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MASTER'S THESIS

**THE CONNECTION BETWEEN CORPORATE SUSTAINABILITY
AND MARKET VALUE OF FIRMS**

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INTRODUCTION

Observing international and local firms operating in a highly competitive business world, raises a question of how firms can gain a competitive advantage towards their competitors and assure their business to succeed on the long-term by becoming sustainable. Nowadays, a highly used practice that firms undertake to make a step further is engaging themselves in corporate sustainability strategies. According to the general framework developed by Hart and Milstein (2003), sustainability behaviors can be classified into four broad categories: pollution prevention, product stewardship, clean technology and community focus. By employing them, firms try to create a long-term shareholder value, which results in embracing opportunities and managing risk from economic, environmental and social point of view. Besides creating value, firms intend to capture other qualitative and non-financial criteria as references for their performance.

For the last two decades, the need for preserving the natural environment and complying with social and ethical norms has been of vital interest for corporate management. Many managers and academic researchers have argued that businesses focused on sustainability may also improve their financial performance and there is also little information about the firms' financial gain in the case of sustainability activities implementation. On the contrary, a question of whether weak sustainability acting can have the opposite effect arises. Therefore, firms' primary query is whether benefits of investing in corporate sustainability (hereinafter: CS) strategies truly outweigh the connected costs and consequently increase firms' value. This very issue is the focus of our thesis, and our goal is to test positive correlation between investing in sustainability and the firms' value. The thesis will be based on the sample of publicly listed European firms included in a widely recognized stock index. There clearly exist skeptical positions about the returns of sustainable strategies, and our purpose is to make it less opaque.

Firms that are highly engaged in sustainable strategies may show higher levels of competence when dealing with global industrial challenges. However, to gain advantageous competence, several benefits should be evident when investigating more in detail. The key problem is not cost offsetting when investing in sustainability but its timing. Therefore, the key to success of any sustainability-oriented firm is to find the right balance between benefiting the public/environment and maintaining profitability at the same time. Hence, the purpose of our master's thesis is to explore the term corporate sustainability and to examine the correlations between the term and the firms' value. The central question we will try to answer is whether implementation of corporate sustainability has a positive effect on firms' value, which will be sought through quantitative and qualitative research. Later on, we will try to find out which source brings excess value in comparison to other firms, be it through increased profitability or risk minimization.

In the past years, several empirical researches have been conducted trying to establish relationships between corporate sustainability and firms' performance on the market. The researchers have come up with mixed results. However, the researchers left many opened questions for further investigation and we will try to find answers for at least some of them. Thus, the paper theoretically extends previous studies by bringing together the concepts of corporate social responsibility and corporate sustainability development. Afterward, the correlation between introducing CS strategies and firms' value will be discussed. In the empirical part, we will demonstrate the analysis of our panel data, which tackles the question of whether firms' engagement in CS strategies actually earns higher market value. Secondly, we will try to identify the added value parameter that investors appreciate the most when considering to invest in sustainable firms, be it a decreased risk or increased profitability. In addition, we will conduct a thorough analysis of three firms (Neste Oil, Shell, Eni), which operate in oil and gas industry. The mentioned industry is highly controversial in the sustainability context since its production is reputed to be environmentally damaging. Therefore, we will perform a case study analysis, which will serve as a perfect tool for linking the theoretical and the practical corporate sustainability approaches.

1 CORPORATE SUSTAINABILITY

1.1 Triple bottom line

The accounting principle approach, named the "**Triple bottom line**" (hereinafter: TBL), was firstly formulated by John Elkington (1994) and widespread through the article published in California Management Review in 1994. Elkington (1994) defines it as "an inevitable expansion of the environmental agenda that focuses corporations not just on the economic value they add, but also on the environmental and social value they either add or destroy". Thus, the idea of this concept is that firms can actively contribute to sustainable development through management orientation on the economic growth which consequently fosters their competitive position without harming the environment, evading social responsibility on one hand or neglecting the consumers' interest on the other.

Elkington's fundamental aim was to explore how individual needs could be sustainable in the economic, ecological and social context. He observed the significant change in governance such as power shift from governments' roles to international institutions. This change started to question the control of governments over corporations with respect to their actions towards environment and society. Therefore, Elkington claimed that firms should incorporate three different performance measures in their accounting model - bottom lines. The first one, "profit account", is the traditional measure of corporate profit. The second bottom line, "the people account", is a measure of firms' social responsibility and the third one, "the planet account", deals with firms' attitude towards the environment

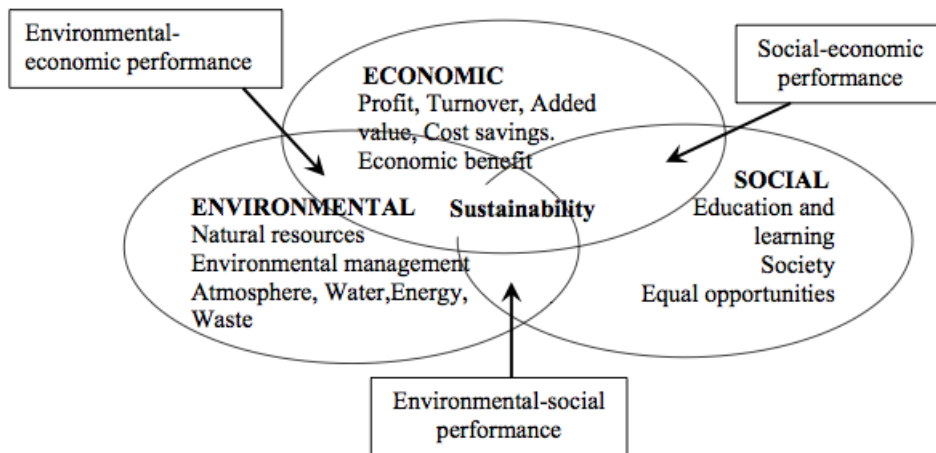
(Elkington, 1997). The three dimensions need to be simultaneously met so as to obtain a favorable outcome. After that, solely satisfying economic dimension is not a sufficient condition for sustainability in the long run (Gladwin, Kennelly, & Krause, 1995).

TBL consists of three Ps: profit, people and planet. It aims to measure firms' financial, social and environmental performance over a particular period of time. Only a firm that has integrated the TBL concept into the business model takes into consideration the entire source of costs from the business operations. The idea lies in the fundamental principle of: "what you measure is what you get, because what you measure you are likely to pay attention to" (Savitz & Weber, 2014). Thus, only firms that measure their social and environmental performance can be socially and environmentally responsible organizations which are conditions for corporate sustainability.

While traditional models target at making money and profit, TBL accounting approach recognizes that, without satisfied employees and a clean environment, the firm is facing unsustainability in the long run. Thus, TBL is a reporting approach that stabilizes the corporate responsibility concerns regarding shareholders and all stakeholders (Young & Dhanda, 2013). Many firms and non-profit organizations have adopted the TBL framework to assess their performance and to compose the sustainability annual reports and the TBL framework is also widespread among governments and local institutions.

There is no defined method, which can be applied in the firms' business operations to evaluate the TBL. TBL allows firms to adapt the general framework to the particular needs of entities or projects and also for broader purposes, where the ideal set of measures can be set up. On the other hand, there are challenges and difficulties to implement TBL into practical use. These challenges primarily refer to measuring each of the three categories, finding applicable data and calculating project's contribution to sustainability. To overcome these challenges, the TBL concept allows firms to evaluate the impact of their decisions from a long-term perspective (Slaper & Hall, 2011). The interdependent relationships among the three aspects of the TBL approach can be seen in Figure 1.

Figure 1: Mutual relationship between environmental, social and economic areas with respect to corporate performance



Source: A. Kocmanová & M. Dočekalová, *Corporate Sustainability: Environmental, Social, Economic and Corporate Performance*, 2011, p. 206, Figure 1.

1.1.1 Environmental performance

In TBL framework for the environmental performance is described as firm's consideration of the social interests by taking responsibility for the impact of their activities on the environment. The environmental dimension is based on the effects that firms' business has on the environment. Within this dimension, the firm is required to achieve efficient management of natural resources, reduce pollution and improve waste management. This obligation extends beyond the statutory rules to comply with legislation as it rather prompts the firms to act voluntarily towards improving the employees' life quality and helping the local community and the society as a whole (Elkington, 1997).

Therefore, the "Planet dimension" has been undertaken by firms that try to benefit the nature as much as possible but without harming it. Therefore, firms try to reduce their ecological footprint by carefully managing its consumption of energy and non-renewables, reducing manufacturing waste and rendering less toxic waste. Altogether, the environmental factor is nowadays becoming one of the firms' most considered aspects.

To get a satisfying outcome when using TBL, we need to choose the measured metrics reasonably. Therefore, we identified a few example factors to be measured when analyzing the environmental performance in particular areas (Savitz & Weber, 2012):

- Pollutants omitted
- Carbon footprint
- Electricity/Water consumption

- Fossil fuel consumption
- Solid waste management and recycling level
- Hazardous waste management
- Change in land use/land cover
- Products impact

As expected, some of the example factors are difficult to be measured and respected by the industry itself. Therefore, governments are promoting environmental responsibility by applying additional taxes in the case of exceeding pollution limit quotes. More on this topic will be discussed in the chapter of corporate sustainability strategies.

1.1.2 Social performance

The social dimension primarily refers to the interaction between the firms and the local communities. Thus “People dimension” refers to fair and beneficial business conduct towards employees and community in which a firm operates. A firm undertaking this “bottom line” is expected not to exploit its labor force, not to use child labor on one hand and to pay fair salaries and maintain safe work environment and tolerable work hours on the other (Elkington, 1997).

Social variables could include the measurements of equity and access to social resources, such as education, health, well-being and quality of life. Variables from the particular examples are listed below (Savitz & Weber, 2012):

- Health and safety record within a firm
- Female labor force participation rate
- Community impact
- Human rights/privacy
- Product responsibility
- Employee relation

As mentioned, the listed variables are used to measure the firms’ social performance. Nowadays, firms that try to minimize costs to fight the competition successfully frequently overlook and neglect the social performance. Consequently, many non-governmental organizations undertook several actions with the goal to defend the society’s rights. Therefore, it can be stated that the social dimension plays a crucial role in the firm performance and as such it should not be ignored.

1.1.3 Economic performance

Economic performance is considered to be an essential element in the economic environment. Every firm's purpose is to generate profit as its existence can be endangered otherwise. Economic dimension includes elements such as market value, investment in research and development, wages and employees' benefits, initiatives aimed at the community and the value of goods and services provided.

In other words, the "Profit dimension" is the economic value created by an organization after deducting the cost of all inputs including the cost of the tied up capital. Besides, the profit also includes the factors of risk management, capital efficiency, margin improvement, growth enhancement and investment returns. Furthermore, profit, in this case, has a broader conception as it does not benefit only a particular company but the society as a whole, and therefore it, differs from the traditional accounting definitions of profit. In the original concept of the sustainability framework, the "profit aspect" needs to be seen as the real economic benefit enjoyed by the host society. Nonetheless, this is often confused with the internal profit made by a firm or organization, which nevertheless remains an essential starting point for the computation. Therefore, an original TBL approach cannot be interpreted as a traditional corporate accounting profit plus social and environmental impacts unless the "profits" of other social entities are included.

Economic variables need to be chosen carefully in the range of elements that deal with the bottom line and the flow of cash. The potential range of variables should consider the following areas: income or expenditures, taxes, business climate factors, employment, and business diversity factors. Several variables examples are listed below (Savitz & Weber, 2012):

- Sales, Profit, ROI
- Taxes paid
- Monetary flows
- Jobs created
- Supplier relations
- Operational margin improvements

1.1.4 Issues of the TBL concept

Despite all TBL's positive effects, the concept has been a subject of criticism. One of the issues raised has been that TBL encourages environment, economy, and society to be considered as three separate accounts rather than one. As mentioned before, the concept is entirely successful only if it is considered as a whole. However, the three elements of TBL are fundamentally different making a single framework with a single unit and comparable 'bottom lines' problematic (Milne & Byrch, 2011). Thus, we can conclude that the biggest

issue with the triple bottom line is that the three separate accounts cannot be easily implemented. It is hard to measure the people and planet performance in the same terms as profits. For instance, the full cost of an oil-tanker spillage is immeasurable in monetary terms, as is the cost of displacing whole communities to cut down forests.

In conclusion, TBL captures the fundamentals of sustainability by measuring the impact of firms' operations. Having reached positive TBL effects reflects in an increase in the firms and shareholders' value including the rise of the economic, social and environmental capital. The core nature of the TBL dimensions emerges from fundamentally different domains. The differences in the characteristics of social, economic, and environmental sustainability show the inappropriateness of measuring, reporting, and conceiving these three facets in the same ways. However, the TBL approach has been the base for many other corporate sustainability concepts and is still being used for the newly evolving concepts.

1.2 The theory of Corporate Sustainability

Sustainability has become an often debated issue at the political and corporate level. By definition, **Corporate sustainability** (hereinafter: CS) is a business approach that creates long-term shareholder value by embracing opportunities and managing risk from economic, environmental and social dimensions (Dow Jones Sustainability Indices, 2014). Moreover, Salzmann, Ionescu-Somers and Steger's, (2005) definition argues that CS shall be defined as "a strategic and profit-driven corporate response to environmental and social issues caused by the organization's primary and secondary activities".

The recent trend has confirmed that firms are progressively engaging in such activities to contribute to sustainable development, which proves it to be a critical part of the corporate strategy practice. The concept of sustainable development enhances the value of economic growth, environmental protection and social equity. Firms undertaking corporate sustainability strategies bring added value to other qualitative and non-financial factors, such as the quality of management, corporate governance structure, human capital management, stakeholders' relations, environmental protection and corporate social responsibility. From this point of view, the corporate sustainable operating approach is considered to be a type of strategic investment, which consequently provides firms with additional competitive advantage. Thus, CS is usually perceived as a valuable resource, which can be used to improve the future performance and market position of firms' competitiveness (Bibri, 2008).

Several scholars describe sustainability as the environmental responsibility dimension of business as they often use the concept of "ecological sustainability" (e.g. Sharma & Henriques, 2005; Shrivastava, 1995). On the other hand, other researchers claim that sustainability evolved from a TBL perspective based on the dimensions of economic

responsibility, social equity, and environmental integrity (Bansal, 2005). A more practical point of view was described by Jacques Schraven, the chairman of the Dutch Employers Association, who explained that CS cannot be determined with one standardized definition since CS is a custom-made process (Michalos & Poff, 2013). Therefore, each firm should carefully choose the most appropriate sustainability concept by taking into consideration the firm's mission and intention. Furthermore, a firm needs to align the sustainable measures with the firm's strategy as a response to the circumstances in which it operates (van Marrewijk, 2003).

To sum up, CS can be seen as an evolving management approach. It is an alternative to the traditional model, which highlighted the business growth and profit maximization. CS is focused on pursuing environmental protection, social equity, sustainable and economic development while it gives less attention to the importance of growth and profit (Wilson, 2003). According to Schaefer (2004), although the conceptualizations consist of the three components, the environmental issues are emphasized more often than the social ones.

Nevertheless, the CS definition describes the sustainable growth and profit as a very plausible outcome if CS strategies are successfully implemented into the corporate core business strategy.

1.2.1 Key challenges for Corporate Sustainability

There are many challenges that firms' managements face within the process of implementing CS strategies in the traditional business model.

From the TBL approach ecological, social and economic challenges have derived. The ecological challenge aims to increase the ecological effectiveness of a business processes. Therefore, it confronts firms with the challenge of reducing their environmental impact and it measures the absolute environmental performance. In the end, it also provides a general description of the achievements in minimizing environmental impacts. The social challenge relates to enabling firms' successful performance while simultaneously taking into consideration the social and cultural diversity along with the individual social demands. Thirdly, the economic challenge of environmental and social management aims to improve the eco and socio-efficiency.

