking the company towards a new business direction, it is clear that Maersk Group had the intention of repositioning itself in the industry once more<sup>61</sup>. With this in mind, it is possible to observe that giving Maersk Line a new competitive approach, accompanied with the biggest and most environmentally oriented vessel in the world, was part of a branding and repositioning strategy. In conclusion, it is possible to understand that these concepts were major drivers behind the incorporation of the Triple E to the fleet.

#### **4.3.2 Competitiveness and Higher Industry Standards**

For Maersk Line, as for any CSL, outsmarting the competition is of utter relevance. To do so, the company has focused on innovating the way in which they approach business. This benchmark strategy can be seen in the way in which the firm has maximized the benefits of the "hub and spoke" network configuration (Fremont, 2007). Additionally, during the last decades this approach to competition has been followed by a series of

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<sup>60</sup> Maersk Line begun implementing the Waste-Heat Recovery System as early as 1988. However, it was until 2006 with the E-Class containerships, such as the Emma Maersk, that the company received a brand recognition for its effort to reduce CO<sub>2</sub> emissions by being the only CSL in the world to instal the system on a large scale (Han, 2010).

<sup>61</sup> Historically, Maersk Line has repositioned itself several times as one of the most relevant CSL's in the world. In this sense, Freemont (2007) provides an accurate account of the company's history in what he calls "The Case of Maersk".

strategic decisions such as the Sustainability Strategy. This new business direction launched in 2013, has as a main goal to *unlock growth* with one of its main motivations to improve competitiveness (Maersk Group, 2015b). This of course, can be understood as outgrowing the competition by gaining a bigger share of the market.

To fulfill the company's expansion goal and to gain competitive advantages, the Sustainability Strategy was reinforced with the introduction of the Triple-E to the fleet. As mentioned before, the containership represents bigger carrying capacity and the reduction of fuel consumption which translates into a decrease of cost per TEU moved. Also, the vessel can be considered as a major factor to improve the environmental performance of Maersk Line which ultimately results in a reduction of the polluting emissions per TEU moved (usually expressed in g CO<sub>2</sub>/TEU km).

These characteristics result in a more competitive fleet for the Asia-Europe Route, which is the busiest trade lane in the world. For these reasons, it can be understood that the competitive benefits the Triple E would bring to Maersk Line were major drivers behind its incorporation to the fleet.

### **4.3.3 Higher Social Expectations**

Maersk Group responded to social expectations with a new environmental direction: the Sustainability Strategy. The strategy came as the result of the consultation with the key stakeholders. This engagement focused on determining the social expectations which became the guidelines for the new business direction of the company. The results pushed the company towards recovering used shipping resources and maximizing operations. For example, the company's policies entail the sale of excess equipment and facilities, used shipping materials such as packaging, and the collection of used oil for sale (Lai et al., 2011). Additionally, the Group has a corporate policy on vessel recycling<sup>62</sup> to guarantee that recycled ships are free from oil spillage, toxic water discharge, and any negative impact from the disposal of shipping materials (Lai et al., 2011). Also, the Triple E responds to the corporate policy that defines that all new vessels have to be designed and built to ensure the highest recycling ratio possible (Lai et al., 2011).

Given the higher social expectations as well as the influence of social media, it is understandable that proactive CSLs focus on improving their operations. In the case of Maersk Group, the company responded to the social expectations by addressing the

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<sup>62</sup> The procedures include a radiation survey and audit for hazardous materials.

concerns of its key stakeholders through the consultation that gave way to the Sustainability Strategy. This was complemented with the Triple E which would help Maersk Line address this social expectation. Particularly, the specific stakeholder expectation of moving from relative efficiency improvements to absolute reduction of CO<sub>2</sub> emissions (Maersk Group, 2016b). In other words, then it is possible to observe that meeting higher social expectations played a major role behind the incorporation of the Triple E.

#### **4.3.4 Growth and Trajectory**

In the case of Maersk Group, through APM Terminals the company has created a monopoly<sup>63</sup> of 31 ports which provides a strategic position from its hubs, and in turn results in growth in its share in the market (Fremont, 2007). Likewise, Maersk Line has designed specific strategies to increase its market share and outsmart its competition. Such is the case of the Voyage Efficiency System (VES) which identifies the most efficient route to pursue a "just in time" steady running strategy (Lai et al., 2011). Additionally, with the projected growth of the CSI, the company is following the rationale behind designing bigger ships and terminals (Altena, 2013) while expanding the fleet (Wu & Lin, 2015). This is the case of the Triple E within Maersk Line.

As for many CSLs, for Maersk Line the decision of increasing its carrying capacity through the Triple E reflects its interest to capture additional market share (Tran & Haasis, 2015). Each of the 20 Triple E's ordered by the company translate into 18,000 additional TEUs per vessel. That is a total of 360,000 TEUs of additional capacity for the fleet in just a period of two years<sup>64</sup>. Also, these containerships will be used in the busiest global trade lane (Asia-Europe) which clearly reveals the company's intention to grow in the markets that take part in this particular trade route.

Given these reasons, it is possible to understand the incorporation of the Triple E as an effect of Maersk Line's intention to grow. Not only that, but the vessels gave the fleet

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<sup>63</sup> It is important to notice that the ports are operated by APM Terminals and not directly by Maersk Line. However, APM Terminals is part of Maersk Group. This way, the Group does not depend on external companies to handle its sea-to-land operations. This means that Maersk Line will achieve better logistics and efficiency through less hotelling time.

<sup>64</sup> The 20 Triple E's entered into service between 2013 and 2015. This will be reviewed in section 4.3 The Triple E.

additional carrying capacity which can be seen as an expected increase in the market share. Additionally, the containership can help the company reinforce its historical trajectory of environmental policies and corporate responsibility.

#### **4.3.5 Legislations and Regulations**

When it comes to the subject at hand, it is clear that Maersk Line has a strong focus on compliance and on pushing forward better and more responsible policies in the industry. This can be observed in the company's participation in sector working groups such as the CCWG, the Global Compact LEAD Group, the World Ocean Council, the Maritime Anti-Corruption Network, the World Economic Forum, the UN High-level Advisory Group on Sustainable Transport, among others (Maersk Group, 2015a). Additionally, Maersk Line has ensured compliance with the regional regulations of the English Channel and the North Sea as well as the Sulphur Emissions Control Area (SECA) in the Baltic Sea (Han, 2010).