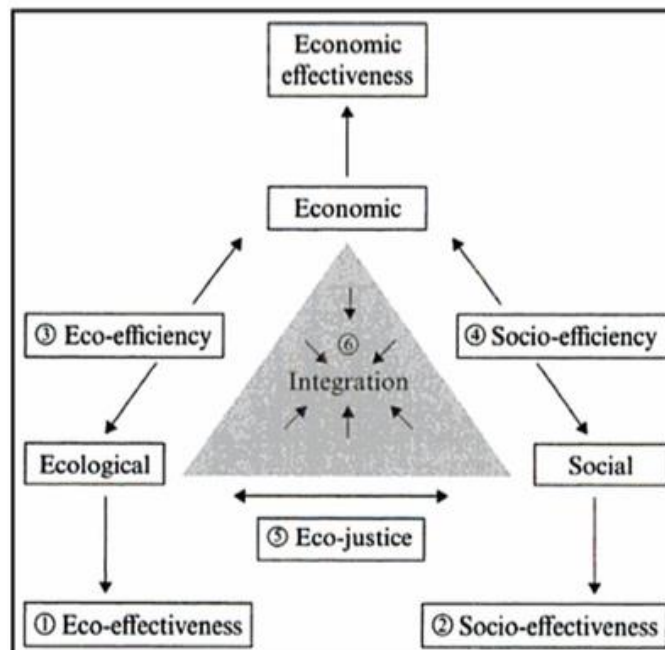
Besides the three main challenges, firms are facing other issues as well, such as integration, orientation towards the future, sustainable development approach and some tradeoffs strategies, with the intention to bring the firm on the principle of a win-win path. Thus, the integration challenge brings together the three mentioned challenges and represents the most important issue for the management. Such integration requires simultaneous attention to all three pillars to fully succeed. Since the impact of the CS strategies is not of a short term nature, the firms' management is required to have a good

vision of the future to incorporate all the expected improvements. Firms need to treat their sustainable development as a long-term process in order to come to satisfying results.

Many times to come to satisfying results tradeoffs are required. Tradeoffs principal considers the intersection between Profit, Planet and People dimensions when maximizing values in all the dimensions simultaneously is not possible. Given the complex nature of sustainable development, conflicts between environmental, economic and social dimensions arise, and consequently firms are forced to make certain tradeoffs to reach the optimal performance in each area. For example, Eccles and Serafeim (2013) claim that creating sustainable strategies requires trade-offs between financial and sustainable performance meaning that while improving one brings additional costs for the other. Hence, firms should focus on issues that most intensely impact the firm’s ability to create shareholder value thus simultaneously boosting financial and sustainable performance.

On the other hand, many researchers are of different opinion. For instance, they argue that the core nature of investment and return is not a tradeoff between social and financial interest but rather a pursuit of an embedded value proposition composed of both, which is the so-called “Win-win paradigm” (Emerson, 2003). In order to attain the win-win paradigm, firms need to thoroughly integrate sustainability strategies into their core business model. This approach will be furtherly demonstrated under the section of case studies.

Figure 2: Corporate Sustainability Challenges



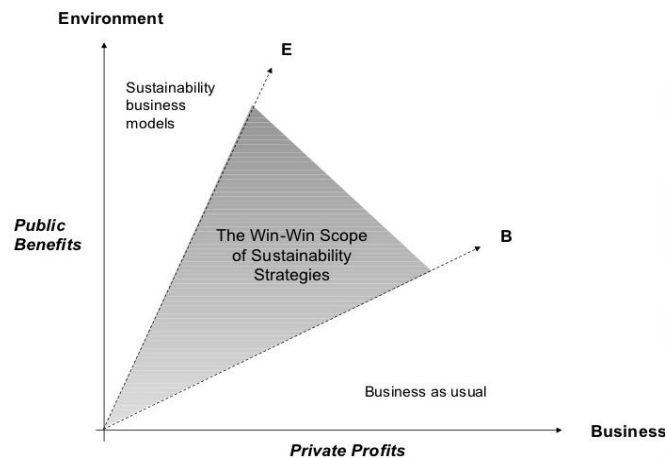
Source: H. Folmer and T. Tietenberg, *Corporate Sustainability: The International Yearbook of Environmental and Resource Economics*, 2005, p.186.

1.2.2 The Win–Win Paradigm of Corporate Sustainability

The win-win paradigm states that the social and environmental issues are taken into consideration only until they contribute to an increased corporate financial performance. Furthermore, the relevance of the environmental and social issues for sustainable performance are purely of an economic nature, and CS investments should not be considered as charity actions. In addition, the win-win thinking is interesting because it enables company executives and students to perceive sustainability issues as a strategy that on long term brings certain benefits without incurring any drawbacks (Porter & Kramer, 2006) since it can be managed with well-known in practice management tools, such as Porter’s generic competitive strategies (Orsato, 2009).

Sustainability is achieved only at the intersection of three principal dimensions: environmental integrity, social equity and economic prosperity. For instance, let us suppose that firms focus only on environmental or social aspects and neglect financial goals. In this way, they risk not fulfilling shareholders' expectations by not working towards the economic value creation. Therefore, according to Orsato (2009), firms should focus on reaching the win-win scope. The scope partly covers the goals of all three dimensions at once hence satisfying stakeholders and regulations, which results in a trade-off that brings competitive strategy, which is the highest level of economic value creation. However, in practice we rather see situations when firms focus only on their own benefits without considering the public welfare. Hence, this business model is seen as unsustainable since firms should consider shareholders’ expectations of economic value creation and take into consideration society benefits as well since this approach can change previously non-profitable areas into profitable ones. The concept can be observed in Figure 3. The win-win scope is defined by lines E and B.

Figure 3: The Win-Win scope of Sustainability strategies



Source: R. J. Orsato, *Sustainability Strategies: When does it pay to be green?*, 2013, p.13, Figure 1.1.

Apparently, each individual firm should strive to find such an area despite the fact that firms are facing several methodological challenges, such as multiple dimension, timing and context comprised of industry, stakeholders' requirements. It can be derived that the structure of the industry and the political and the economic context in which a business operates enhances the chances of succeeding with sustainable investments (Orsato, 2009). Thus, the search for such an area is seen as a competitive strategy and defining it is of crucial importance when considering the benefits of acting green. The business case for sustainability, which is described later in the paper, used many different methodologies to assess the impact of CS on firms' financial performance to prove or disprove the sound economic rationale for the corporate sustainability management.

1.3 Corporate Sustainability vs. Corporate Social Responsibility

The corporate scandals that have arisen in the last decade have triggered the need for better transparency and accountability. Subsequently, the practice of **corporate social responsibility** (hereinafter: CSR) and CS have become much debated and used in practice. Many scholars argue that a corporation can profit in many different ways by operating with a broader and longer perspective rather than with a short-term vision of profits (Baker & Nofsinger, 2012).

However, the concepts are still too equivocal in scholars debates and as well in corporate implementations, and they have turned out be of a slightly different nature. In general, CS and CSR are both known as voluntary business activities addressing the environmental and social concerns. Some would argue that the definition of CS and CSR is still opaque, but recently more studies have been written clarifying the differences between these two concepts. For example, Montiel (2008) described the differences between CSR and CS definitions saying that CS and CSR frameworks have almost identical conceptualizations

of economic, social, and environmental areas. However, these conceptualizations have triggered different queries. On one side, CS scholars argue that the economic, social, and environmental pillars are interconnected. In fact, CS describes a system that recognizes that the economy is part of society, which is part of a larger ecological system – a systems connectedness issue. On the other side, most empirical CSR research treats social and economic performance as independent components (Montiel, 2008).

1.3.1 Evolution of Corporate Sustainability

A widely excepted and standardized definition of CS does not exist. The World Commission on Economic Development (hereinafter: WCED) used the term sustainable development for the first time in its report *Our Common Future* in 1987. The WCED definition assumed “development is sustainable if firms present needs can be met, without compromising the ability of future generations to meet their own needs.” (WCED, 1987). After this first quoting of the concept, an increasing trend of articles mentioning CS can be noticed. Later on, the concept was spotted in the general management literature in 1995 when Gladwin, Kennelly, and Krause (1995) described sustainable development as a process of achieving human development in an inclusive, connected, equitable, prudent, and secure manner. In 2005, Bansal (2005) defined “corporate sustainable development” as a tridimensional construct based on economic prosperity, social equity, and environmental integrity. Afterwards, Szekely and Knirsch (2005) defined the meaning of sustainability for businesses as ‘sustaining and expanding economic growth, shareholder value, prestige, corporate reputation, customer relationships, and the quality of products and services as well as adopting and pursuing ethical business practices, creating sustainable jobs, building value for all the stakeholders and attending the needs of the underserved’.

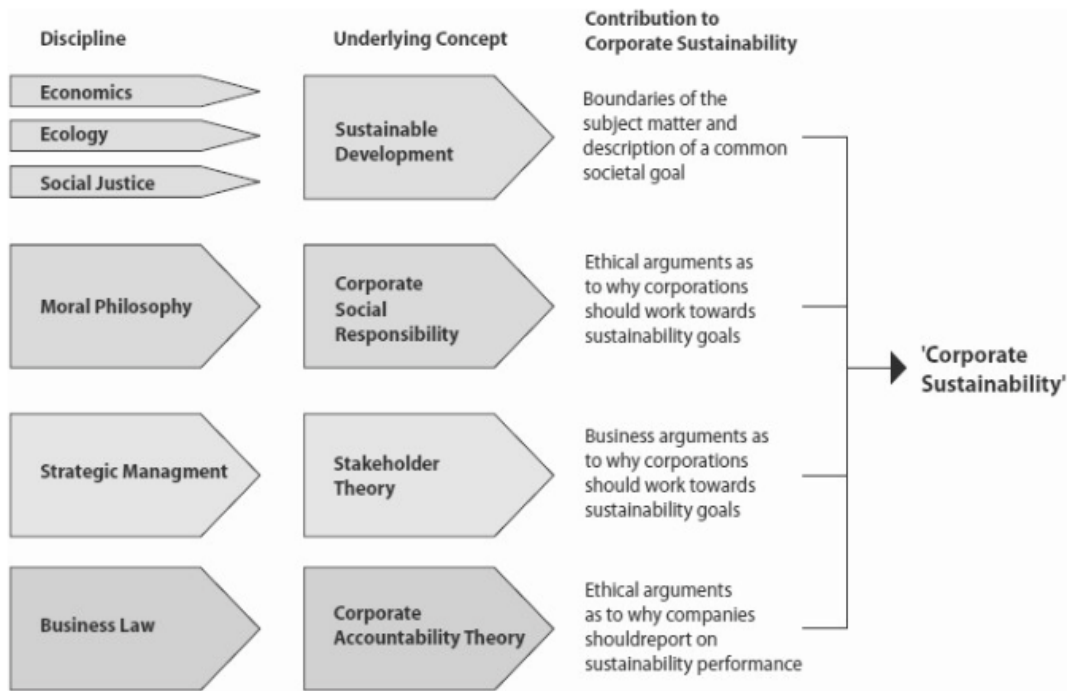
A review of the prior literature brings up the idea of CS borrows and extracts certain elements from four already discussed and established frameworks (Wilson, 2003):

- Sustainable development
- Corporate social responsibility
- Stakeholder theory
- Corporate accountability theory

We can observe two primary contributions of sustainable development. Firstly, it facilitates determining the areas firms should focus on i.e. social, environmental and economic performance. Secondly, it provides a firm with a common goal, which needs to be followed if it wants to become sustainable. Besides that, CSR contribution is appreciated because of its ethical arguments, which should be taken into account with a goal of reaching sustainable goals. In respect to CS development, the contribution of corporate accountability theory is of great importance since it helped to define the relationship between corporate managers and stakeholders. In addition, CS also defends the firms’ need

to report on their social, environmental and economic performance and not just on their financial performance. Meanwhile, stakeholder theory indicates that it is in the firms' best economic interest to work in the direction of strengthening their relationships with the stakeholders, since they play a significant role in helping firms to meet their business goals. The contributions of the above-mentioned concepts are clearly illustrated in Figure 4 (Wilson, 2003).

Figure 4: Evolution of Corporate Sustainability



Source: M. Wilson, *Corporate Sustainability: What is it and where does it come from?*, 2003, p.2, Figure 1.

1.3.2 Evolution of Corporate Social Responsibility

CSR concept appeared in the history rather before than CS. The CSR was first mentioned in a few journals in the 1970s. Therefore, the most frequently cited definition is Carroll's (1979) statement that "the social responsibility of business encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time.". Afterward, Russo and Fouts (1997) claimed that firms engage in CSR to provide a competitive advantage from different sources inside and outside the firm's ambient:

- profiting from increased know-how,
- symbiosis in corporate culture,
- committed workforce and
- external benefits related to reputation.

We can say that CSR goes beyond the shareholders' bottom line aiming at higher moral standards. It can be seen as driving force for promoting transparency, fairer accountability, integrity, better communication, mutually beneficial exchange and sensible development (Pava, 2008).

The importance of CSR was furtherly magnified by the changes of social status in past years. In the trend of globalization with numerous ongoing mergers, the fortune of principal stockholders is accumulated due to the economy of scale and expansion of business scope. On the other hand, those who could not benefit from corporate alliances have been exploited. Therefore, the gap between the wealthy and the poor is larger than ever. Consequently, the society and governments demand firms to undertake social responsibility measures to reduce social conflicts. Thus, the concept of CSR is forced to adjust due to significant factors such as new demand for environmental protection, emphasis on corporate governance and changes in social status. These changes result in a vast number of different definitions available in the literature for CSR but are all congruent (Dahlsrud, 2008).

Throughout history many views on CSR appeared. The first one is a classical view which says that the social responsibility of business is to focus on increasing firms' profits, which is the so-called shareholder approach (Friedman, 1970). Thus, the primary firms' focus is the pursuit of profit maximization while socially responsible activities are governmental tasks. When using this approach, CSR is firms' concern only until it contributes to the creation of a long-term value for the shareholders. Secondly, stakeholders' approach already indicates that firms are not only accountable to their owners but to the stakeholders' interests as well.

Afterward, a societal approach developed which got much closer to the current meaning of CSR (Porter & Kramer, 2011). It determines CSR as an approach in which firms are entirely responsible for the society. Firms received a public consent to operate according to this approach in order to constructively satisfy the needs of society. The philanthropic approach is seen as the root of CS, but different approaches to corporate responsibility indicate that CSR is a distinct phenomenon. The societal approach is understood as strategic response to the changing business environment that had not been present in the past as it forces firms to act very carefully in terms of the complex societal context (van Marrewijk, 2003).

1.3.3 Comparison

The best way to differentiate the two concepts is citing the definition of Montiel (2008), which says that "...corporate sustainability and corporate social responsibility have evolved from different histories, they are pushing towards a shared future." In the past, CS term

was more related to the environmental issues, and CSR referred to the social aspects. Nowadays, many consider CS and CSR as synonyms and basically both concepts originate in the TBL characteristics (Montiel, 2008). Furthermore, Montiel (2008) claimed that both theories share the very same vision pointing out the balance between economic sustainability and environmental/social responsibility. Definitions and key constructs for CSR and CS have spread over the last decade, and this has contributed to the additional risk for managers' (Bansal, 2005; Carroll, 1999). Besides, some researchers claim that CS and CSR are converging despite their paradigmatic differences due to the sharing issue of environmental and social concerns.

On the other hand, according to Wempe and Kaptein, (2002) CSR and CS cannot be used as synonyms. CSR is determined as an intermediate goal necessary for balancing TBL and consequently reaching the ultimate objective of reaching CS. In other words, considering the definition of CS, CSR can perfectly fit as a composition part of its framework. Furthermore, van Marrewijk (2003) describes that CSR is more "communication" oriented relating to people and organizations (e.g. sustainability reporting, stakeholder dialogue), whereby CS is more concerned with the agency principle (e.g. environmental management, human capital management, value creation) (van Marrewijk, 2003).

In conclusion, after reviewing Montiel's (2008) article, we came to a conclusion that the analysis of CSR and CS definitions and its main differences implicate that there are many more social and environmental business areas to consider and consequently to investigate for scholars and the only way to come to clear distinction is to work together and share theories, knowledge, definitions, and methodological approaches as it will help increase the impact of social and environmental performance research into the general management field.

1.3.4 Measurement of CS and CSR

According to the literature reviewed, we can notice similarities in how CS and CSR researchers operationalize their constructs to measure social and environmental performance (Montiel, 2008). It can be seen that different researchers (Chan, 2005; Whiteman & Cooper, 2000; Bansal, 2005; Sharma & Henriques, 2005) use similar variables to measure CSR or CS. For instance, the scope of CSR variables includes ethics policy, stakeholder relationships (investors, shareholders, clients, suppliers, employees, and the community), philanthropic contributions, city development, minority support programs, health and safety initiatives, pollution abatement programs, and conserving natural resources. On the other hand, CS researchers (Sharma & Henriques, 2005; Shrivastava, 1995; Starik & Rands, 1995) mainly focus on the "planet" side of sustainability considering variables, such as employees' eco-initiatives, voluntary environmental restoration, eco-design practices and systematic waste and emission reduction. In addition,

other CS measures use economic and social dimensions, such as stakeholder interests, government relationships, health, safety and community development (Montiel, 2008).

1.4 CS Strategies

Firms will always try to increase their productivity, which will consequently also increase the overall impact on the environment. Unfortunately eco-investments do not directly fall in the area of CS strategies as they do not necessary generate competitive advantage. For this to take place, firms have to embed eco-investments to coincide with their core business, and this as a whole creates added value for the business as well as the environment. But as with any other “big” decision, it depends on the management incentive to do so and the context in which the firm operates (Porter & Kramer, 2011).

After reviewing the literature on CS strategies, we have acknowledged that there are several relevant theories written on this topic and practices show variations depending on the source. We will focus our thesis on a contribution of four theories structured by different authors, which have established a theoretical background of linking different sustainability approaches to firm’s value, and who have depicted the evolvement of CS strategies during the last two decades.

1.4.1 CS Strategies according to Hart

Stuart L. Hart (1997) presented his view on sustainability strategies in the article “Beyond Greening: Strategies for a Sustainable World”. In this article, Hart (1997) leads us from the business logic of greening, which is largely a pollution prevention program, to a more complex business logic for sustainability, which can result in competitive advantage on the market. He sees greening as a foundation for sustainability as it has been framed as risk reduction, re-engineering and cost cutting strategy. Hart (1997) believes that up to the time the article was written executives have not been able to recognize greening as an important source of revenue growth and so he sets a foundation for expanding greening into a more complex sustainability strategy.

Quoting Hart (1997) “Whereas yesterday’s businesses were often oblivious to their negative impact on the environment and today’s responsible businesses strive for zero impact, tomorrow’s businesses must learn to make a positive impact. Increasingly, companies will be selling solutions to the world’s environmental problems.” we can see that he realized the necessity of changing firms’ attitude towards sustainability and changing their strategies accordingly. To move from greening to sustainability, we must firstly explain the complex set of global interdependencies, which consists of three different overlapping economies.

- **Market Economy** is a mixture of developed nations and emerging economies. One-sixth of the world's population lives in developed countries and consumes 75% of the world's energy and natural resources. Nonetheless such intense consumption of resources and energy does not lead to high level of pollution, mainly because of stringent environmental regulations and greening of the industry. Important factor behind this is also the reallocation of the most polluting activities to emerging market economies. Not on the other hand much larger population base in emerging countries, in hand with their rapid industrialization could easily offset the environmental benefits made in the developed economies.
- **Survival Economy** is a traditional way of life, where people satisfy their needs directly from nature. Survival economy comprises form around 3 billion people. The population growth in this economy accounts for around 90 % of the world's population growth.
- **Nature's economy** is defined by the natural systems as well as resources that are consumed by the market and the survival economy. Nonrenewable resources, such as oil, metals, and other minerals, are finite. Renewable resources, such as soils and forests, will regenerate themselves for as long as their use does not exceed critical levels of consumption. Despite their renewability they are the greatest threat to sustainable development.

The interdependence of the three economies is evident as it creates major social and environmental challenges i.e. climate change, pollution, resource depletions, poverty and inequality (Hart, 1997). These challenges can be seen in Figure 5.

Figure 5: Major challenges to sustainability according to Hart

Major Challenges to Sustainability			
	Pollution	Depletion	Poverty
Developed economies	<ul style="list-style-type: none"> -greenhouse gases -use of toxic materials -contaminated sites 	<ul style="list-style-type: none"> -scarcity of materials -insufficient reuse and recycling 	<ul style="list-style-type: none"> -urban and minority unemployment
Emerging economies	<ul style="list-style-type: none"> -industrial emissions -contaminated water -lack of sewage treatment 	<ul style="list-style-type: none"> -overexploitation of renewable resources -overuse of water for irrigation 	<ul style="list-style-type: none"> -migration to cities -lack of skilled workers -income inequality
Survival economies	<ul style="list-style-type: none"> -dung and wood burning -lack of sanitation -ecosystem destruction due to development 	<ul style="list-style-type: none"> -deforestation -overgrazing -soil loss 	<ul style="list-style-type: none"> -population growth -low status of women -dislocation

Source: S. L. Hart, Beyond Greening: Strategies for a Sustainable World, 1997, p.70, Figure 2

In 1960s, environmentalists Paul Ehrlich and Barry Commoner made a simple observation about the sustainable development. They argue that the total environmental burden created by human activity is a function of three factors; population, affluence, which is a proxy for consumption; and technology, which is how wealth is created (Ehrlich & Holdren, 1971; Commoner, 1971). Moreover, according to Hart (1997) achieving sustainability will require stabilizing or reducing the environmental burden, which can be done by decreasing the human population, lowering level of affluence or improving the technology. Nonetheless, the first two options are not feasible as the first one would require an occurrence of a major public-health crisis or war, and the second one would only worsen the situation. Demographers have long known that birth rates and level of education are inversely correlated. Therefore, the stabilization of population growth can only be achieved only by creating wealth on a massive scale (Hart, 1997). Therefore, Hart (1997) sees decreasing the economic burden by changing the technology as an only option, and consequently a question of whether firms are part of the solution or part of the problem arises. According to Hart (1997), only when considering this issue, firms will be able to start developing a vision for sustainability. Hart (1997) understands sustainability as a shaping logic that goes beyond today's internal operational focus on greening to a more external strategic focus. Hart believes such vision is required to guide firms through three stages of environmental strategy:

- **Pollution prevention** is the first step in making a shift from pollution control to pollution prevention. Pollution control deals with cleaning up waste after it has been created whereas pollution prevention focuses on minimizing or eliminating waste before it has even been created. This shift has been pushed forward by the emerging global standards for environmental management systems and the logic that pollution prevention pays. Increased profitability can be achieved by selling products specialized in reducing waste or by waste becoming an input in another process.
- **Product stewardship** is the second step in Hart's (1997) environmental strategy. This step mainly focuses on minimizing environmental impacts associated with the full life cycle of a product. Design for environment (hereinafter: DFE) is a tool for creating products that are easier to recover, reuse or recycle. This tool enables all the effects that a product could have on the environment to be examined during its design phase. The cradle-to-grave analysis goes outside the boundaries of a firm's operation including a full assessment of all the inputs and examination of the customers' usage and disposal of the product. Altogether, DFE can be achieve higher profitability reducing energy and material consumption. This can be achieved by product recycling or by simply using environmentally friendlier input materials.
- **Clean technology** is the third step in Hart's (1997) environmental strategy and it focuses on the future. Even though firms can make real progress towards sustainability

with pollution prevention and product stewardship the existing technologies do not enable firms to achieve sustainability in full. Therefore, firms must aim to develop technologies that will enable them to achieve sustainability.

Sustainability vision: all three above mentioned steps help firms to become sustainable, but firms need a framework which will give the direction with these activities. Otherwise, their impact will be meaningless. Therefore, firms need a clear vision of future product and service evolution along with a proper understanding of the new competencies needed to achieve sustainability. Hart (1997) developed a simple diagnostic tool to identify whether firms' strategies are consistent with sustainability or not. The tool is presented in Figure 6.

All questions in each of the quadrants have to be answered and evaluated to understand fully the firm's current situation and to see what measures it has to take to become sustainable.

Figure 6: Sustainability diagnostics tool



Source: S. L. Hart, *Beyond Greening: Strategies for a Sustainable World*, 1997, p.74, Figure 2

In a prior article, Hart (1995) argues that a firm's competitiveness is dependent on non-renewable and renewable resources, and thus the sustainability vision should integrate future elements of the world degradation in order to effectively guide firm's activity and develop capabilities that ensure future sustainable competitiveness.

1.4.2 CS Strategies according to Reinhardt

Forest L. Reinhardt (1999) described his view on sustainability in the article “Bringing the Environment Down to Earth”. His basic argument is that there must exist certain circumstances for environmental policies to become profitable. Reinhardt’s argues that environmental investments are not profitable if firms do not consider their working environment first. He thinks that environmental investments should be treated as any other investments, which intend to deliver positive returns or risk reduction. Therefore, the question firms should ask themselves is not “Does it pay to be green?” but rather “Under what circumstances do particular kinds of environmental investments deliver benefits to shareholders?” (Reinhardt, 1999).

Reinhardt (1999) suggests that there are five approaches firms can take to integrate the environment into their business:

- Differentiating products
- Managing your competitors
- Saving costs
- Managing environmental risk
- Redefining markets

He also believes that these approaches should be evaluated in a long term as benefits from environmental investments in principle take place in longer time spans. Reinhardt (1999) furtherly suggests that firms possessing the right structure, competitive position and managerial skill will deliver increased value to shareholders and will also make improvements in their environmental performance.

1.4.2.1 Differentiating products

The first approach in Reinhardt’s (1999) paper is the product differentiation approach. The idea behind environmental product differentiation is that firms create products or employ processes that offer greater environmental benefits or impose smaller environmental costs than competitors’. Such actions allow firms to endure higher costs and command higher prices or capture additional market share. For this to take place, three conditions should be fulfilled:

- Identification of the customers who are willing to pay more for an environmentally friendly product.
- Ability to communicate the product’s environmental benefits credibly.
- Ability to protect oneself from imitators long enough to profit on investments.

1.4.2.2 Managing your competitors

According to Reinhardt (1999), firms may derive environmental and business benefits by working on changing the rules of the game so that the playing field tilts in their favor. Firms may need to incur higher costs to respond to environmental pressure, but they can force their competitors to raise their costs even more. This can be done by joining similarly positioned firms to set private standards which only work when the following attributes have been adhered:

- The regulators must be able to set measurable performance standards.
- The regulators have to possess access to information to verify compliance.
- The regulators have to be in a position to enforce their rules.
- Private programs need at least government's tacit approval.
- Private regulations must cover all relevant competitors.

As an alternative to the private standards, firms can tie their competitors' hands by working with government regulators. Again, the proposal of the new environmental standards is required to have a strong market position and the regulator needs to benefit from the improved regulations at the same time. The costs have to be spread among all the involved parties thus lowering the chance of organized opposition.

Using the environmental regulation strategically is somehow different from the product differentiation approach as firms have to force their rivals into matching their behavior. Therefore, this approach works best when there is no possibility of inducing customers to pay a price premium for your product.

1.4.2.3 Saving costs

The third Reinhardt's (1999) approach for value increase is internal cost reduction. He argues that some organizations are able to cut costs and improve environmental performance simultaneously. Such tactics include reducing solid waste generation and cutting water and energy use. Industrial companies can reduce costs and enhance environmental performance at the same time by redesigning inflexible and wasteful routines. Such environmentally friendly cost savings often happen when firms are under tremendous pressure of existence in the market. Even if rare, these opportunities are something managers should be looking for as long as the cost of searching for them does not offset the profit they can bring.

1.4.2.4 Managing environmental risk

The fourth approach described by Reinhardt (1999) focuses on risk management. The primary objective of this approach is cost avoidance in case of an industrial accident, a consumer boycott, or an environmental lawsuit. He argues that effective management of business risk stemming from environmental problems can be a source of competitive

advantage. Reinhardt (1999) believes that firms which go beyond compliance and establish good communication with stakeholders can achieve competitive advantage, which can result in entering new markets or simply managing long-term costs.

The problem with environmental risk is that it is extremely difficult to assess it quantitatively and that it is why it is important to manage it differently. There are several ways to do that. Manager's environmental performance can be a factor in determining incentive pay, and it can also be considered in regular performance reviews and promotion processes. Moreover, as information about environmental risks improves, it will become increasingly possible to handle them like any other risks. On the other hand, environmental investments are risky by nature, which is the reason why even sensible investments in risk management are extremely vulnerable to cost-cutting pressure. Therefore, senior managers have to make sure that those responsible for environmental risk management are clear about the potential benefits of their investment and which solutions ought to be integrated into firm's overall risk management approaches.

1.4.2.5 Redefining Markets

For the fifth approach, Reinhardt (1999) says that some firms are following several approaches at once and in the process they are redefining the competitive rules in their respective markets. Rethinking traditional guidelines about property rights is a useful way of discovering corporate opportunities to redefine markets based on environmental prerogatives. In other words, it means that instead of transferring all rights and responsibilities of ownership to the customers, manufacturers can retain the obligation of disposal and in return control the product at the end of its useful life. The end product can then be used for new products thus benefiting the firm and the environment. The key to this approach is innovation, which enables firms to create a very strong competitive position, but it may come with a significant market, regulatory and scientific risks.

Firms that succeed with this approach are often leaders in the industries facing intense environmental pressure. And such firms have the investment money and motivation to invest into research and development of new ways of delivering valuable services. They also have the power to implement their vision and cope with the potential risks. Moreover, by creating a base for a more profitable and environmentally responsible future, they may be able to attract top class managers, scientists, and engineers who will help them build on their initial success.

Reinhardt (1999) believes that firms have realized quality does not always come at an extra cost and that improved quality sometimes leads to lower costs. Thus, firms have to be aware of the importance of implementing the right strategy, and they should also be informed about their customer's requirements. He believes that environmental problems should be analyzed as business problems and should be treated accordingly. Reinhardt

(1999) states that firms' responsibility is not solving problems as their shareholders want a return on their investment. Therefore, not all firms will profit from environmental strategies, and that is the reason why managers have to think about when it actually pays to be green.

1.4.3 CS Strategies according to Placet, Anderson & Fowler

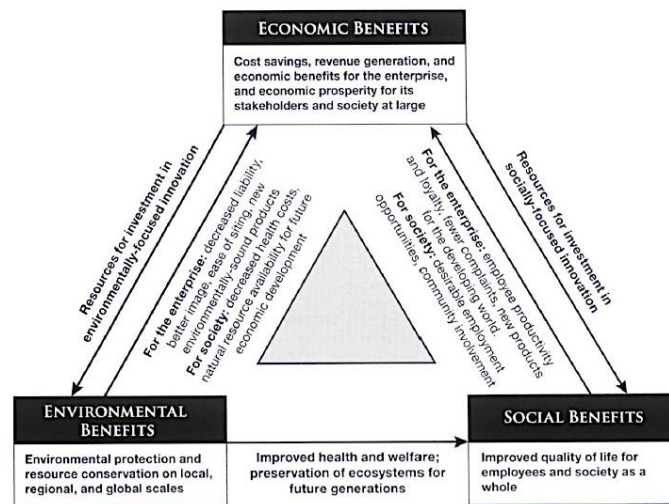
The third theory on CS strategies we will mention is a theory written by Placet, Anderson and Fowler (2005), which was published in the article "Strategies for sustainability". They argue that sustainable development has three goals i.e. environmental stewardship, social responsibility and economic prosperity. Such strategy has to be carefully studied with a view to fully understand sustainability-related opportunities and threats. Placet, Anderson and Fowler (2005) argue that innovation is a key element of sustainability- focused business strategy and must be customized to meet firms' core competencies, financial skills, resources and the sustainability challenges.

In accordance with the previous theory on sustainability, the authors also recognize three principal goals of sustainability:

- Environmental stewardship
 - Protecting air, water, land and ecosystems
 - Effectively managing the earth's natural resources
- Social responsibility
 - Improving quality of life
 - Improving equity for employees and society as a whole
- Economic prosperity
 - Creation of economic opportunity for the firm and its stakeholders

Placet, Anderson and Fowler (2005) suggest that pursuing the first two goals might be viewed as costly and unnecessary, but at the same time they suggest that pursuing them is likely to result in enhancing the third goal. The rationale for such logic is that a more efficient use of materials and lower level of waste, lead to lower production costs. In addition, a firm's concern for its employees might result in improved productivity, loyalty and decreased turnover. Authors also suggest that there is reverse correlation meaning that a high level of economic stability and profitability provides means necessary to achieve the first two goals. Without a strong economic base, a firm's concerns for the environmental and social issues usually take come after the intention to survive in the market. Hereby, they provide more evidence that three bottom lines are strongly inter-developed and work best if they are developed simultaneously. Intensive and volume maximizing strategy to an approach that uses fewer resources and maximizes both stakeholder and shareholder value requires leadership, leadership, commitment, planning and innovation.