Correspondingly, it is possible to consider the Triple E as a response to the current trend of more stringent environmental regulations and higher standards. Furthermore, with its focus on better environmental performance and efficiency, as well as its relevance as a flagship of the company and its stakeholders, the Triple E vessels are expected to comply with any legal environment in which they operate. Furthermore, high quality vessels, such as the Triple E, are less likely to change registration and flag-out (Fan et al., 2014). Therefore, it is possible to conclude that international and local legislation and regulation were major factors behind the decision of incorporating the flagship to the fleet.

#### **4.3.6 Legitimacy**

Based on its historical reputation and actual activities, it is clear that Maersk Group is concerned of maintaining its legitimacy worldwide. To do so, the firm is actively participating in accreditations and is constantly reporting its numbers. As mentioned at the beginning of section 4, the Group participates in several environmental certifications and management systems as well as sector working groups. Through these activities, the company endorses its operations with regards to environmental, social, and safety aspects. As a result, the certifications, in combination with the annual "Sustainability Reports", provide Maersk Group with constant ways to improve its legitimacy. However,

Maersk Line also benefits from strategic decisions that encompass most of the aspects that translate into legitimacy. Such is the case of the Triple E.

In a similar way as the Sustainability Strategy, the Triple E is the result of years of strategic planning that included the engagement of stakeholders. As a consequence, the vessel represents a way in which the Group is addressing its goals while at the same time it is helping materialize two of the main stakeholder's expectations mentioned previously: 1) move from relative efficiency improvements to absolute reduction of CO<sub>2</sub> emissions, and; 2) have a better role in addressing barriers to trade. Therefore, it is possible to observe that to increase the stakeholder's trust and the Group's social acceptance were important factors that influenced the decision of adding the Triple E to Maersk Line's fleet.

#### **4.3.7 Stakeholder Engagement and Satisfaction**

In the case of Maersk Group, the design of the Sustainability Strategy included the consultation of 38 key stakeholders<sup>65</sup> from the academic, social, and governmental sectors as well as the Group's investors (Maersk Group, 2016b). The results gave the firm an understanding of the stakeholders' expectations and helped determine the strategic steps to fulfill them. As a matter of fact, this particular engagement defined the four main stakeholder expectations that latter became the foundations of the Group's new strategic direction.

To address the social and partner expectations, Maersk Group complemented the Sustainability Strategy with the incorporation of the Triple E vessels to the fleet. As expected, the company focused on two of the key expectations defined by the consultation for the design of these new containerships:

1. The Group should move from relative efficiency improvements to absolute reduction of CO<sub>2</sub> emissions.
2. The Group could have a better role in addressing barriers to trade.

(Maersk Group, 2016b)

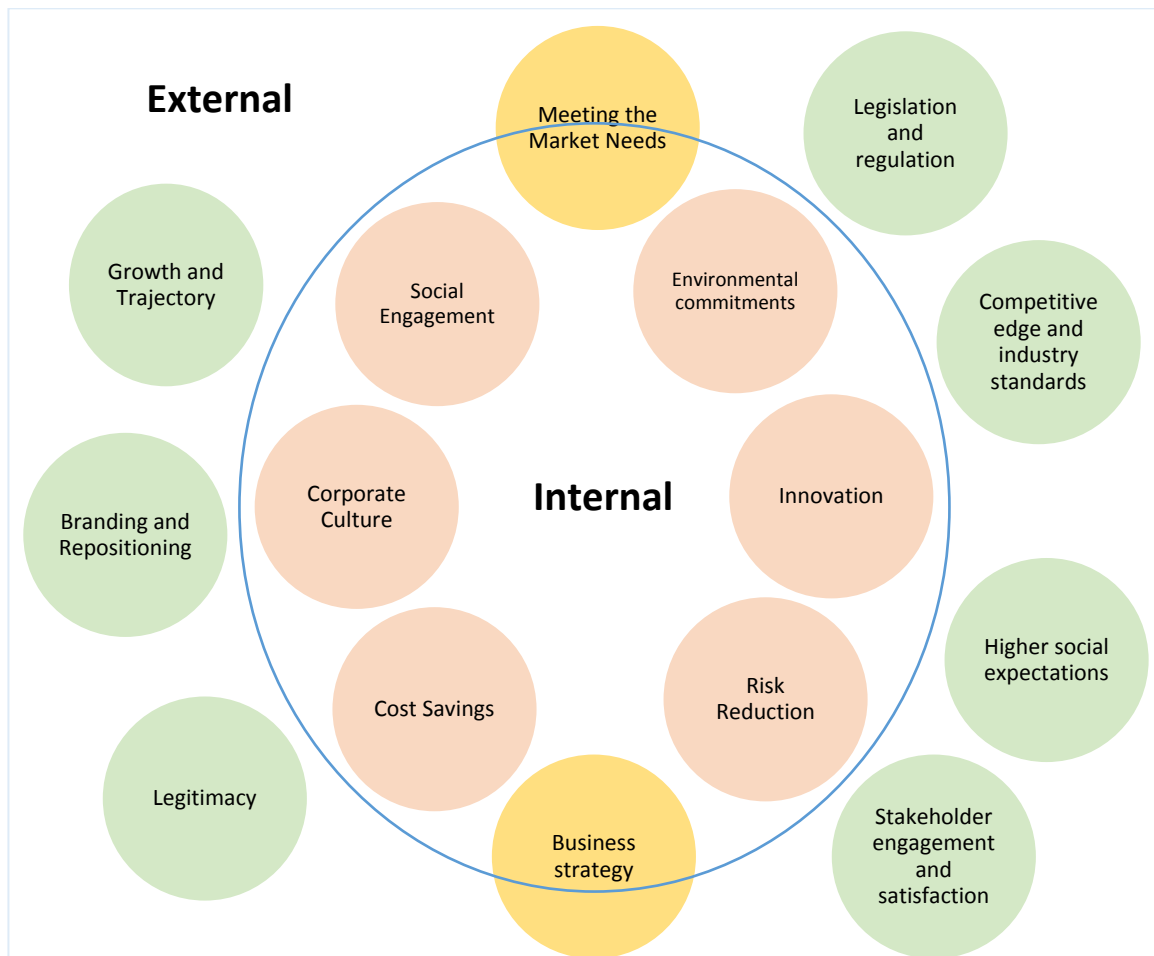
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<sup>65</sup> Additionally, Maersk Line practices shipper-company cooperation with regards to environmental concerns. For example, the company has collaborative activities with stakeholders in the eco-design of cargo handling and shipments that focus on involving customers in cleaner delivery and includes aspects such as the enforcement of programs for recycling, vehicle idling, packaging waste recollection, and use of green packing materials (Lai et al., 2011).