Figure 7: Three cornerstones of sustainable development according to Placet, Anderson and Fowler



Source: M. Placet, R. Anderson & K. M. Fowler, *Strategies for sustainability*, 2005, p.34, Figure 1

Placet, Anderson and Fowler (2005) argue that the greatest barrier to sustainability focused innovation is inertia; the tendency for firms to continue operating as they have in the past, which can be supported by the fact that sustainability-focused investments are not necessarily linked to near-term cash flow. The authors base their assumptions on the study conducted by Battele (2002) on the cement industry. The study included a series of stakeholders' dialogs and sub-studies, which researched topics relevant to sustainability in this particular industry. After completing the analysis, Batelle formulated ten key recommendations:

- Climate protection: establishing carbon management programs and targets for CO2 reduction
- Resource productivity: facilitating the practice of industrial ecology and eco-efficiency in the industry
- Emissions reduction: improving and spreading the use of emissions control techniques
- Employees' well-being: implementing programs to enhance workers' health, safety and satisfaction
- Community's well-being: enhancing quality of life through stakeholders' dialog and community assistance program
- Ecological stewardship: improving land-use practices
- Regional development: promoting regional economic growth and stability by participating in a long-term planning in developing countries
- Business integration of sustainable development: integrating sustainable development principles into business strategy and practices in order to create shareholders value

- **Cooperation:** working with other firms and other external organizations to foster sustainable development practices and removing barriers
- **Innovation:** encouraging sustainable development related innovations in product development and processing technology and enterprise management

Placet, Anderson and Fowler (2005) emphasize that innovation is integral to all the recommendations even though it is treated as a separate recommendation. Battele's study provides examples of potential pathways for sustainable innovations associated with each of the recommendations stated above. Each possible innovation pathway is categorized as a process, product or management initiative. The pathways can be seen Table 1:

- **Process improvements** are generally oriented towards reducing resource consumption and environmental effects, which might include deployment of carbon capture, sequestration technology, development and deployment of biomass fuels, re-usage of waste products and investing in product and technology research and development.
- **Product innovation** focuses on creating higher value products that result in less material and energy inputs in the product's lifecycle. It may also assist industries in meeting the climate protection as well as resource intensity recommendations. This can be achieved if less resource inputs are needed for production of the end product or if waste products are used for the production. Producing higher quality products can also prolong products' lifetime thus reducing the overall consumption.
- **Management initiatives** include measures of monitoring progress and improving information needed to make sustainability focused decision. Future innovations will be a result of firm's own research, product development and management processes, but there are legal limits and industry specifics, which must be taken into account.

Table 1: Potential future innovation pathways

	Potential Future Innovation Pathways
Climate Protection	<p>Process:</p> <ul style="list-style-type: none"> -Carbon capture and sequestration technology -Development of biomass fuels of lower-carbon, hydrogen-rich fuels for cement kilns <p>Management:</p> <ul style="list-style-type: none"> -Measurement and monitoring programs for CO₂
Resource productivity	<p>Process:</p> <ul style="list-style-type: none"> -Co-production of cement and electricity (based in the principle that coal ash and clinker are created through high-temperature burning and both have the same basic chemical makeup). -Technologies for safely increasing use of waste fuels in kilns -Advanced monitoring for combustion processes using waste -Advanced kiln concepts that lower temperature of fossil fuel use <p>Product:</p> <ul style="list-style-type: none"> -Innovations that lead to much lower use of limestone in cement by increasing performance of blended/composite or concrete -Novel cement products using fewer virgin resources (cement with lower calcium content or higher reactivity; new types of cement made by completely new processes) <p>Management:</p> <ul style="list-style-type: none"> -Use of lifecycle analysis and other analysis techniques to better understand the relative impacts of various resource productivity improvements
Emission Reduction	<p>Process:</p> <ul style="list-style-type: none"> -Continuous improvement in emission reduction technology <p>Management:</p> <ul style="list-style-type: none"> -More widespread use of continuous emissions monitoring and environmental management systems
Ecological stewardship	<p>Management:</p> <ul style="list-style-type: none"> -More widespread use of good land practices and expanded use of new quarrying techniques, such as semi-open cut mining
Employee Well-Being	<p>Management:</p> <ul style="list-style-type: none"> -Improved methods to measure and ensure worker safety, including the handling of wastes

table continues

continued

Community Well-Being	Process: -Innovative ways to destroy hazardous substances in cement kilns, providing a benefit to society Product: -New applications of cement to ameliorate environmental problems Management: -Innovative stakeholder communication methods -Better ways to evaluate benefits to society of waste destruction and other innovations
Regional Development	Product: -Novel cement-based products that lower costs of infrastructure development in emerging economies
Business Integration and Stakeholder Value	Process: -Continuous improvement in process efficiency and cost reduction Product: -High-value products that have environmental and societal benefits Management: -New business models that change the way shareholder value is produced by cement companies; e.g., new ways to market and distribute cement and concrete products in developing countries

Source: M. Placet, R. Anderson & K. M. Fowler, Strategies for sustainability, 2005, p.34, Figure 2

The other assumption that Placet, Anderson and Fowler (2005) make is that firms must develop unique strategies tailored to their situations in the industry as well as their competencies. Firms must take into account competencies within the region (types of skills available in the firms, government agencies, legislation, etc.), natural resources available and regional sustainability challenges (environmental and social). Managers who believe sustainable development is an important part of a firm's strategy must find ways to produce sustainable products, processes and new ventures that will help to improve environmental and social conditions and at the same time maintain or improve firm's profitability. Placet, Anderson and Fowler (2005) pointed out several suggestions for developing sustainability focused strategies:

- Ensuring that many sustainability focused options are being considered, which means exploring a broad range of innovative, sustainability focused opportunities that can simultaneously result in additional revenues, lower costs or higher product value.
- Examining options from a holistic environmental and societal perspective therefore considering a full range of environmental and quality-of-life effects of all the alternatives.
- Considering stakeholders perspective, this stands for identifying internal and external stakeholders of any business decision.
- Considering financial risks and benefits, including the risks and benefits of not innovating.

The authors argue that all strategies must be customized to a specific situation and that there is no set of sustainability-oriented innovations uniformly suitable for firms in general.

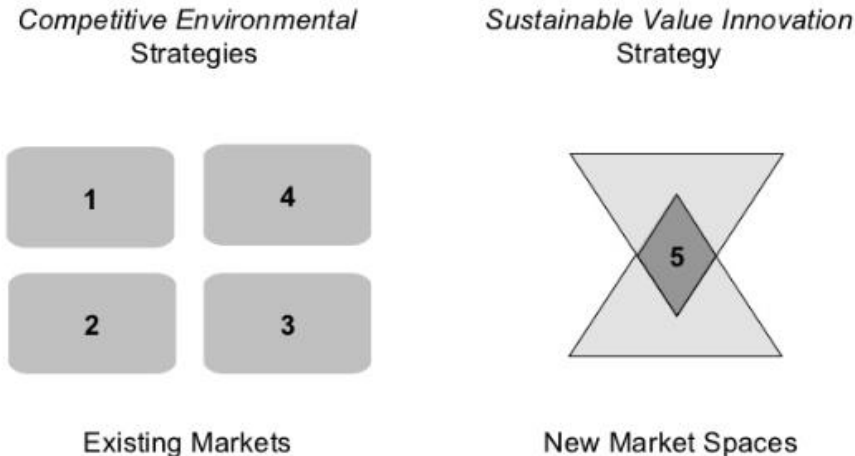
In order to achieve viable solutions that meet the triple bottom line, R&D leaders will be required to customize sustainable processes and products to specific regions and raw materials, and they might have to transcend traditional internal and external boundaries to find breakthrough solutions to sustainability.

1.4.4 CS Strategies according to Orsato

The final theory on CS strategies we will mention is based on Orsato’s (2009) book “Sustainability strategies: When does it pay to be green?”. We will explore this theory more in depth as we believe it best explores the relationship between CS strategies and firm’s value through different financial drivers.

According to Orsato (2009), there are two basic group of strategies; competitive environmental strategy and sustainable value innovation strategy. Together they comprise five different sub-strategies that firms can undertake as sustainable strategies. The first choice firms have to make is whether they want to create a competitive advantage, which results in undertaking the four competitive environmental strategies competing in existing market spaces with existing products, or they want to create new market spaces with the sustainable value innovation strategy. Managers’ goal is to align the environmental and social investments with the firms’ strategy by focusing on a particular strategy they choose to prioritize, which does not mean that firms’ focus on one strategy prevents them from engaging in other strategies. As mentioned before, the alignment between the environment and the firms’ core strategy is of utmost importance.

Figure 8: Sustainability strategies



Source: R. J. Orsato, Sustainability Strategies: When does it pay to be green?, 2013, p.40, Figure 2.3.

1.4.5 Competitive Environmental Strategies

The concept of competitive advantages was firstly introduced by Michael Porter (1980) in 1980s. He identified two types of competitive advantages that firms can use to surpass their competition and they are being cheaper or being different. The first type of competitive advantage focuses on minimizing production costs by the efficient use of labor and capital whereas the second type focuses on product's uniqueness thus convincing consumers to choose their products over the competition's. When implementing the two types of competitive advantages, firms are being faced with a challenge to transform the mentioned advantages into sustainability strategies and they may encounter several obstacles on the way as well.

Firstly, successful transformation into a sustainability strategy depends on the conditions the firms are faced with. Some favor the transformation of eco-investments into profitable business opportunities and eventually into sources of a competitive advantage. The matrix below, taken from Renato Orsato (2013), shows four different strategies basing on the types of competitive advantages and focus. Firms can choose to either generate advantages via differentiation or lower costs or to concentrate on the organization. It is also fundamental to recognize that the focus on one particular strategy does not mean neglecting other areas. The goal is that firms go beyond compliance and try to reduce their environmental footprint as much as possible. The four different competitive advantage strategies with the focuses can be observed in Figure 9.

Figure 9: Competitive Environmental Strategies



Source: R. J. Orsato, *Sustainability Strategies: When does it pay to be green?*, 2013, p.30, Figure 2.1.

1.4.5.1 Eco-Efficiency

In 1990s, Porter re-emphasized that productivity is the key element for firms to gain competitive advantage (Porter, 1990). Therefore, firms should be able to turn cost into profit by identifying hidden opportunities for innovations. In 1995, Porter and Clas Van der Linde (1995) argued that firms should promote resource productivity in the form of material savings and by-products because waste exists in an inefficient use of resources. Eco-efficiency is, therefore, a CS strategy that fundamentally pursues hidden opportunities through eco-investments and turns them into sources of competitive advantage. Cost reduction and converting waste and by-products into sources of new revenue are just some of the competitive advantages that firms use by undertaking **eco-efficiency** as their CS strategy. In order that the strategy is labeled as eco-efficient, firms must focus on three aspects of resource productivity.

- Lean thinking
- Industrial Symbiosis
- Lower emissions of CO₂

The optimal use of resources has always been a sound business plan. The harshly competitive economic environment has driven firms to reduce costs of industrial processes and firms have had to minimize waste and optimize their resource use to its maximum. The overall result of the **Lean Thinking** (hereinafter: LT) approach has been the reduction of the environmental impact. For the LT approach to fully coincide with the eco-efficiency strategy, an eco-oriented mindset is first required. Only when possessing it, LT can trigger radical eco-innovations and technologies, which can lead to improvements in resource utilization thus becoming sources of competitive advantage. “In practice, when waste is not considered as such in process-intensive firms, extra revenues are made possible by taking full advantage of by-product utilization.” (Orsato, 2009)

“The eco-efficiency mindset can generate gains beyond the borders of a single firm. Firms can reduce environmental impacts by looking for resource efficiency of broader processes.” (Orsato, 2009). The perspective of industrial ecology, where individual manufacturing processes are building blocks of broader systems of production and consumption, has inspired the development of **Industrial Symbiosis** (IS). IS assumes that there is an interdependent flow of materials, processes and energy inside the cluster of closely located firms, which means that waste, by-products and energy of one firm can be another firm’s input. In this way, closed-loop systems are being formed called Eco-Industrial Parks. Altogether, IS has been creating a simple economic logic where the cost of input and waste can be reduced whereas income can be obtained by selling by-products or energy to neighboring firms.

For more than a decade, the most crucial environmental issue has been the global warming issue, and the mitigation measures for it will increasingly reward eco-efficiency in a new way, through **carbon credits**. The new approach was enabled by the Kyoto protocol which

was signed in 1997 assuming the emission reduction by 5% compared to the 1990 level of emissions in the commitment period 2008-2012. The mechanism that enables firms to create value through the reduction of greenhouse gasses is the Emission Trading Schemes. To fully understand the mechanism, we should observe the examples of the EU member countries.

The scheme is based on the cap (fixed total amount of emission that EU member country can release) and trade principle. In the first period (2005-2008), allowances (carbon credits) were given for free to firms working in the sectors of electricity, oil, metals, building materials and paper. So, the underlying logic is that firms that did not exceed the allowed quota could sell their carbon credits to the firms surpassing the quota of the emission allowed. Therefore, “the entrepreneurial question in greenhouse gas reduction is: How can one generate carbon credits at the lowest cost and sell them at the highest price?” (Hoffman, 2005). It can be observed that the market mechanism itself will reward the commitment to the reduction of greenhouse gasses even after the Kyoto commitment period.

In order to generate value from the eco-efficiency strategy, the management has to be ready to commit time and focus on the flow of resources within and around the corporation. In addition, this approach requires specific conditions to be developed and, therefore, it cannot be generally undertaken, but it can be only used to some extent. Therefore, due to firms’ working circumstances some will be rewarded more than other.

1.4.5.2 Beyond Compliance Leadership

Firms that operate in the resource-intensive industries are often under the microscope of eco-activists. Thus, firms’ primary goal is to inform the general public of their efforts that go beyond compliance. They invest into certifying Environmental Management systems according to International Organization for Standardization (hereinafter: ISO) or adopt voluntary environmental initiatives, which may require them to pay subscription fees and commit to reduce the overall impact of the organizational process. Especially firms that operate in the energy and oil industry have been struggling to go beyond the law requirements by advertising their green credentials with a view to inform the demanding stakeholders about their environmental disposition. The rationale behind is reputational risk. Firms that are exposed to the risk of having a bad reputation need to show proper citizenship credentials. Large firms are nowadays endeavoring not only to avoid the risk of a bad reputation but to create a positive one. In the past, the endorsement of codes of environmental conduct or the certification of ISO standards was enough to generate competitive advantages, but nowadays the market forces firms to join voluntary environmental initiatives or green clubs to show their will to go beyond the law.

It is fundamental for firms to realize they cannot operate to their full potentials if the community has a bad perception of them. Hildebrand and Money (2007) pointed out the importance of firms' responsibilities in the stakeholders' eyes. They analyzed the benefits the firms bring to the customers via products and services, the communication with the customers, keeping promises, awareness of the local community, and the firms' attitude to solving problems. There are several indexes that measure corporate reputation and one of them, for example, is Fortune's most admired firms. Fortune's index measures reputation basing on different aspects, which are innovation, financial soundness, employee talent, use of corporate assets, long-term investment value, social responsibility, quality of management and quality of services and products. In principle, corporate reputation relates to the perception stakeholders have about a firm.

Firms are undertaking their voluntary actions by signing up in **green clubs**. They initially emerged as a means of helping firms to manage their reputation, which was often damaged by pollution and accidents from their operations. These voluntary initiatives are realized as codes of conduct, environmental guidelines, charters and programs. These initiatives have a goal of achieving implementation of the environmental programs and passing them to the general public. "Green clubs require club members to incur private costs, as codified in the club's membership standards and mechanism for ensuring compliance with those standards. The cost of membership should not be trivial because producing public good is not free. For Green Clubs, the main cost of joining the club are generally not direct payments to club sponsors. Rather, they are monetary and non-monetary costs of adopting and adhering to the club's requirements." (Orsato, 2009). When becoming members of green clubs, firms should improve their environmental performance. It cannot be claimed that joining the voluntary initiatives has brought advantages in the market, but it has at least served as a defensive strategy by avoiding the disadvantages of being exposed to adverse reputational campaigns. It also has to be stated that the favorable reputation of these clubs influences the possibility of increasing firms' reputation. Clubs with highly demanding standards which were formed by a broad range of stakeholders, tend to have higher reputational values.

Joining a Green Club and complying with their environmental standards may help firms to generate a positive public opinion and eventually increase firms' reputation. Nevertheless, this is a broad definition which cannot be generally applied to all business entities and similarly to the previous strategy, the context and the type of industry firms operate in will eventually define the strategy's success.

1.4.5.3 Eco-Branding

Differentiating products and seeking loyal customers willing to pay premium prices for the products has always been an appealing business strategy. To that end, firms provide unique products/services that customers' value regardless of the price. The goal is to set the

customers' mindset in a way that they will appreciate these efforts and will be willing to pay for it.

Respectively, there is little surprise that firms have started ecological differentiation. Firms are evermore exploring market niches for which it was long thought that only a selection of people would pay the premium price. Nowadays, the eco-oriented products represent a well-defined market niche and can be treated similarly to other niche markets. But to enter this type of eco-oriented market, one has to be aware there will be additional requirements for the product. The products have to present lower environmental impacts and satisfy all other conditions at the same time. Therefore, products must not only satisfy customer or firm's private needs but should also benefit the public.

A straightforward way to differentiate the products basing on environmental prerogatives is to inform the customer about it. Labeling with terms such as natural or bio is a cheap way to inform the customers of your eco-product. However, there is a potential drawback as self-claimed labels are only certified by the producer itself and are not considered eco-labels by the ISO standard. These types of labels lack legitimacy, and moreover reliable information is of ultimate importance when it comes to eco-differentiation. Hereby, third-party accreditations of eco-labels step in. According to Orsato (2009) "the fundamental logic behind eco-labeled products is to differentiate them on the basis of above-average environmental performance". This means that customers have relatively easily accessible information on whether a certain product meets the criteria for the environmental impacts during stages of a product's life.

Due to the fact that the eco-labeling has become increasingly difficult and costly, firms have developed an innovative way of differentiating products' portfolio. Therefore, firms created whole new brands that portray the image of environmental responsibility, whereas a whole range of different products is sold under these names. These products should taste and perform as well as the conventional products, they should not be necessarily more expensive nor should they be difficult to find. Hence, the key to success is finding, developing and managing a reliable supply chain as the whole chain has to be eco-certified due to strict regulations. These require that the eco-certification be traceable all the way back to the producer of raw materials, which is complicated and time-consuming. Therefore, eco-branding is far more accessible to big market players who can influence the suppliers with their bargaining positions.

According to Jeol Makeover (1994) "Given a choice, most consumers will be happy to choose the greener product – provided it does not cost any more, comes from a trusted maker, requires no special effort to buy or use and is at least as good as the alternative. That is a hard hurdle for any product." Regrettably, this objective can only be achieved by a minority of market players. In order to succeed in eco-branding, firms must consider the structure of the industry, the legal framework and the firm's capabilities. But for the eco-

branding to truly be a competitive advantage Forest Reinhardt (1999) has identified three requirements for the eco-product differentiation; when the information about product's environmental impact is, reliable, uncontroversial and available to all consumers, imitating of differentiation must be difficult for consumers and that consumers are willing to pay for the cost of ecological differentiation. At this point Orsato (2009) suggests there should be an additional aspect to the three mentioned aspects. The fourth aspect relates to the convergence between public and private benefits meaning that profits are being taken care of while the impact on the working environment is still positive.

1.4.5.4 Environmental Cost Leadership

Although firms' effort is to differentiate in the market is substantial, there is only a limited amount of options to do that. Especially industrial markets have a very strict sense of costing, where the price always coming first. Hence, in price-sensitive markets, the product's price is consumers' priority and no matter how eco-friendly the product may be it has to be cheap first.

So does this mean that the products that need to be cheap cannot be eco-friendly? The latter has been an issue in the "does it pay to be green debate". Some firms have been able to reduce costs and environmental impact at the same but admit it has been a difficult challenge indeed. Firms, which succeed in providing eco-attributes at low costs, should experience competitive advantages and such firms are able to compete with very thin margins. Firms are trying to offset the eco-investment cost with innovative designs, alternative materials and different advertising and they even market their products differently. There are four aspects of the environmental cost leadership strategy:

- Eco-design
- Changing product's nature
- Redefining products concept and use

The **eco-design** aspect of the E-cost leadership strategy is best shown in the example of the packaging industry. Due to post-consumer taxes, the demand for low-price and environmental performance has arisen. The saturation of the market, where margins are low, has pushed firms under pressure to reduce costs and, on the other hand, the environmental regulation has strained the competition. Consequently, firms have been pushed into adopting the environmental-cost strategies to generate competitive advantages. The eco-design concept is defined as a design of products with the intention of reducing their embedded environmental impact (Ryan, 2003). This means that firms should use alternative materials for their packaging, which would cost less and would reduce the environmental impact at the same time. The dematerialization, which is an eco-design principle, is also often associated with the packaging industry. The post-consumption regulatory measures have pushed firms into replacing the existing materials with materials

that can be later reused or recycled. This should in principle reduce both the costs and the environmental impact. Hence, dematerialization is advantageous because of costing less and reducing the environmental load at the same time. Another aspect of eco-design is also reducing the weight or volume of materials used. Optimizing either of those can generate positive environmental and cost impacts during the transportation of products. Furthermore, another aim of eco-design is to design products that can be reused, remanufactured or recycled. Therefore, those who are able to develop eco-attributes at low costs are likely to experience competitive advantages.

Rather than redesigning their products, some of the firms, **change the products nature**. To best show this aspect of the environmental-cost leadership strategy is to focus on the oil industry, which has been increasingly challenged by production of renewable bio-fuels. New fuels tend to be cheaper and have less environmental impact. In the bio-fuels segment, a Brazilian firm is in the center of attention as it was a pioneer in producing ethanol with the intention to replace a large portion of petrol with bio-fuels. However, facing a drop in oil prices, the initiative to produce ethanol faded away. Anyhow, with the introduction of flex-fuel engines, the demand for ethanol eventually increased as flex fuel systems allow mixtures of different fuel types (for example petrol and ethanol). The evidence shows that in Brazil ethanol production had positive effects on the environment and society because ethanol produces less toxic emissions. Its production created jobs all over Brazil, but the quality of such jobs is questionable. The global trend of decarbonization suggests that the potential for profit in this segment is still considerable. Bio-fuels have the advantage of being renewable sources of energy and present lower regulatory risk than other carbon-intensive fuels. Nonetheless, the marketplace does not reward the eco-friendly attributes of bio-fuels, and therefore producers are not able to charge a price premium for it. All in all, the key element to success is still pricing, products need to be economically viable, and if you manage to combine both the environmental soundness and pricing you get a potentially winning combination.

The product that adopts the E- cost Leadership strategy must present lower costs and a positive environmental impact. The third way to adopt this approach is by redefining **products concept and use**. The best way to explain this strategy is to present a fertilizing product developed in New Zealand. Its advantages are embedded in three aspects. The first aspect deals with focusing on the product itself. Its development was fundamentally different from the development of usual fertilizers. This fertilizer is unique as it helps preserving the already existing nutrients in the soil rather than adding them. Therefore, the cost is reduced since farmers do not have to apply additional fertilizers and also the environmental impact of adding fertilizers is reduced. The second aspect focuses on the location where the product is used. The usage of the new product has helped to improve the quality of groundwater in the area thus reducing the local impact. However, the legislation has not yet obliged the farmers to reduce the use of fertilizers on behalf of the groundwater pollution. This may change soon, and the newly developed products will be

of significant use to help farmers mitigate this problem. And the third aspect focuses on the planet. As conventional fertilizers produce the powerful greenhouse gas nitrous oxide, the newly developed product also serves as a mitigating tool for defying global warming.

To sum up, when adopting environmental-cost leadership strategy, the cost must be a priority. Hence, reducing the cost for consumers is essential while the environmental attributes present either the license to operate in the cost-sensitive industry or additional sales arguments. It follows that firms which need to compete on the basis of low cost and reduced environmental impact need to focus on the environmental-cost leadership strategies. However, the nature and attributes of the products and their target markets have to be taken into consideration, and they also have to create necessary organizational competencies to become the environmental-cost leaders.

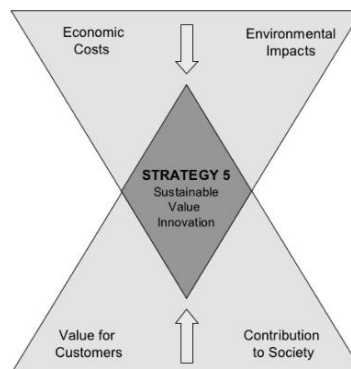
1.4.6 Sustainable Value Innovation

In comparison to the above-described strategies, the fifth sustainability strategy does not focus directly on creating a competitive advantage on existing markets but rather on the concept of value innovation and it can be said that highly innovative firms can bypass the competition by adopting the **Blue Ocean Strategy** (hereinafter: BOS). According to Orsato (2009), the logic behind the BOS is creating additional value for the customers at lower costs. Consequently, firms can bypass the competition as such value innovation can generate new market spaces. As BOS is customer oriented, it is considered a demand-oriented strategy while competitive environmental strategies are considered supply-oriented because of their focus on outperforming the competitor.

Translating BOS into **sustainable value innovation** (hereinafter: SVI) strategy requires firms to lower costs and increase customer value, hence increase private profits and at the same time generating public benefits in the form of reduced environmental impacts and value for society. Large firms possess the power to influence their supply chain and distribution channel of their products and services. They can define the standards and policies of how their products are produced and at what price they should be sold, which also includes the environmental and social standards. Large firms can use their bargaining power to achieve the so-called greening of the supply chain.

Another example of SVI is creating a closed-loop recycling system. In this way, firms can reduce the risk of being taken by surprise if a new regulation is brought into law. Thus, such actions positively affect the firm's reputation. Nonetheless, even if a competitor adopts the same strategy, its outcome results to be of public benefit exhibited in the form of recycled materials and private profits. Such actions are described as product stewardship. The focuses of the SVI strategy can be observed in Figure 10.

Figure 10: Focuses of the Sustainable Value Innovation strategy



Source: R. J. Orsato, *Sustainability Strategies: When does it pay to be green?*, 2013, p.38, Figure 2.2.

In most cases, SVI can only be created if both the process of product production and consumption are redesigned. Thus, we can consider SVI a system strategy as it requires not only changes in the nature and technology, but also changes in the systems of production and consumption. For some firms, pursuing long-term SVI strategy has become a question of existence. With such strategy, firms are trying to dominate the existing markets or to create new market spaces by simultaneously addressing the economic, environmental and social demands. In order to implement SVI, firms must first observe the industry they are working in, and evaluate the system of production and consumption of a particular product, group of products and services i.e. SVI must address systemic inefficiencies. In this way, firms can reduce economic costs and environmental impacts while generating value not only for the customers but for the society as well.

This type of strategy is the most difficult to deploy. However, if using it, firms are able to develop innovative approaches to the life cycles of their products. Such approaches can create added value and new customers at reduced economic and environmental costs. In such wise, SVI strategies align shareholders' pressure for profit with societal and environmental demands (Orsato, 2009). In comparison with other competitive strategies, SVI is more constrained by the competence and ingenuity of the firms having to create new market spaces than by the context itself. SVI requires substantial innovations in the business model itself and its implementation is more of an issue of managerial audacity than positioning of the firm within an existing competitive space.

1.5 Level of integration

As we have seen in the chapter above, firms can undertake one of the several CS strategies to effectively compete in the market space. However, firms are to decide on the amount of focus put on the integration of CS strategies. According to van Marrewijk and Were (2002), there are six ambition levels of CS. Their approach is based on Graves's value system, which is thoroughly described in Beck's and Cowen's book *Spiral Dynamics*

(1996). Graves believes that mankind has developed eight core value systems; which are defined as way of conceptualizing reality and encompassing a consistent set of values, beliefs and corresponding behavior and can be found in individual persons, as well as in firms and societies. Each new value system includes and transcends the previous ones, thus forming a natural hierarchy. Value systems develop in reaction to specific environmental challenges. Eight core values according to Graves can be seen below:

- Survival
- Security
- Energy & Power
- Order
- Success
- Community
- Synergy
- Holistic life system

Firms will have to eventually meet these challenges or face extinction. In case of circumstance change, firms will be obliged to respond and reconsider their role within the society and environment and re-align the value systems in all their business institutions (mission, vision, policy deployment, decision making, reporting, corporate affairs, etc.). Marrewijk and Were (2002) believe only last six value systems are important in the context of CS. You can see a short description of each of the six value systems in relation to the environment, life force, main focus and typical values in Table 2.

Table 2: Development of human and organization value systems

VALUE CHART	Development of human and organization value systems					
Main Themes	Energy & Power	Order	Success	Community	Synergy	Holistic life system
Environment	Limitless challenges about boundaries of the territory and to be dominant over self and others within the territory.	Ordered relationships requiring legitimization in order to ensure stability and security for the future	Many viable alternatives for progress, prosperity and material gain since change is the nature of things	The gap between people and their (material) possibilities has become disproportionately large	Complex problems that cannot be solved within the current systems as awareness of broad interconnections grows.	The consequences of human actions threaten the planet's living systems and demand coordinated effort.
Life force	Conquering Domination	Belief	Achievement Changeability	Belonging	Understanding	Interconnections
Main Focus	Individual/self	Group/collective	Individual/self	Group/collective	Individual/self	Group/collective
Typical values	Courage, vitality, strength, respect, personal power, rivalry, territorial, intimidation, hedonism, loyalty to persons	Clarity, discipline, one truth, responsibility, loyalty, duty, guilt, conformity, justice, obedience, orderliness	Results, reward, image, quality, innovation, productivity, creativity, career advancement, enterprising, control	Consensus, conflict avoidance, teamwork, equality, participation, honesty and openness, being a decent person, harmony	Insight, integrity, learning, long-term orientation, ability to reflect, flexibility, tolerance for uncertainty and paradoxes	Inspiration, interdependence, future generations, ability to forgive, wisdom, sufficiency, responsible living

Source: M. van Marrewijk & M. Werre, *Multiple Levels of Corporate Sustainability*, 2002, p.3, Table 1.

In Table 3 you can see short descriptions of typical forms of expression of certain value systems within the organization. When a certain value system dominates, its related expression will manifest itself receiving a lot of emphasis within the organization.

Table 3: Forms of expression in organizations

	Forms of expression	Possible ineffective forms of expression
Energy & Power	<ul style="list-style-type: none"> - Strong drives to prove own power - Energetic and egocentric acting out - Quick to act, often impulsive and uncontrolled - Powerful leadership through dominance 	<ul style="list-style-type: none"> - Selfish at the expense of others; exploitive - Misuse of power, destructive games - Impulsive actions, sabotage and guiltlessness - Everybody for him/herself; island forming
Order	<ul style="list-style-type: none"> - A deal is a deal; - Clarity for all, orderly, obedient to rightful authority; - Rules and regulations, logic, step by step - The assigned task is the focus, not the person 	<ul style="list-style-type: none"> - Planning and regulation is more important than the objective - One truth, one right way, always categorical - Limited problem solving capacity and reluctant creativity - Suffocating rules and procedures for employees and customers
Success	<ul style="list-style-type: none"> - Success and result-oriented through improvement - Means serve the end, pragmatic - Informal and pragmatic lines of communication - Desire to compete and to become better 	<ul style="list-style-type: none"> - The end is more important than the means: ethical issues - Profit at the expense of the weaker; drop-outs - Inattentive to fair distribution, elitist - Quantity and profits instead of quality and durability - No time to enjoy the fruits of success; compulsive
Community	<ul style="list-style-type: none"> - Tolerance and accepting of differences - Group bonding, sharing and caring for others, consensus - Using each other's qualities for mutual growth - Makes judgments relative to the situation at hand 	<ul style="list-style-type: none"> - Pace of action and decisions is slow since everyone must agree - Criticism is smothered by love, not down to the point - Consensus is more important than expertise: risk of non-functional decisions - No leadership – in effect the group decides
Synergy	<ul style="list-style-type: none"> - Self-development and also environmentally concerned - Focused on the ability to learn and apply knowledge - Flexible organizational forms depending on situations - Strong leadership without dominating / use of raw power 	<ul style="list-style-type: none"> - Lack of commitment to organization and colleagues - Not enough interesting work will result in abandonment of position - Might appear aloof and uninterested - Intolerant to rigidity and demands open access to information
Holistic life system	<ul style="list-style-type: none"> - Global thinking; broader view of working, living and nature - Care for natural and human resources as one entity - More selfless and altruistic with focus on holistic view - Decision making independent of the own group 	<ul style="list-style-type: none"> - Difficulty to implement in conventional organizations - 'Everything is connected to everything else' - syndrome

Source: M. van Marrewijk & M. Werre, *Multiple Levels of Corporate Sustainability*, 2002, p.4, Table 2.