As a result, the Triple E was designed with the main objective of reducing the environmental impact of the company. Consequently, its incorporation to the Asia-Europe route is helping decrease the fleet's overall emissions. Furthermore, the extra carrying capacity added by the Triple E vessels can be seen as an effort to have a better role to tackle the barriers to trade. In other words, to increase the company's market share while improving the quality of freight services through sustainable practices. With this in mind, it is possible to understand that the fulfillment of the stakeholders' expectations was a major factor behind the decision of incorporating the Triple E to the fleet.

### ***Chapter Summary***

In section 4.2 the factors that influenced the decision of incorporating the Triple E to the fleet were categorized and scrutinized. As a result, it is possible to discern the internal and external drivers behind the Triple E and their relevance to Maersk Line's SCSR objectives. Additionally, through the analysis it is clear that all of these factors are linked to the implementation of the company's SCSR, the Sustainability Strategy. Furthermore, when the drivers are evaluated from a holistic perspective it is possible to conclude that the incorporation of the Triple E to the fleet was a calculated decision. Correspondingly, this can be understood as a strategic step towards repositioning the firm as one of the most relevant Container Shipping Liners in the industry. This holistic approach can be better observed with the help of figure 12 which shows all the drivers behind the incorporation of the Triple E to the fleet.



**Figure 12. The Internal and External Drivers of the Triple E**

Developed by the author of this thesis.

*Notes:* "Meeting the Market Needs" and "Business Strategy" are defined as both, internal and external factors. Therefore, in the graph they are depicted in a different color and in the middle of the graph between the internal and external drivers.

## 4.4 The Triple E

In 2013, Maersk Line launched the Triple E as the biggest and most optimized containership in the world of that time (Maersk Line, 2015b). Furthermore, its design was entirely based on innovation which resulted in a maximized Economy of Scale, Energy Efficiency, and Environmental Performance (Maersk Line, 2015c). The focus on these concepts gave the flagship its name, three E's hence Triple E. With this in mind, this section will explore the environmental relevance of the containership from three perspectives: technical features, operational changes, and strategic market-based advantages. The analysis will also scrutinize its limitations to determine its current and future relevance for the Container Shipping Industry.

As mentioned before, Maersk Line is guided by a strong focus on maximizing its environmental and energy efficiency. The results could be already be seen in 2014 when its fleet achieved 10% higher efficiency than the industry average (Maersk Line, 2014a). To continue with this trend, the Sustainability Strategy determined that the company should *lead the way* through low impact shipping (Maersk Line, 2014a). This was supported with the incorporation of 20 Triple E's to the Asia-Europe trade lane between 2013 and 2015 (see Appendix 2 to review the list of Triple E vessels in service).

### 4.4.1 Technological Features

The design of the Triple E is based on the latest technologies with the aim of maximizing its efficiency potential. In this sense, the Triple E benefits from a diverse technological range, from Information Technologies (ITs) to innovative hydrodynamic hull design. The synergy between these clean and high tech features gives the containership a solid environmental performance.

To begin with, the Triple E was specifically designed for slow steaming<sup>66</sup> (Altena, 2013). In this sense, the containership is equipped with a twin propeller system<sup>67</sup> which achieves optimal speed and fuel efficiency through operational adjustments according to the actual carrying load and overall conditions (Tran & Haasis, 2015). Not only that, but

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<sup>66</sup> Slow Steaming and port operations will be reviewed in section 4.3.2 Operational Changes.

<sup>67</sup> This system provides propulsion from two engines and two propellers (Maersk Line, 2016a). The use of a twin propeller system is linked to an improvement of 4% energy savings in comparison to the one-engine/one-propeller system (Ship Technology, 2016). However, Marine Insight mentions that the energy savings are of 10% by using this twin system (Marine Insight, 2015).

the system operates with two slow running super-long-stroke engines that help improve the fuel efficiency and reduce CO<sub>2</sub> emissions by approximately 50% in comparison to the industry average in the same trade lane (Maersk Line, 2016a). In this sense, each 910 ton engine provides 43,000 HP for each propeller (Ship Technology, 2016) which translates into a total power of 30,000 kW per engine (Marine Insight, 2015).

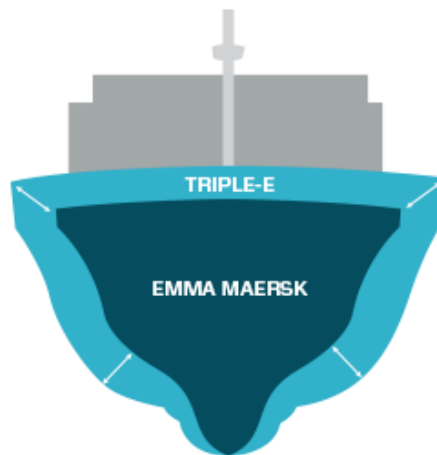
Additionally, the Triple E is equipped with a waste-heat recovery system that helps save up to 10% of energy from the main engine power (Maersk Line, 2016d). This system recycles the energy from the hot exhaust emissions that adds extra energy for propulsion which results in "an unmatched energy efficient class of vessel" (Maersk Line, 2016d, para. 4). Given these points, the Triple E vessels have an energy efficiency above average and a better environmental performance than the similar ships in the Asia Europe trade lane (Maersk Line, 2016d).

Moreover, the Triple E was specifically designed to increase the carrying capacity of the fleet. Consequently, its innovative hull design has a twin island<sup>68</sup> U-shape instead of the traditional one island V-shape hull used for the previous Emma Maersk vessels (figure 13) (Altena, 2013; Maersk Line, 2016a, 2016c). Equally important is the fact that the 165,000 ton vessel is 400 m long and 59 m wide, with a draught of 15.5 m and a height above baseline of 73 m (Maersk Line, 2016a; Ship Technology, 2016) which made it the longest and widest containership at the time of its launch in 2013 (Maersk Line, 2015c).