When the coping possibilities a value systems offers are no longer sufficient to provide an appropriate response to the existing circumstances, there is an incentive to move on to the

next value system. The increasing complexity of the environment requires that a value system be more complex, thus allowing more freedom to act in accordance with the environment. The move to the new value system facilitates new patterns of behavior and creation of new institutions. Thus, firms will develop new solutions to cope with more challenging circumstances.

Based on the above described value systems, Marrewijk and Were (2002) have identified six different ambitions level and manifestations of CS. In comparison to the basic triple bottom line theory of CS, they have added a fourth P to the existing three (people, planet and profit); principles. Short definitions of different ambition levels can be seen below:

- **Pre-CS:** There is no ambition for CS. Basic steps towards CS can be enforced externally (e.g. legislation)
- **Compliance-driven CS:** The motivation here is providing welfare to society in the limits of legislation. Firm might consider charity and stewardship. CS is seen as duty and obligation.
- **Profit-driven CS:** Social, ethical and environmental aspects are integrated into firm's operations and decision making with a sole reason to achieve higher profitability
- **Caring CS:** CS implementation goes beyond legal compliance and profit considerations. Balancing of economic social and environmental concerns is vital. The motivation behind is caring for society and planet are as such important.
- **Synergistic CS:** CS is driven by a search for well-balanced solution, which create value in the economic social and environmental aspects in the framework of firm's operations. Synergy between firm and all the stakeholders is vital. CS is viewed as the only plausible future pathway.
- **Holistic CS:** CS is fully integrated every aspect of the firm. It considers the quality of life of present and future generations. The motivation for CS is that it is the only alternative since all beings are mutually interdependent.

Each level includes and transcends the previous ones. Firms must choose their ambition level based on their awareness, circumstances and the existing value systems. In Table 4, you can see furtherly clarified ambition levels of CS in relation to the principle dimension, added by Marrewijk and Were (2002).

Table 4: The internal principles

MULTIPLE LEVELS OF CORPORATE SUSTAINABILITY						
PRINCIPLES	Pre-CS	Compliance - driven CS	Profit-driven CS	Caring CS	Synergistic CS	Holistic CS
CS ambition level / definition	At this level there is basically no ambition for CS. However, some steps labeled as CS might be initiated if forced from outside.	CS at this level consists of providing welfare to society, within the limits of regulations from the rightful authorities. In addition, organizations might respond to charity and stewardship considerations.	CS at this level consists of the integration of social, ethical and ecological aspects into business operations and decision-making, provided it contributes to the financial bottom line.	CS consists of balancing economic, social and ecological concerns, which are all important in themselves. CS initiatives go beyond legal compliance and beyond profit considerations.	CS consists of a search for well-balanced functional solutions creating value in the economic, social and ecological realms of corporate performance, in a synergistic, win-together approach with all relevant stakeholders.	CS is fully integrated and embedded in every aspect of the organization aimed at contributing to the quality and continuation of life of every being and entity, now and in the future.
Internal drivers / motivation behind CS	The awareness that CS could increase personal power (e.g. through reputation improvement)	A sense of moral duty (e.g. regarding charity or stewardship): CS is perceived as a duty or correct behavior	Awareness of the business case for CS: CS is promoted when it is thought to contribute to personal success and the financial bottom line * Relevant issues e.g.: reputation in various markets, or a perceived profit risk in not installing a CS policy (e.g. possibility of scandals)	Personal values and beliefs of top - management and all participants that social and environmental care are important as such	Personal values and beliefs of all stakeholders as well as top management that sustainability, social and environmental aspects are important as such and inevitable given long-term trends	Conviction that sustainability on a worldwide scale is the only alternative, since all beings and phenomena are mutually interdependent. Each person or organization therefore has a universal responsibility towards all other beings, both in the present and of future generations.
Criteria for decision making	The impact of the decision on personal power.	The decision should be taken by the correct authority according to the proper procedures and in line with the basic purpose	Financial criteria: Shortest 'pay out period', highest expected profit, return on investment or shareholder value	* People, Planet, and maybe Profit * Taken after consensus or at least with consent of all relevant stakeholders	Balanced, functional decision, taking into account all available expertise and considerations with long term view perspective	In line with and in favor of holistic interests for survival of life on the planet

Source: M. van Marrewijk & M. Werre, *Multiple Levels of Corporate Sustainability*, 2002, p.6, Table 3.

In Table 5 you can see the external drivers behind specific CS ambition levels and the ways in which governments can support CS.

Table 5: External drivers to corporate sustainability

MULTIPLE LEVELS OF CORPORATE SUSTAINABILITY						
EXTERNAL IMPACT	Pre-CS	Compliance - driven CS	Profit-driven CS	Caring CS	Synergistic CS	Holistic CS
External drivers behind CS	Outside force, e.g. enforced government legislation or a buyers strike or rewards	Instructions from higher authorities: e.g. government regulation or the word from God	* Proof that CS improves profitability * Pressure from various markets, e.g. reputation issues leading to a decrease in sales or lower stock price * negative media coverage	Requests from employees and other stakeholders for social and environmental care	Information from any source regarding the consequences of organizational actions (e.g. unexpected negative externalities or unused improvement opportunities)	
Preferred role for the government	Government implementing traditional public tasks.	Clear legislation and subsequent enforcement which is effective and visible (law and order). Also clear division of tasks and responsibilities.	* Creating and maintaining a level playing field * Creating financial stimuli to engage in CS	* Supporting international governance structures and national policies on poverty, environments, equity, ethical codes, etc. * Stimulating the formation of participative CS discussion groups	* Stimulating a network of experts to further develop the expertise-base to implement CS in a most effective way * Coordinating overlapping responsibilities * Furthering PPP in projects * Rules supporting SRI and transparency	Co-creation in performing societal issues
Organization stakeholders – society relationship	Distrust – the organization might act in very unsocial an unsustainable way when not properly controlled	Independent; social welfare is the responsibility of the state, not of an organization (apart from legal compliance)	Shareholders normally come first; taking account of interests of other stakeholders is often expensive and preferably avoided	Dialogue between the organization and stakeholders / society	Stakeholder orientation of the organization: taking interests of relevant stakeholders into account is integrated into core business	

Source: M. van Marrewijk & M. Werre, *Multiple Levels of Corporate Sustainability*, 2002, p.7, Table 4.

In Table 6 you can see further explanation of the CS ambitions level in relation to the basic triple bottom line approach (Profit, Planet, People).

Table 6: The aspects of the 3P dimensions for various CS ambitions

MULTIPLE LEVELS OF CORPORATE SUSTAINABILITY						
PROFIT	Pre-CS	Compliance - driven CS	Profit-driven CS	Caring CS	Synergistic CS	Holistic CS
Prices based on:	What they can get away with	Integral cost price plus	Market price/value	Fair price	Perceived value	
Shareholder value	Shareholders are only relevant when powerful	Keep owners satisfied	Maximizing shareholder value is key; Managing perceptions of potential shareholders to increase stock price	Balancing shareholder value with interest of other legitimate stakeholders; Expand "ownership" possibilities	Increase of stakeholder values furthers shareholder returns as well doing something of use.	Fair price for owners, no stocks traded.
Investor relations	Tell them whatever it takes to keep them from interfering; Possibility of manipulating financial and other information	In line with relevant regulations (e.g. issued by SEC)	Proactive managing of relations to secure financing at minimum costs	· Stakeholder relation · Beginning of exchange of social and environmental information · Participatory	· SRI orientation · Full info on Corporate Sustainable Performance	
PLANET						
Environmental management	Environments are exploited for short-term gain without concern for long-term consequences.	Compliance oriented and use of simple improvements (such as taller pipes)	Environmental measures must directly improve profitability [e.g. waste reduction, reducing energy use] or indirectly [e.g. high visibility projects boosting reputation]	Eco-efficiency	Minimize impact on the environment (e.g. emissions, waste and extraction of raw materials) Use of insight in systemic interdependencies	Pursuit to reach zero impact on the environment (e.g. emissions, waste and extraction of raw materials)
Neighborhood	No issue	Compliance with relevant regulations; charity (riches oblige)	High visibility projects boosting reputation	Supporting neighborhood development	Together win approach	
PEOPLE						
People Management	Autocratic; Exploitive	Custodial; Authoritarian	Supportive; Manipulative	Collegial; Participative	Motivational; Interactive	
Workplace environment	Permanent supervision; Communication is top-down; Risk of exploitation of employees	Compliance: meeting physical and safety requirements; Standardization of work	Cost-effective actions to improve employee motivation in order to increase productivity and decrease employee turnover	Endeavors specifically to increase personnel wellbeing; Corporate culture is often considered a major theme	Individual and collective alignment of requirements and facilities, supporting dedication and individual motivation	

table continues

continued

Safety & Health	Respond to acute problems	Compliance with regulations; Inventory of common problems and systematic response	Cost-benefit appraisals of possible improvements	Management system on safety and health, including socio-psychological dimensions	Pro-active policy, linked with people management (HRM) and custom made arrangements for individual employees	
Diversity	Non-issue	Homogenic labor force	Diversity only receives attention when it increases results	Policies for emancipation of women, colored and disabled persons	Women and minorities in management positions (provided they qualify)	
Work Ethics and globalization: (e.g. bribery, child labour)	Non-issue	Ethical code describes the one and only correct way to handle	Pragmatism	Ethical imperialism: act abroad as when at home [e.g. total ban on bribery and child labor]	Situational relativism; Applying appropriate expertise to introduce local improvements	Proactive policies for introducing better institutions world wide
Consumers	Victims	Company oriented, supply push	Market oriented, but still basically supply push	Discovery of the human being behind the customer	Truly customer oriented: e.g. concretion, design for all	Integrated production consumer systems
Suppliers	Players who are trying to get to us before we get to them'	As few as possible; focus on economies of scale and vertical integration (hierarchies), Loyalty; Tradition.	Sub-contracting based on strict cost based contracts (win-lose approach) Output control	Introduction of co-maker ship Process control and internal audits (e.g. introduction of SA 8000)	Strategic partnerships (together win approach) Systemic quality control, externally verified	Integrated supply chains

Source: M. van Marrewijk & M. Werre, *Multiple Levels of Corporate Sustainability*, 2002, p.9, Table 5.

As we can see from the table above, firms have the option to choose how deeply into sustainability they want to deep dive. The still context in which they operate in is most often the key reason to make this decision. And as an industry of the environment in which they work in evolves, so have to the firms. Usually the more we go in to the future, the more pressure firms have to become more environmentally and socially sound, meaning that they have to aspire to the higher level of CS.

Furthermore, we decided to describe a particular case of CS, which is “greenwashing”. With this so-called “strategy”, marketing is deceptively used to promote the perception that a firm's product, aims or policies are environmentally friendly. With greenwashing firms spend more time and money claiming it to be »green« through advertising and marketing than actually implementing business practices to minimize environmental impact (Greenwashing index, 2015) Greenwashing can span from changing the label of a product to show its green attributes to advertising campaigns portraying highly polluting energy

companies as eco-friendly. Greenwashing is not just misleading the consumers, it can also hurt the environment because it can subtly encourage consumers to unknowingly damage the environment. Greenwashing misleads the consumers to buy products or services advertised to be green, but their nature is all but green. Therefore, we righteously believe that greenwashing is ethically and morally wrong (Greenwashing index, 2015) .

It is a shame that some firms try to take the short-cut to increase profit basing on environmental prerogatives as sustainability in its purest form can increase profitability. Unfortunately, greenwashing has significantly increased during the last few years as firms are under immense customers' pressure demanding green products and services. Furthermore, this type of strategy can backfire quite quickly as if noticed, it can hurt the firm's reputation and its sales significantly.

1.6 Linking Corporate Sustainability to firm value

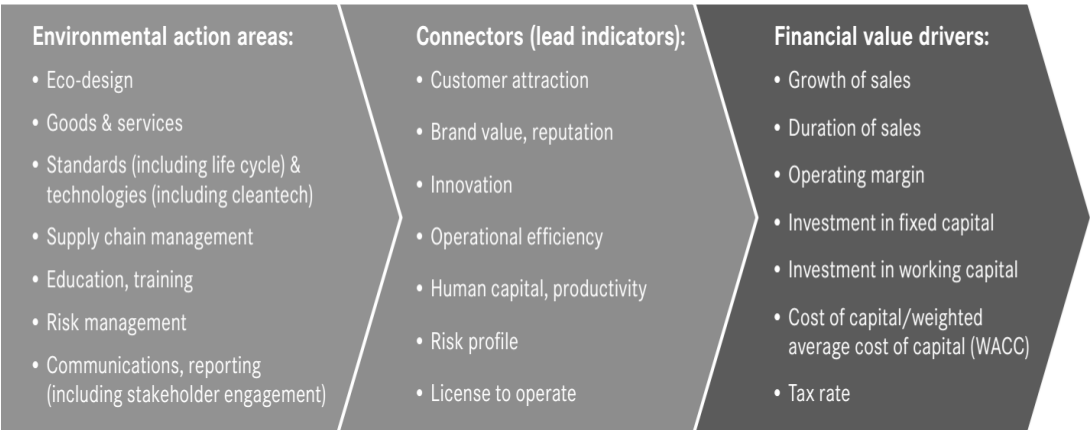
The primary goal for all firms operating in a competitive marketplace is to increase their created value. Therefore, firms are seeking new ways to enhance value, and one of them is by engaging in CS strategies. The decision to undertake such strategies is relatively easy however its adequate implementation poses a significant challenge. The first thing that has to be taken into consideration is that CS is not a short-term profit maximization strategy, but rather a long-term one, as it creates value for shareholders by embracing opportunities and managing risk deriving from economic, environmental and social developments (Burnett, Skousen & Wright, 2011). However, stockholders' short-term profit expectations are still perpetuating the managerial focus on enhancing short-term economic results. Therefore, it is crucial for the management to integrate CS strategies into their long-term strategic planning.

With a view to determining the link between CS and firm value, it is essential to identify the benefits brought to the firm by engaging in CS strategies. A research overview done by Doughty Centre for Corporate Responsibility (2011) has identified over 60 benefits clustered into seven overall business benefit areas:

- Brand value and reputation
- Employees and future workforce
- Operational effectiveness
- Risk reduction and management
- Direct financial impact
- Organizational growth
- Business opportunity

These benefits have made firms shift their short-term mindset to thinking about sustainability and creating competitive advantages on the long-term. The easiest way to link sustainability initiatives to firm value is through business case analysis. It traditionally works with 2 sets of indicators, which are the input side; in our case the sustainability actions and the output side; the financial performance seeking a positive correlation between the two. But Bertoneche and van der Lugt (2013) have discovered that there is a need to add a set of intermediary factors acting as a linkage between sustainability actions and financial performance. Adding intermediary factors should help define the driver of a better financial performance. Bertoneche and van der Lugt (2013) have set up a green business case model with key environmental actions on the input side. The model can be seen in Figure 11

Figure 11: The Green Business Case Model

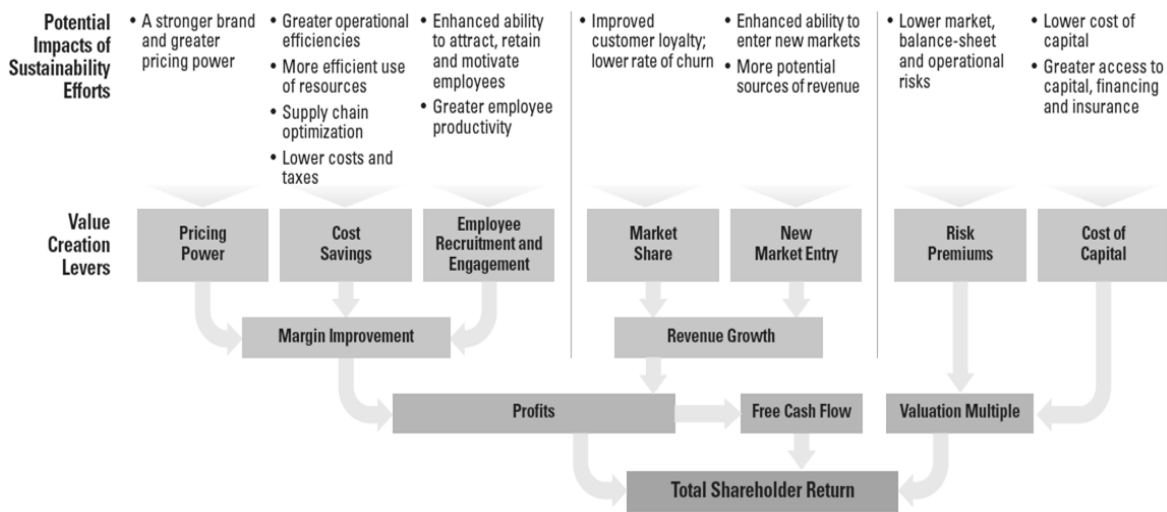


Source: M. Bertoneche and C. van der Lugt, *Finding the God particle of the sustainability business case: Greener Pastures for Shareholder Value*, 2013, p. 3, Figure 1.

Critics of CS usually argue that it destroys shareholder’s value, but according to Eccles, Ioannou and Serafeim (2012) the truth is quite the opposite, as the firms which successfully manage their environmental and social performance have better financial performance thus creating more value for shareholders. On the long-term, these are the firms that will preserve their license to operate, which is essential for running a business. Furthermore, firms will regard sustainable strategies as social expectations as responsible environmental and social practices are on the rise. Moreover, lacking the culture of sustainability is quickly becoming a source of competitive disadvantage. To support Eccles’s assumption, we included MIT Sloan’s (2009) model which structurally shows beneficial potential impacts of sustainability and how they lead to a total shareholders’ return. The model can be seen in Figure 18 showing how different sustainability strategies affect different value creation levers thus producing positive effects for better overall shareholders’ return. Deriving from there, it can be observed that “The argument about sustainability is over. It is the key to creating value for shareholders and all other

stakeholders over the long term, thus ensuring the sustainability of the firm itself.” (Eccles et al, 2012).

Figure 12: How sustainability affects value creation



Source: MIT Sloan, *Sustainability and Competitive Advantage*, 2009, p.24.

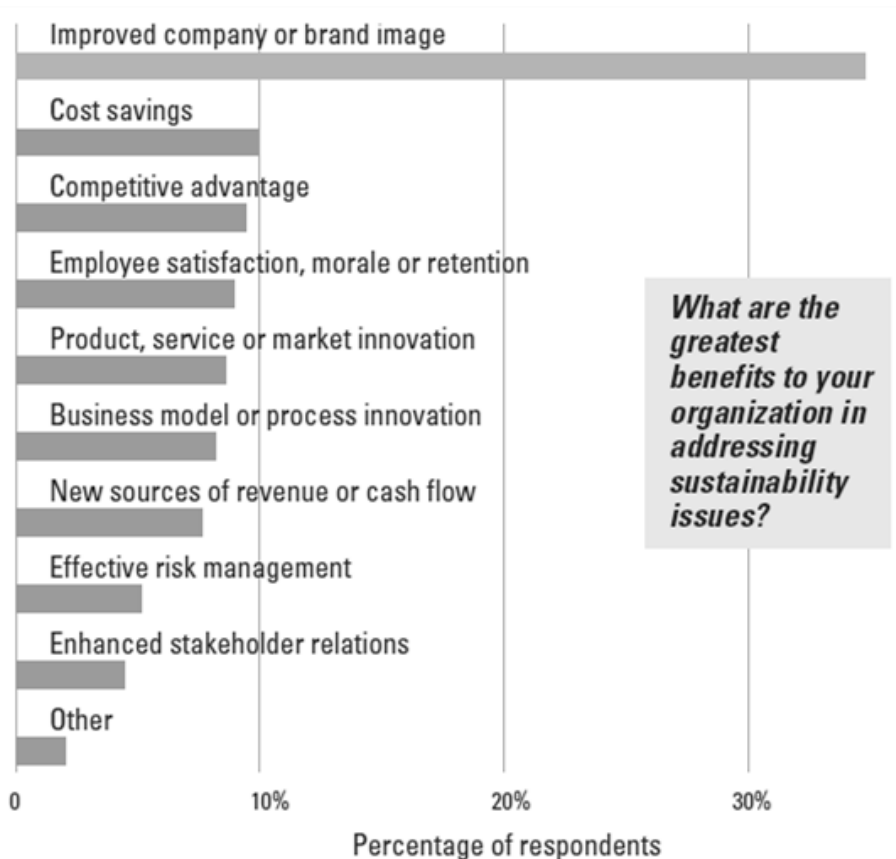
1.6.1 Firm reputation and differentiation

The main reason why firms are hesitating with the implementation of CS strategies is the fear of experiencing lower profitability or even unprofitability. This fear might originate from the fact that firms undertaking such strategies may underperform due to high labor cost and missed valuable opportunities that did not fit within the boundaries of their values and norms (Eccles, Ioannou & Serafeim, 2013). To sum up, sustainable firms face tighter constraints regarding their behavior and operation in the economic environment. But, on the other hand, the facts that do not speak in favor of implementing CS often convey just the opposite. For example, high labor costs can also mean that a firm can attract better human capital, establish more reliable supply chain and avoid conflicts, which consequently improve the firm’s reputation in the economic environment, and since reputation is one of the key linking drivers, it connects corporate sustainability actions with better financial performance. Chami, Cosimano and Fullenkamp (2002) emphasize the importance of ethics as firm’s ethical reputation is an intangible asset especially because investors show their stand regarding the firm’s behavior by best owing financial rewards or punishments respectively. Especially in the era of fast information spread, firms should pay even more attention to reputable conduct as it is the only way to acquire a favorable position in the society. A research done by Bahar Gidwani (2013), who compares sustainability performance and brand value, shows a relatively strong correlation between the two variables, and provides states that better firm reputation can be built through the implementation of CS strategies. Considering Benjamin Franklin’s quote “It takes many

deeds to build good reputation, and only one bad one to lose it”, we can understand why investing in CS is crucial.

Conclusively we see that the rationale behind implementing sustainability is simply lowering reputational risk (Orsato, 2009) and increasing brand value. Nonetheless, mere investments in higher social and environmental norms do not bring firms greater reputational value since reputation is exclusively dependent on the perception of stakeholders. In order to strengthen the reputation, firms must first identify the group of stakeholders prone to corporate sustainability and then set up a dialog to inform the stakeholders about firms’ pro-environmental and pro-societal attitude. Furthermore according to Brickley, Smith and Zimmerman (2002), there is clear evidence that unethical behavior bears higher costs in relation to future sales, especially in industries where information about product quality is easily accessible. Therefore, in the world of high data availability and fast information spreading, unethical behavior proves to be even more costly than in the past. Negative shock events can cause an overnight erosion of reputation and brand value. But on the long run, the sustained offering of quality products and services will serve to protect the brand value and secure positive duration of sales. A survey done by MIT Sloan (2009), where managers and executives from firms all around the world needed to identify the key benefits of implementing sustainability practices, recognized the improved firms’ image as the principal benefit of sustainability strategies. You can see the distribution of responses in Figure 13.

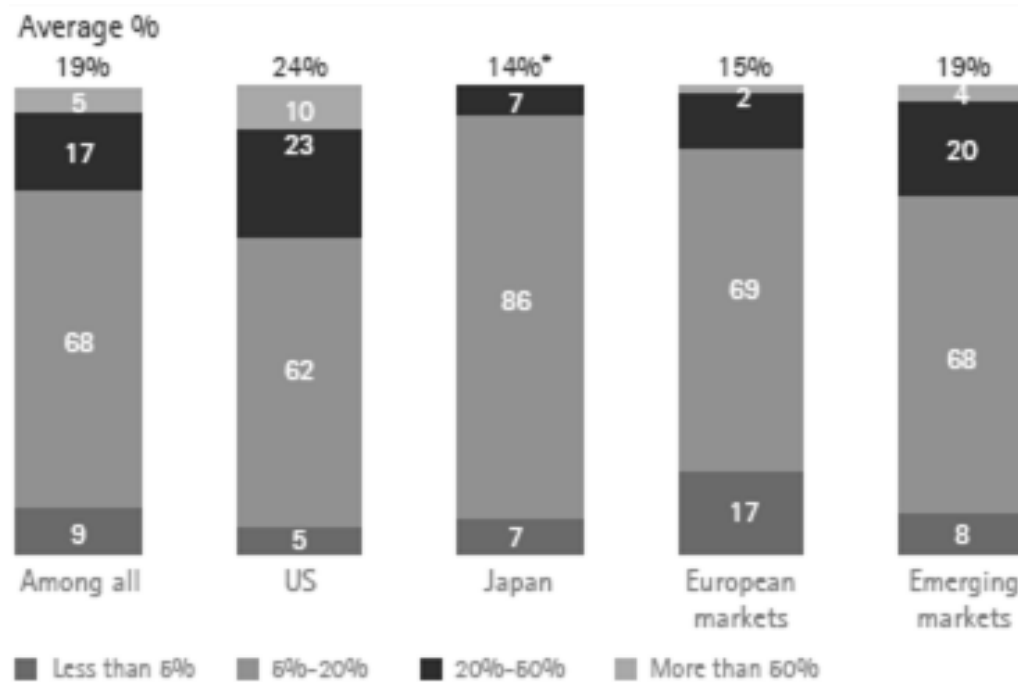
Figure 13: Benefits of Sustainability Strategies



Source: MIT Sloan, *Sustainability and Competitive Advantage*, 2009, p.23.

Firms can also use CS to differentiate themselves from other competitors, which can be done in two ways. A firm can either differentiate itself by re-thinking its operation thus becoming eco-efficient or by differing on costs and adopting schemes that distinct it from others by enhancing transparency. Moreover, a firm can also enhance product differentiation by complying with standards and labeling. In this way, firms can use CS to create new products, revamp the existing products and enter new markets by creating their own eco-label. Alongside, firms should also take into consideration the attributes of the eco-branding strategy, which is described in the section “CS” strategies. Eco-labelling has the potential to attract the environmentally concerned consumers, who are willing to pay price premiums for eco products and consequently, a firm can boost the revenues and increase profitability with enhanced margins. A research done by Accenture (2012) has come to a conclusion that firms can charge an average of 19% of price premiums for their product based on answers of the 250 executives from United States, Japan, Germany, France, United Kingdom, China, Brazil and India. The research also shows that European firms can charge an average price premium of 15% based on answers of the 42 executive from European firms. You can see the results in Figure 14.

Figure 14: What price premium can you charge for sustainable products and services?



Source: Accenture, *Long Term Growth Short Term Differentiation and Profits from Sustainable Products and Services*, 2012, p.7, Figure 11.

Clearly, differentiation is another connector which links CS strategies to firm value. Nevertheless, firms have to be aware that the differentiating advantage of green products is time-bound and requires continual improvement (Bertoneche & van der Lugt 2013). On the other hand, a firm that adopts a reputation for acting unethically risks losing potential customers and automatically excludes itself from generating sales in the markets that require high ethical and environmental standards.

1.6.2 Improving profitability and risk mitigation

The connectors described in the previous section have a direct impact on the outputs of the business model, the financial drivers. We have stated that reputation and diversification can help maintain growth and duration of sales, but we have not touched the risk reduction and cost optimization of CS. Firms can improve their operational efficiency increase their profit margin and earn more per dollar of costs by optimizing the product production. Greater operational efficiency also means that fixed assets will be used more efficiently. Operational efficiency will reduce the environmental and social impacts, thus reducing risks of being caught off guard by a potential new legislation. Regarding cost savings, a particular saving area can be seen in the field of energy efficiency. For example, in areas of fossil fuel depletion, the prices of natural goods have risen to a great extent. Moreover, innovations in the field of renewable energy have left firms with vast room for improvement in the section of energy costs as by applying renewable fuels firms' production can benefit on the cost and environmental side.

Quality human resource management is another area where firms can generate cost savings. Educating and training employees respecting environmental and social standards can help firms to attract better human capital and improve the productivity of the employees, which can also boost the operating margin, capital expenditure and reduce the environmental impact as well.

A firm with effective environmental risk management systems and competent communication via reporting and other means is in a position to secure a better risk profile due to the stable image it projects on the market. Consequently, firm's stable image opens the door to obtaining debt and equity capital at lower cost as being environmentally and socially sound means obtaining credits at lower costs since the firm is perceived to bear fewer risks of lawsuits and penalties. Furthermore, researches show that firms, which lower their systemic risk through environmental risk management, experience less volatility and therefore financial markets are willing to accept lesser price premiums on their equity, which means lower cost of equity capital (Sharfman & Fernando, 2008).

Another area where firms can endure cost savings is through tax rates. More and more governments pursue green growth strategies and have been applying taxes such as carbon taxes, waste disposal taxes, etc. Sustainability actions and environmental impact reductions create possible tax benefits by avoiding or at least lowering them. Applying a higher level of environmental risk management and therefore gaining tax benefits, can also influence firms' capital structure. The analysis in the United States has confirmed that such firms experience higher tax savings by financing themselves from debt. The logic behind it is that such firms are perceived less risky by the market and can therefore, get financing at lower interest rates. Meaning that they can have a greater portion of debt in their capital structure, which means that firms experience higher leverage and ability to have higher tax shield since credit interests are tax deductible (Sharfman & Fernando, 2008).

1.7 Dow Jones Sustainability Index Europe

The Dow Jones Sustainability World Index was established in year 1999 as the first global sustainability benchmark. RobecoSAM Indices and S&P Dow Jones Indices cooperatively manage the numeric DJSI group of indices. The family tracks the stock performance of the world's leading firms in terms of society focus, profit and environmental point of view. The indices serve as benchmarks for investors who pursue the idea of integration of sustainability criteria into their portfolios, and provide an effective engagement platform for firms who want to adopt sustainable best practices (Dow Jones Sustainability Indices, 2014).

The Dow Jones Sustainability Index family consists of global, macro-regional, and also country benchmarks:

- Dow Jones Sust. Index World
 - Dow Jones Sust. Index World Developed
 - Dow Jones Sust. Index World 80
- Dow Jones Sust. Index Asia Pacific
 - Dow Jones Sust. Index Asia Pacific 40
 - Dow Jones Sust. Index Japan
- Dow Jones Sust. Index Emerging Markets
- Dow Jones Sust. Index Europe
 - Dow Jones Sust. Index Eurozone
 - Dow Jones Sust. Index Europe 40
 - Dow Jones Sust. Index Eurozone 40
- Dow Jones Sust. Index North America
 - Dow Jones Sust. Index United States
 - Dow Jones Sust. Index North America 40
 - Dow Jones Sust. Index United States 40
- Dow Jones Sust. Index Australia
- Dow Jones Sust. Index Korea
 - Dow Jones Sust. Index Korea 20
- Dow Jones Sust. Index World Enlarged
 - Dow Jones Sust. Index Nordic

In particular, the Dow Jones Sustainability Europe Index (DJSI Europe) was established in 2010 to track the performance of the largest European firms from developed countries that lead the field in terms of corporate sustainability. However, before 2010 it was named Dow Jones STOXX Sustainability Index and was serving for the same purpose.