Also, its engines are located further back than other containerships which permits additional slot space and hence improves the economies of scale of the ship (Maersk Line, 2016a). Likewise, the bridge and accommodation areas were moved forward to provide higher accommodation of containers (Ship Technology, 2016). The new hull shape in combination with the relocation of the engines, the navigation bridge, and accommodations resulted in an additional extra row of containers, passing from 22 in the Emma Maersk to 23 rows in the Triple E (Ship Technology, 2016). In other words, the innovation in the hull design and the increase in size provided the Triple E with an extended carrying capacity of up to 18,000 TEUs, which represents a 16% additional slot space than the Emma Maersk vessels (figure 13), that is 2,500 TEUs more than the next biggest ship in the fleet (Maersk Line, 2015c).

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<sup>68</sup> The twin island hull design is used for ships with twin propeller systems, such as the Triple E.



**Figure 13. Triple E hull design in comparison to the Emma Maersk**

Source: (Maersk Line, 2016c)

Furthermore, the Triple E is equipped with 2,800 sensors hardwired into the main control system (Maersk Line, 2014a). In fact, in the engine room alone there are 200 sensors that measure the temperature, pressure, and operation of the system (Maersk Line, 2014a). These sensors provide the company with up to 30 TB<sup>69</sup> of data per month. This information is transmitted directly to the Maersk Line Global Voyage Center from where the fleet is monitored nonstop, 24 hours a day (Maersk Line, 2014a). This monitoring allows the company to maximize the use of ITs and live-data for improving the environmental performance of the fleet while achieving cost savings, all with real-time decisions.

Additionally, the design of the Triple E was focused on creating a *recyclable ship*. To do so, Maersk Line developed a "Cradle-to-Cradle Passport" to list, describe, and indicate where all the materials used for building of the ship are located as well as describing how to correctly disassemble, recycle and dispose them (Maersk Line, 2016d). This way, the constituents of the ship are numbered while at the same time they are demarked as high and low grade steel, copper wiring, hazardous materials, and waste (C2C-Centre, 2016). With this, the Triple E follows the concept of "Total Vessel Recycling" which eliminates dangerous and polluting ship disposal (C2C-Centre, 2016; Maersk Line, 2016d).

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<sup>69</sup> TB stands for Terabyte. In this case, 30 TB corresponds to 30,000 GB.

#### 4.4.2 Operational Changes

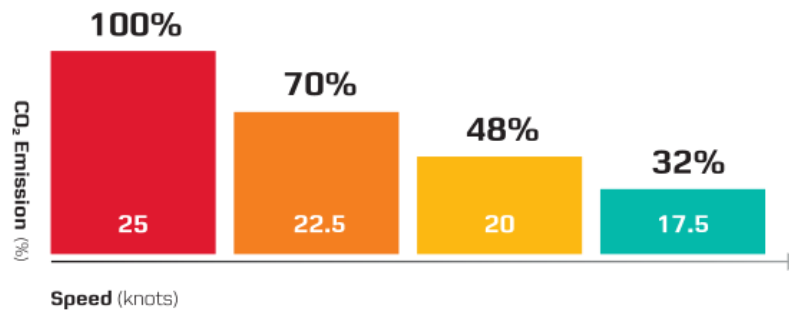
Operational changes can be achieved through real time monitoring of speed, route, wind speed and direction, rudder angle, engine rotation, and weather and sea conditions (Han, 2010). To do so, Maersk Line created the Global Voyage Center which monitors the fleet at all time (Maersk Line, 2014a). Through this monitoring, the company is able to make real time decisions to achieve the most efficient operations. Correspondingly, the Triple E is monitored through 2,800 sensors which makes it the most monitored vessel of the fleet.

The monitoring is reinforced with the use of innovative operational strategies to make the Triple E and the fleet as efficient as possible. This is done with Maersk Line's route planning program, the Voyage Efficiency System (VES) (Han, 2010; Lai et al., 2011). The VES focuses on keeping the engine load at a minimum which in turn translates into better fuel efficiency and less emissions (Han, 2010). This way, the Triple E is able to achieve maximum efficiency in its operations with use of real live monitoring and the use of decision making tools as the VES.

Likewise, the combination of the new hull design with a new approach to speed on deep sea results on lower emissions. This is complemented with bigger propellers that operate at lower revolutions which translates into a decrease of propulsive power required (Maersk Line, 2016c). This is of outmost relevance because lower speed translates into less fuel consumption and reduction of CO<sub>2</sub> emissions<sup>70</sup> (figure 14) (Maersk Line, 2016c). With this in mind, the usual speed of the Triple E in open waters is of approximately 20 knots (Maersk Group, 2016a).

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<sup>70</sup> The use of engines and propellers can be maximized through the Characteristic Curves of each equipment that provides its most efficient rpm angular velocity. This way, CSLs are able to maximize their operations with an analysis of the characteristic curves of each of its engines.



**Figure 14. Speed vs CO<sub>2</sub> emissions for the Triple E**

Source: (Maersk Line, 2016c)

The Triple E operates in the busiest and most technologically advanced trading lane, the Asia-Europe route. The usual time for the Triple E to get from Shanghai to the Rotterdam is of 23 days (Maersk Group, 2016a; Maersk Line, 2016c). The Triple E makes usual stops in the world's biggest and most advanced ports such as Shanghai, Ning-bo, Xiamen, Yantian, Tanjung Pelepas and Hong Kong (Maersk Group, 2016a; Ship Technology, 2016; World Shipping Council, 2016c). While these ports are prepared to handle the size of the Triple E, other ports in the route are not big enough for the containership. However, the launch of the Triple E triggered a series of investments in ports around Europe to be able to receive this size of vessels (Neate, 2013).

Correspondingly, the Triple E is equipped with an innovative system of ballast water distribution which provides stability in the loading and unloading process. Through a computerized system, the Triple E is able to distribute water in several tanks to maintain an even keel during the loading and unloading process (Maersk Group, 2016a). The system is of outmost relevance because during this process the weight distribution of the containership is changing.

As any new containership, the Triple E is equipped with an Automatic Identification System (AIS). The AIS is used for improving the safe navigation of ships worldwide. To do so, the AIS provides information to Vessels Traffic Services<sup>71</sup> (VST) as well as ship-to-ship information such as position, speed, course, heading, rate of turn, ship status, voyage information, and additional safety-related messages (Lynch, 2004). This is particularly relevant for the operations of the Triple E because it became the biggest containership to transit the Suez Canal and the most congested shipping lanes, such as

<sup>71</sup> Vessel Traffic Services " provide active monitoring and navigational advice for vessels in particularly confined and busy waterways" (US Department of Homeland Security, 2014).

the Malacca Strait (Maersk Group, 2016a). Also, due to the size of the Triple E, the use of AIS is of outmost relevance in its day to day operations in order to be able to maintain its safety as well as the safety of vessels around it (Maersk Group, 2016a). Moreover, the Triple E's on board AIS gives the captain a clear panorama of the vessels ahead and permits him to position the containership in the fastest lane (Maersk Group, 2016a).

Furthermore, due to its cargo value, the Triple E operates in constant communication with regional security forces during its journey, such as NATO<sup>72</sup>. This is particularly relevant during its transit through the Gulf of Aden which saw an increase of Somali piracy attacks, mainly in 2008 (Maersk Group, 2016a). Additionally, the vessel's crew is trained in antipiracy precautionary measures (Maersk Group, 2016a).

With the Triple E, Maersk Line addresses the human element of its day to day operations by providing a safe and friendly working environment for the crew. For example, the containership includes a cinema, a gym, a recreational area, and a kitchen operated by professional chefs (Maersk Group, 2016a). This is of great relevance from a SCSR perspective, because these kind of policies help create a sense of community that translates into motivation, teamwork and productivity (Lantos, 2001).

#### **4.4.3 Strategic market-based decision**

The Triple E responds to the company's strategic goal to *unlock growth* in the three strategic areas set by the Sustainability Strategy. With regards to the *environment*, the Triple E has a design focused on improving its efficiency and a cutting edge environmental performance. With this, the Triple E is not only improving the fleet's overall performance but it is also reducing the operational costs by decreasing its fuel consumption per TEU moved (Maersk Line, 2014b). Also, thanks to its increased capacity, the Triple E will call fewer times in each port which translates into fewer unloading/loading working hours which in turn reduces the overall operational costs of the fleet in the long term.

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<sup>72</sup> The North Atlantic Treaty Organization (NATO) has kept a constant presence in the Gulf of Aden, off the Horn of Africa and in the Indian Ocean since 2008 as a result of the increase in the number of piracy attacks to international vessels (NATO, 2016). As a company from Denmark, one of NATO's members, Maersk Line relies on the security provided by the Organization's security forces to continue its operations in a safe and constant manner.

When it comes to the *economic* area, the Triple E is focused on maximizing the concept of economy of scale. By becoming the biggest containership in the world and with a focus on efficiency, the Triple E is able to reduce the moving costs per TEU (Maersk Line, 2014b). This of course results in an overall reduction of costs for the fleet as well as better freight prices for the company's customers. Correspondingly, this helps Maersk Line to reposition itself in the market and outsmart the competition.

With regards to the *social* area, the Triple E addresses the creation of jobs and development as defined by the Sustainability Strategy. This also responds to the stakeholders' expectations to address the systemic barriers to trade. Furthermore, the launch of the Triple E can be linked to the creation of specialized jobs in the following areas:

- a) Design and construction of the ship. This includes the collaboration with the South Korean company Daewoo Shipbuilding and Marine Engineering.
- b) Maersk Group's and Maersk Line's specialized working unit's directly and indirectly linked to the Triple E.
- c) The specialized crew of Triple E as well as its direct working units within Maersk Line. This includes the global monitoring center in Mumbai, India.
- d) The design and construction of bigger and more advanced container terminals in the Asia Europe Route<sup>73</sup>.
- e) Specialized jobs for the Vessels Traffic Services in ports, canals and straits.
- f) Specialized jobs in container logistics, IT, and advanced technology companies of the sector.

Given these points, it can be said that the Triple E became a factor behind market changes in the CSI. For example, its launch triggered investments for bigger and more advanced container terminals (Neate, 2013). Also, the design of bigger containerships, such as the Triple E, pushed forward the expansion of the Panama Canal. Furthermore, the Triple E is not only triggering the construction of new terminals, but it is also reshaping the transit of freight cargo through historical ports and canals (Neate, 2013).

Additionally, the Triple E maximizes the economy of scale in Maersk Line's activities and reduces its operational costs. This way, the company is able to achieve a competitive advantage over its competitors. With this in mind, it is no surprise that the company

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<sup>73</sup> The launch of the Triple E triggered a series of investments to increase the size and technological capabilities of container terminals, particularly in Asia and Europe (Neate, 2013).

utilizes the Triple E in the Asia-Europe route (AE10) (figure 15) which represents 25% of the company's business (Maersk Line, 2014b). In fact, Maersk Line is already the CSL with the largest market share in the Asia- Europe route with 20% of the container cargo in the Asia-Europe direction and 18% in the Europe-Asia direction (Maersk Line, 2014b). Then, it is clear that the Triple E was the result of a strategic market-based decision that encompassed internal and external factors.



**Figure 15. The Asia-Europe route of the Triple E**

Source: (Maersk Line, 2016c)

Note: The figure shows the actual port calls of the Triple E. These are: "Busan (from April 2013) and Kwangyang (South Korea); Hong Kong, Ningbo, Shanghai and Yantian (China); Singapore; Tanjung Pelepas (Malaysia); Port Tangiers (Morocco); Rotterdam (the Netherlands); Bremerhaven (Germany); Gdansk (Poland); Aarhus (Denmark); and Gothenburg (Sweden)." (Maersk Line, 2014b).

## 5 Final Discussion

The aim of this thesis is to answer four research questions: 1) Why did Maersk Group launch the Sustainability Strategy 2014-2018?; 2) Why was the Triple E incorporated to Maersk Line's fleet?; 3) How has the Triple E advanced Maersk Group's efforts to fulfill its Strategic Corporate Social Responsibility goals?; and, 4) How are Maersk Group's Strategic Corporate Social Responsibility and the Triple E influencing the industry to improve its environmental performance?

When reviewing Figure 1 the trend for bigger ships seems to follow the maximization of the economies of scale as main objective. This would seem accurate because historically the benefits of reducing costs have been considered the main objective behind CSLs' business strategies (Levinson, 2006; Rodrigue, 2016; Tran & Haasis, 2015). However, section 2.3 Green Shipping Practices shows that the business strategies in the CSI have evolved and now consider sustainability aspects as well. What is interesting is that the literature seems to indicate that there is still a gap between Green Shipping Practices (GSPs) and a holistic sustainability approach to business strategies in the CSI. This highlights a potential opportunity for the future implementation of SCSR for this particular industry.

The reasons behind more sustainable practices in the CSI can be linked to more stringent regulations (Lai et al., 2011; Wuisan et al., 2012), higher industry standards (BSR, 2013, 2015; Coady et al., 2013), and an increased complexity in maritime freight operations (Kitada & Ölcer, 2015; Schøyen & Bråthen, 2015). These changes have pushed CSLs towards new business strategies which has resulted in the implementation of CSR by some of them. In fact, the literature indicates that the drivers behind CSR (Hart & Milstein, 2003; Lozano, 2015; Tutore, 2013) can also be observed when it is implemented in the CSI context (see section 2.4 The rationale behind SCSR and its potential for the Container Shipping Industry). With this in mind, this section answers the research questions and compares the findings to the most relevant literature on the subject.

### ***RQ1: Why did Maersk Group launch the Sustainability Strategy 2014-2018?***

The findings show that the Sustainability Strategy was the result of Maersk Group's search for better ways of addressing the sustainability challenges of the 21<sup>st</sup> century.

Also, the Strategy responds to a consultation of 38 key stakeholders which gave the firm an understanding of their expectations. Furthermore, the findings show that the design of the Sustainability Strategy corresponds to four guiding principles: 1) proactive leadership and corporate culture; 2) ethical responsibilities; 3) stakeholders' expectations, and; 4) competitiveness. In fact, these principles seem to guide the company's overall business strategy through the Sustainability Governance Framework (see Figure 6).

These principles are common in the literature and are mentioned as motivators behind SCSR (see section 2.4 The rationale behind SCSR and its potential for the Container Shipping Industry). However, the existing CSR literature focused on the CSI context (Coady et al., 2013; Lai et al., 2011) do not seem to give these principles much importance and falls short on the definition of SCSR. For this particular case study, and considering the existing literature, one would expect the Sustainability Strategy and Sustainability Reports to have a stronger focus on regulatory compliance and Institutional/Governmental pressure when in fact they have a stronger focus on the compliance of the company's own standards and policies. This should not be a surprise considering that the findings set Maersk Group in the third level of Carroll's Pyramid of CSR, in other words, above the legal responsibilities. This, in my opinion, permits the company to have a stronger focus on setting its own interests, standards and policies rather than the compliance of local and international regulations, which one can assume is in order.

### ***RQ2: Why was the Triple E incorporated to Maersk Line's fleet?***

Eight internal and seven external drivers were identified as having influenced the decision of incorporating the Triple E to Maersk Line's fleet. The drivers were prioritized with help from Maersk Group's top executives (at director level) and the order was supported with information from secondary sources. The prioritization of the internal drivers (Figure 8) demonstrates that the search for innovation was the main factor behind the incorporation of the Triple E to the fleet. This is particularly relevant from a SCSR perspective, because the literature has linked innovation to the repositioning of the brand (Hart & Milstein, 2003), achieving better competitive opportunities (Lozano, 2015; Poulsen et al., 2016), and improving the environmental performance of CSLs (Lun et al., 2015). The results reinforce the literature that links Maersk Line's growth and success to innovation (see (Coady et al., 2013; Fremont, 2007; Han, 2010). This comes to no

surprise considering Maersk Line's history of innovation, first with the hub and spoke strategy and latter with the Emma Maersk (i.e. the E-Class containerships).

Likewise, the findings show that the company's repositioning in the market as well as the competitiveness benefits brought by the Triple E were the main external drivers behind its incorporation (Figure 11). This is consistent with the literature that highlights the benefits of constant repositioning and branding in shipping (Arat, 2011; Font et al., 2016) as well as the relevance of maintaining a competitive edge in this industry (Arat, 2011; Lai et al., 2011; Mansouri et al., 2015). It is relevant to mention that the order of the external drivers is not as significant as in the internal drivers where innovation was clearly the main factor behind the decision.

Even when the findings point at specific internal and external drivers behind the decision, it is necessary to remember that the concept of the Triple E is strongly focused on energy efficiency and enhanced environmental performance (see section 4.4 The Triple E). Then, it is clear that improving the environmental performance of the fleet with a particular focus on the CO<sub>2</sub> emissions reduction goal of the Sustainability Strategy was an important factor behind the incorporation of the Triple E. The findings are consistent with the strategies for improving the environmental performance of CSLs mentioned in the literature (e.g. (Altena, 2013; Coady et al., 2013; Han, 2010)). Also, it follows the rationale behind GSPs and SCSR in the CSI found in the literature (Han, 2010; Lai et al., 2011; Lun et al., 2015). Furthermore, the findings and the literature indicate that the benefits of sustainable practices in the CSI not only refer to environmental performance but also to economic and social benefits (Coady et al., 2013; Lun et al., 2015; Pike et al., 2011) which reinforces the potential benefits of SCSR for this industry.

The internal and external main drivers behind the incorporation of the Triple E as well as its environmental and energy efficiency focus could be expected considering Maersk Line's history of innovation and constant repositioning in the market as well as its search for competitiveness. Furthermore, Maersk Line's new focus on digitalization, announced with the structural changes of Maersk Group in late 2016, is consistent with the internal and external drivers identified. In general terms, it seems that with the Triple E, Maersk Line has repositioned itself as one of the most environmentally friendly and energy efficient oriented CSL in the world.

The findings also show that the Triple E falls into what the literature defines as the size race in the CSI (Tran & Haasis, 2015; Wu & Lin, 2015). In my opinion, this is particularly worrying because the current financial crisis of the CSI was caused by the low freight rates<sup>74</sup> linked to the overcapacity<sup>75</sup> of the global fleet (e.g. (Chiu, 2014; Journal of Commerce, 2016)). The most recent example of the effects of the crisis is the bankruptcy of Hanjin Shipping<sup>76</sup> in August 2016 which was the result of its inability to compete with the low prices of its competitors (Reuters, 2016). Then, if low freight prices are caused by an overcapacity of the fleet, this raises questions with regards to the incorporation of bigger ships. However, the holistic analysis of the internal and external drivers (Figure 12) shows that the incorporation of the Triple E was a strategic decision that follows the company's SCSR framework. This might not be the case of other CSLs acquiring bigger ships which reinforces the need for SCSR in the CSI context as mentioned in the literature (Arat, 2011; Coady et al., 2013; Font et al., 2016). Thus, in my opinion, the immersion of the CSI into sustainable practices, chiefly SCSR, would help create a more resilient industry and even help prevent future crisis while improving its environmental performance.

***RQ3: How has the Triple E advanced Maersk Group's efforts to fulfill its Strategic Corporate Social Responsibility goals?***

The findings show that the Triple E can be considered as a relevant factor for achieving the company's SCSR goals. This can be clearly observed with its energy efficiency and improved environmental performance focus which can be linked to the three key areas for unlocking growth (see section 4.4 The Triple E). This is consistent with the literature that highlights the relevance of strategic decisions for materializing SCSR goals (Agnesson Franzén et al., 2010; Calabrese et al., 2015; Font et al., 2016).

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<sup>74</sup> On June 19th, 2016 the Asia-Europe shipping rates fell to a historical record low of \$205 USD per TEU (Journal of Commerce, 2016). The low freight prices have been linked to the combination of the global trade slowdown after the financial crisis of 2007-2008 and the overcapacity caused by the large order of mega containerhips before and after the crisis (Chiu, 2014; Journal of Commerce, 2016).

<sup>75</sup> In 2016, the CSI faces the record number of 1.5 million TEUs of idle capacity and an expected 500,000 TEUs to be scrapped by the end of the year (Knowler, 2016).

<sup>76</sup> At the moment of its bankruptcy, Hanjin Shipping was considered the seventh largest CSL in the world (Reuters, 2016).

The findings show that the Triple E follows the rationale behind the maximization of economies of scale of bigger ships as mentioned in the literature (Altena, 2013; Tran & Haasis, 2015; Wu & Lin, 2015) which can be linked to the goal of unlocking economic growth. Also, its design can be associated with the stakeholder's expectations of absolute reduction of CO<sub>2</sub> emissions which is probably the most important SCSR goal for the company. This is consistent with the literature that defines better environmental performance as a new business parameter in the CSI (Altena, 2013). Correspondingly, the innovative features of the containership described in section 4.4 The Triple E, can be linked to the strategies to improve the environmental performance of shipping found in the literature (Altena, 2013; Han, 2010; Schøyen & Bråthen, 2015).

***RQ4: How are Maersk Group's Strategic Corporate Social Responsibility and the Triple E influencing the industry to improve its environmental performance?***

It is clearly observed through the findings that the Sustainable Strategy and the Triple E are focused on improving Maersk Line's energy efficiency and enhanced environmental performance while achieving cost reductions which will ultimately make the company more competitive. This is particularly relevant because Maersk Line has the biggest market share of the CSI and becoming more competitive will create additional pressure on the rest of the industry. This will result beneficial in the long term for the CSI if we consider the literature that links the adoption of SCSR by big companies to higher industry standards (e.g. (Kitada & Ölcner, 2015)). Also, the findings show that Maersk Group's approach to the industry and the impact of the Triple E in the market are consistent with the literature that highlights the relevance of working groups and cross sector thinking to higher industry standards (BSR, 2015; Roe, 2013; Wuisan et al., 2012). Then, the Sustainability Strategy and the Triple E may be linked to setting a higher pressure on the industry to implement better sustainable practices to become more competitive. As a consequence, it is possible to understand Maersk Line's business strategy, particularly with the Triple E, as setting new industry standards. Likewise, considering the current financial crisis of the CSI, it is possible to expect more alliances and strategic collaborations among medium and big CSLs along with the merge and acquisition of smaller CSLs as well as those with financial trouble.

### ***Room for Improvement for Maersk Line***

In my opinion, Maersk Line can improve even further its operations with regards to energy efficiency and environmental performance. Even when the Triple E is clearly advancing Maersk Group's efforts to fulfill its SCSR goals, the literature indicates other unexplored areas of opportunity for the company. For example, the reallocation of empty containers (Altena, 2013), the use of closed loop supply chain analysis (Guide & van Wassenhove, 2009), and the use of on-shore power for loading/unloading operations (Wang et al., 2015). This can be complemented with a holistic Life Cycle Emission and Energy Analysis to determine the consumption of energy and fuel with the least ecological footprint; exhaust after treatment systems such as shore side emission treatment systems that could be connected to the ships exhaust which combine a catalytic reduction system with a sea water scrubber (see Han, 2010); and renewable energy options for shipping (see IRENA, 2015).

### ***Limitations***

The study has limitations. The findings are particular to this case and cannot be easily generalized. The secondary sources of information used for this research are, for some part, not focused on the CSI or even on Maersk Line or the Triple E. This makes the research rely on a greater extent on primary sources of information which limits the objectivity of the study.

### ***Opportunities for further research***

The findings may open new research areas focused on the CSI. For example, a further analysis of the motivations behind SCSR for the CSI would bring forth additional drivers than the ones discussed in this research. Additional research would help determine how and why the drivers in the CSI change according to company size, regional market environment, and corporate culture. Finally, this case study brings forth the materialization of environmental goals through SCSR. So far, the analysis of the materialization of SCSR goals with the launch of bigger containerships has not been studied which makes this study relevant for the literature on SCSR.

A deeper analysis of Maersk Group's governance framework would improve the evaluation of SCSR conducted in this thesis. This would serve as a model for analyzing SCSR in a cross sector environment, especially after Maersk Group's structural changes of 2016. Even when Maersk Group operates in different sectors (mainly transportation

and energy), its SCSR policies and governance framework guide all of its companies. Therefore, a deeper analysis of the Group's SCSR policies and its implementation in the different sectors in which it operates would provide better evidence of SCSR as a business direction.

An analysis of SCSR on smaller CSLs would provide important information with regards to the limiting factors of its implementation. However, this could also highlight further benefits of SCSR for this particular industry. With additional evidence, SCSR could be promoted further regardless of company size. Then, this analysis could prove to be most valuable in the current and pressing financial situation of the CSI.

The prospect of autonomous and drone ships, brought forward by the Norwegian and Finnish governments<sup>77</sup>, make it clear that a new business strategy is needed for the CSI. With this in mind, SCSR provides a holistic approach to innovation and technology management. Therefore, further analysis of SCSR could determine its benefits for the future of the CSI, particularly in terms of improving its environmental performance, maximizing the economies of scale, better technology management, and maintaining a constant innovation cycle.

The findings of this thesis provide reference for further studies on SCSR for the CSI context. However, more research needs to be conducted to fill the gaps in the literature with regards to the particular drivers behind SCSR for this industry. The relevance of cross sector transfer of best practices seems to be missing in the literature focused on shipping. Then, a further analysis of Maersk Group's Sustainability Governance Framework could provide a relevant case study of cross sector implementation of SCSR. Also, studying several cases of SCSR implementation in the CSI as well as other maritime freight and passenger transportation sectors (e.g. bulk cargo, oil, natural gas and cruise shipping) may advance the knowledge of how to reach sustainable practices.

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<sup>77</sup> In 2016, Norway defined the Trondheim Fjord as the first area for drone ship testing in the world (Schuler, 2016b). Likewise, in 2016 Finland set the goal to create the world's first autonomous ship by 2025 (Schuler, 2016a).



## 6 Conclusions

The present research provides an evaluation of the rationale behind the implementation of SCSR and the drivers behind strategic decisions within the context of the CSI. The case study provides a reference for examining the benefits of the implementation of SCSR as a business direction for CSLs. This was clearly demonstrated through the results that highlighted the company's immersion into SCSR. This allows Maersk Line to make strategic decisions to improve its competitiveness, environmental performance and energy efficiency. Findings indicate the Triple E as evidence of the benefits of strategic decisions for the materialization of SCSR goals. With Maersk Group's SCSR policies and the Triple E, it is clear that the company is pushing forward better industry standards and practices. However, further research needs to be conducted to be able to determine an industry wide conclusion from the results of this thesis.

The findings seem to indicate that SCSR can become a factor for better environmental performance and resilience for the sector. The case study shows that Maersk Group defined a new SCSR policy backed by its Sustainability Governance Framework. The result is the company advancing its efforts to improve its environmental performance and increase its market share. Even when Maersk Group is going through structural changes, the SCSR practices will remain the guiding principle for its operations. Since the changes in the Group include a new focus on digitalization, the SCSR policies of the Group will have to be further analyzed to fully understand its benefits for technology management and innovation.

### *Theoretical Contribution*

There has been little research conducted with regards to CSR on the CSI which is a key contribution of this thesis. Then, the innovative contribution of this study is that it analyses the rationale behind implementing SCSR in the CSI context through a case study. Also, it contributes to the definition of specific internal and external drivers behind SCSR in the CSI (Figure 12). This is a relevant contribution to the literature because few studies have focused on SCSR on the CSI and, to the best of my knowledge, none have focused on defining the drivers behind it for this particular industry. Even when CSLs are driven by similar motivations, this study suggests that the drivers behind SCSR in the

CSI are company specific due to differences in size, market share, financial status, and most importantly, corporate culture. Furthermore, this thesis contributes to highlighting the potential role of SCSR for addressing sustainability challenges in the CSI. Likewise, this study is the first to analyze the Triple E from a SCSR perspective which is a relevant contribution to the literature on mega containerships.

***Practical contribution for policy makers and CSI working groups***

This case study suggests that the drivers behind SCSR implementation in the CSI are company specific. Furthermore, considering the four guiding principles of the Sustainability Strategy it seems that the evolution from Green Shipping Practices into the full immersion of SCSR will depend greatly on the leadership and a change of the corporate culture of CSLs. This is particularly relevant for policy makers and private projects focused on improving the environmental performance of the CSR. The understanding of the drivers behind SCSR implementation as well as the drivers behind proactive environmental practices in the CSI can help guide the CSI towards better practices.

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## Appendix 1: Freight and cargo ships by country

Freight and cargo ships by country				
#	Country	Total	Foreign owned	Registered in other countries
1	Panama	6,413	5,157	1
2	Liberia	2,771	2,559	
3	China	2,030	22	1,559
4	Malta	1,650	1,437	2
5	Hong Kong	1,644	976	341
6	Singapore	1,599	966	344
7	Marshall Islands	1,593	1,465	
8	Indonesia	1,340	69	95
9	Antigua and Barbuda	1,257	1,215	
10	The Bahamas	1,160	1,069	6
11	Russia	1,143	155	439
12	Greece	860	42	2,459
13	Cyprus	838	622	152
14	South Korea	786	31	457
15	Netherlands	744	196	233
16	Japan	684		3,122
17	Italy	681	90	201
18	Turkey	629	1	645
19	Norway	585	81	974
20	Vietnam	579		86

Notes: Adapted from the CIA World Factbook with information from 2010 (CIA, 2010).

The table shows the 20 countries with higher number of registered freight and cargo ships.

- **Foreign-owned** refers to ships that fly the flag of one country but belong to owners of another country (CIA, 2010). For example, a ship that is registered in Panama and operates under a Panamanian Flag but is owned by a Japanese Company.
- **Registered in other countries** refers ships that belong to owners in one country but fly the flag of another country (CIA, 2010). For example, a ship that is owned by a Panamanian company but it is registered in Japan and operates under a Japanese Flag.



## Appendix 2: Triple E Containerships in service

Triple E Containerships in service					
No.	Name	Yard number	IMO number	Date of Delivery	Status
1	Mærsk Mc-Kinney Møller	4250	9619907	July 2013	in service
2	Majestic Mærsk	4251	9619919	July 2013	in service
3	Mary Mærsk	4252	9619921	August 2013	in service
4	Marie Mærsk	4253	9619933	September 2013	in service
5	Madison Mærsk	4254	9619945	October 2013	in service
6	Magleby Mærsk	4255	9619957	November 2013	in service
7	Maribo Mærsk	4256	9619969	January 2014	in service
8	Marstal Mærsk	4257	9619971	April 2014	in service
9	Matz Mærsk	4258	9619983	June 2014	in service
10	Mayview Mærsk	4259	9619995	June 2014	in service
11	Merete Mærsk	4262	9632064	August 2014	in service
12	Mogens Mærsk	4263	9632090	September 2014	in service
13	Morten Mærsk	4264	9632105	October 2014	in service
14	Munkebo Mærsk	4265	9632117	January 2015	in service
15	Maren Mærsk	4266	9632129	March 2015	in service
16	Margrethe Mærsk	4267	9632131	April 2015	in service
17	Marchen Mærsk	4268	9632143	may-15	in service
18	Mette Mærsk	4269	9632155	may-15	in service
19	Marit Mærsk	4270	9632167	June 2015	in service
20	Mathilde Mærsk	4271	9632179	June 2015	in service

Notes: Adapted from the Wikipedia Article "Maersk Triple E class" (Wikipedia, 2016b).

The table shows the 20 Triple E vessels already in service.

The information was not confirmed by Maersk Line. However, Wikipedia mentions that the table was created based on several external references such as online maritime databases and publications.