Figure 15: Selection process of DJSI Europe



Source: Dow Jones Sustainability Indices, 2014

These firms' corporate sustainability scores are assessed by the Sustainable Asset Management Group (SAM Group), which uses the so called annual Corporate Sustainability Assessment (CSA) tool. Besides, this group also audits and ensures compliance. The DJSI group uses best-in-class approach to select sustainability leaders

from all industries based on pre-defined sustainability criteria accomplished in the CSA. Best-in-class definition is the following:

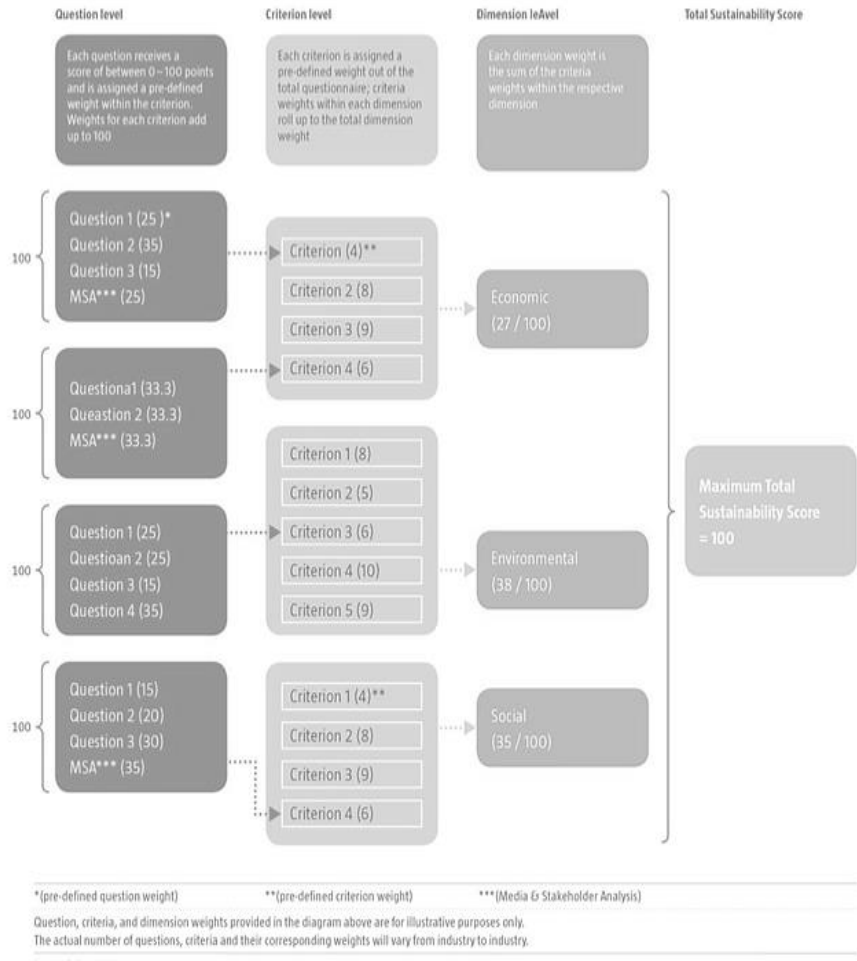
- Under no condition any industry could be excluded from the indices, on the other hand with the most sustainable firms in each industry selected for index membership.
- Firms receive a Total Sustainability Score between 0 and 100 and are compared to other firms in their industry, so called peers companies.
- Only the top 20 % of firms from each industry, based on their sustainability score, are included in the Dow Jones Sustainability Europe Index.

RobecoSAM's approach is based on 2 guiding principles (RobecoSAM, 2013):

- Sustainable business practices are essential to reach and create a long-term stakeholder value in an increasingly resource-exhausted world.
- Sustainability factors considered represent opportunities as well as risks that competitive firms must address.

According to Knoepfel (2001), the CSA methodology used by RobecoSAM is structured along certain lines, which thoroughly covers the three major dimensions of CS (environmental, social, economic). These lines present areas of firm's opportunities and risks and can be defined through the following 5 key corporate sustainability performance principles (Knoepfel, 2001): Innovation; Governance; Shareholders; Leadership; Society. Its overall idea is that investing in innovation helps firms to be more efficient. In respect to the corporate governance, firms should establish the highest standards, including management quality, responsibility and good corporate culture. Clearly, firms should be meeting shareholders' demands (i.e. returns, long-term profitability and growth, competitiveness, contribution to intellectual capital). Leaders should undertake the approach and direction that assure the firm's sustainable superior performance in respect to its rivals. As for the society factor, the idea is that firms that interact with communities at a local and global level try to respond to their specific needs by creating a long-term welfare.

Figure 16: RobecoSAM Assessment Criteria



Source: RobecoSAM AG, Dow Jones Sustainability Europe Index Guide, 2013, pp. 8, Figure 1.

The CSA is designed to capture both general and industry-specific criteria covering the economic, environmental and social dimensions. Each of the three dimensions averagely consists of 6 – 10 criteria, and each criterion contains between 2 – 10 questions, which totals in 80 – 120 questions depending on the industry.

Table 7: Comparison of criteria and relative dimension weights for the Banking, Electricity and Pharmaceutical sectors

Economic Dimension	Banking	Electricity	Pharmaceuticals	
Anti-crime policy/measures	●			industry-specific
Brand Management	●			industry-specific
Codes of Conduct/Compliance/Corruption & Bribery	●	●	●	general
Corporate Governance	●	●	●	general
Customer Relationship Management	●	●	●	industry-specific
Innovation Management			●	industry-specific
Market Opportunities		●		industry-specific
Marketing Practices			●	industry-specific
Price Risk Management		●		industry-specific
Research & Development			●	industry-specific
Risk & Crisis Management	●	●	●	general
Stakeholder Engagement	●			industry-specific
Scorecards/Measurement Systems		●		industry-specific
Total Economic Dimension Weight	38%	30%	40%	
Environmental Dimension				
Biodiversity		●		industry-specific
Business Opportunities Financial Services/Products	●			industry-specific
Business Risks Large Projects/Export Finance	●			industry-specific
Climate Change Governance	●			industry-specific
Climate Strategy		●	●	industry-specific
Electricity Generation		●		industry-specific
Environmental Footprint	●			industry-specific
Environmental Policy/Management System	●	●	●	general
Environmental Reporting	●	●	●	general
Operational Eco-Efficiency		●		industry-specific
Transmission & Distribution		●		industry-specific
Water-Related Risks		●		industry-specific
Total Environmental Dimension Weight	24%	35%	10%	
Social Dimension				
Addressing Cost Burden			●	industry-specific
Bioethics			●	industry-specific
Corporate Citizenship and Philanthropy	●	●	●	general
Controversial Issues, Dilemmas in lending/financing	●			industry-specific
Financial Inclusion/Capacity Building	●			industry-specific
Health Outcome Contribution			●	industry-specific
Human Capital Development	●	●	●	general
Labor Practice Indicators	●	●	●	general
Occupational Health & Safety	5%	4%	2%	industry-specific
Social Reporting	●	●	●	general
Stakeholder Engagement		●	●	industry-specific
Standards for Suppliers	●		●	industry-specific
Strategy to Improve Access to Drugs or Products			●	industry-specific
Talent Attraction & Retention	●	●	●	general
Total Social Dimension Weight	38%	30%	50%	

Criteria and weights are based on the 2011 CSA for the Banking, Electricity and Pharmaceutical sectors and are provided for illustrative purposes only. Criteria and weights will differ for other sectors. Specific criteria and their corresponding weights for subsequent years may change.

Source: RobecoSAM AG, Dow Jones Sustainability Europe Index Guide, 2013, pp. 10, Figure 2.

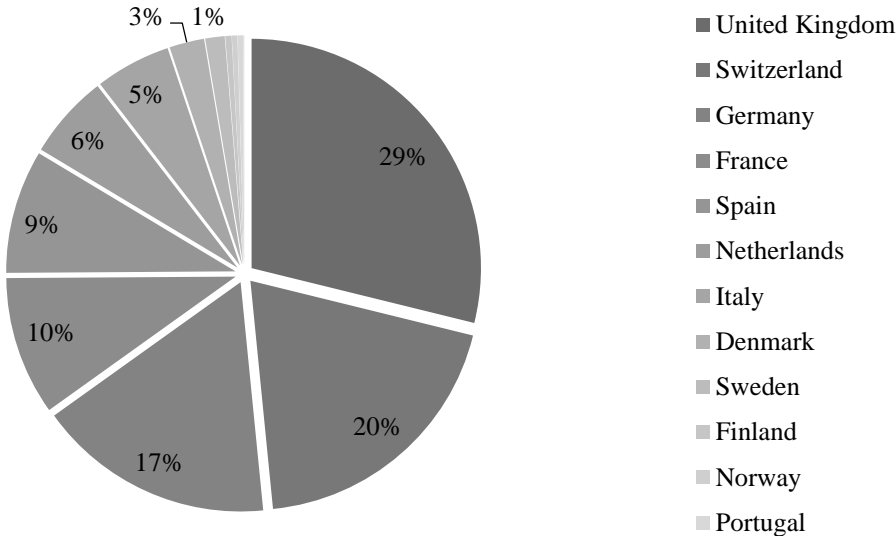
RobecoSAM identified several sustainability areas, which were used for the definition of general valuation factors relating to standard management practices and performance measures such as Corporate Governance, Human Capital Development and Risk & Crisis

Management.

Around 50% of the factor addressed usually cover industry-specific risks and opportunities that focus on economic, environmental and social challenges and trends particularly relevant to firms within the industry in question. An example is shown in Table 7 for 3 different industries consisting of general and industry-specific criteria. Once the overall score is calculated, the firms within the same industry are compared against each other in order to determine the firm’s suitability for inclusion in the DJSI Europe or not. In the assessment process, media and stakeholder commentaries and other publicly available information are also taken into account.

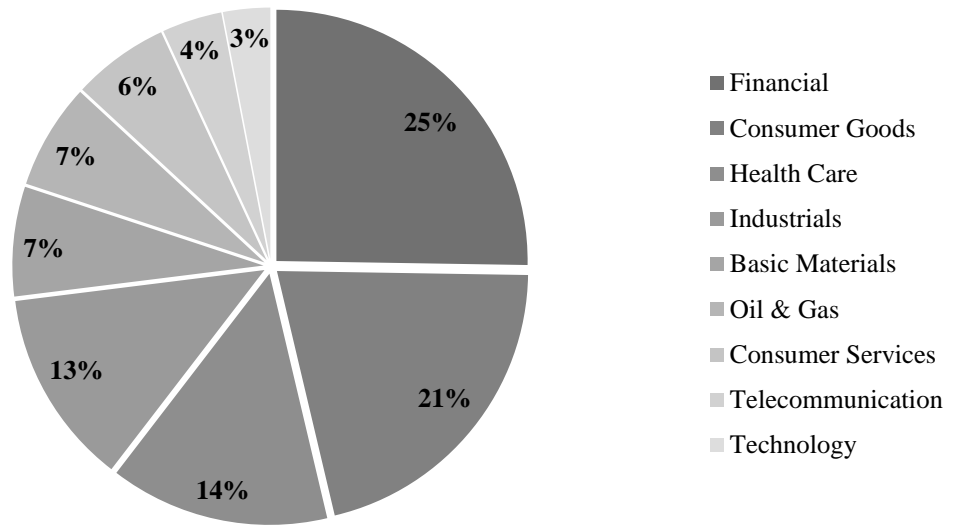
In the Figure 17 below, we can observe the DJSI Europe country allocation in year 2014. Not surprisingly, most of the firms comes from the most developed European countries and indeed those who pay the most consideration to CS issues.

Figure 17: DJSI Europe Country Allocation in 2014 in %



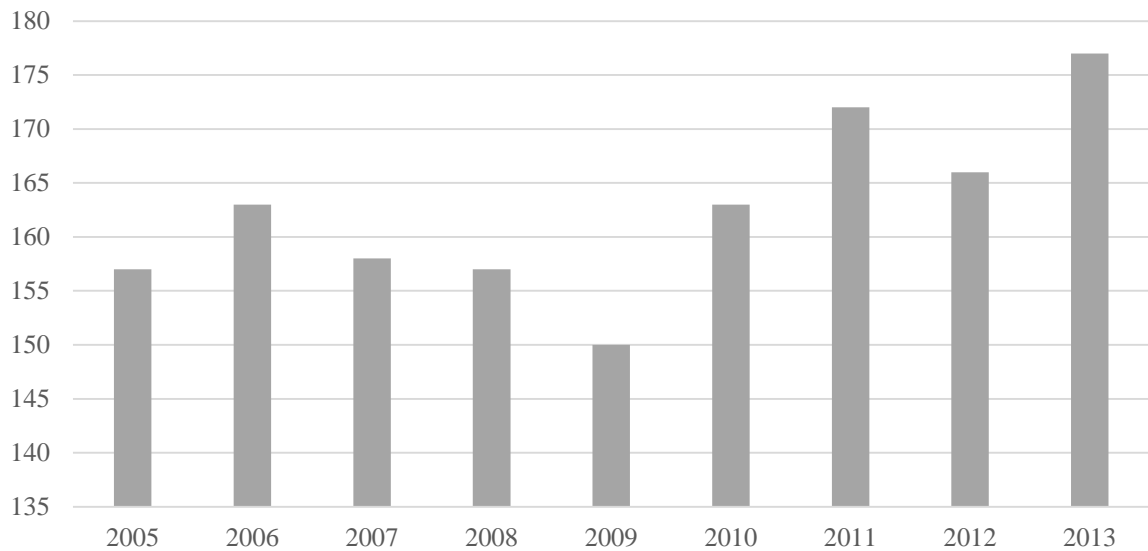
On the other hand, in Figure 18, we can see the allocation of the sector from which firms of DJSIE in 2014 are coming from. Financial sector, consumer goods and health care are the dominant sectors in the composition, especially due to the fact the product and service demand, in our opinion, is highly dependable on the clients perception and awareness of the firm’s reputation. Other sectors are less represented, due to the fact that other industries are differently structured, with bigger players and less of them.

Figure 18: DJSIE Sector Allocation in 2014 in %



As mentioned before the composition of firms in the index changes every year depending on the firm's sustainable performance. In Figure 19, you can observe the number of DJSIE components for the period 2005-2013.

Figure 19: Number of components by year



1.8 Prior research on corporate sustainability and firm's value correlation

A brief literature review of the relationships between financial performance and investing in CS is useful in order to compare the results with the empirical part of our thesis. On one side, many researchers e.g. Yilmaz & Flouris (2010), Weber, Scholz and Michalik (2010) provided clear evidence that investing in CS strategies has a considerable impact on firms' corporate risk (reputational, operational, credit), which consequently influences many cost centers within the firm (reserves, cost of debt, etc.).

In their research paper, Yilmaz and Flouris (2010) focused on new technologies, which improve sustainability or risk performance, and the corresponding strategies for corporate sustainability. Their risk management theoretical model includes five main areas i.e. corporate risks viewed both as opportunities and potential threats, firm sustainability risk management, climate change, culture challenges and basic philosophy of the "think global, act local" mentality. According to Yilmaz and Flouris (2010), sustainable risk management creates and enhances business value through measurement and efficient management of sustainability threats and opportunities, which can help businesses to effectively respond to the growing expectations of the stakeholders. In order to succeed with sustainable environmental, social and economic performance, a firm needs to recognize and defy the risks by implementing Enterprise Sustainability Risk Management.

In addition, Weber, Scholz and Michalik (2010) provided another evidence that investing in CS strategies linked to the risk management has a considerable impact on firms' corporate risk and consequently on the increase of shareholders' value. Furthermore, the researchers answered the following questions:

- does a borrower's economic, environmental and social performance in terms of sustainability has an impact on its credit risk rating
- does adding factors aimed at assessing a creditor's environmental, social or sustainability practices provide added value to traditional financial rating

Their method included the rating of commercial loans, according to the risk of firms in a sample of 40 German firms. They analyzed the possibility of predicting small and medium sized firms' credit risks using sustainability criteria and whether a combination of both would improve upon using traditional credit rating criteria alone for the prediction of non-default firms and default ones. According to Weber, Scholz and Michalik (2010), their result is in accordance with many other researches done before showing positive relationships (correlation) between a firm's financial performance and its sustainability performance (Russo, 2003; Steger, 2004).

On the other hand, Orsato (2009) believes that engaging in CS strategies also has a direct impact on operational costs, which decrease on the long term, using business innovations in technologies, logistics and other operations. In addition, Orsato (2009) emphasizes that CS can also have a positive but an indirect effect on firm's value through differentiation. Herewith, by undertaking CS strategies, firms can build up their reputation and prevail in the group of direct and indirect competitors. Therefore, the key problem does not lie in the possible firms' incapability of offsetting the costs of investing in sustainability but in the timing of doing so. To follow the "win-win hypothesis" it is crucial that the firm finds the right moment to balance between benefiting the public and the environment and at the same time bringing profitability. The latter is the necessary condition, which needs to be fulfilled in order that a firm is perceived as sustainable.

Several other empirical researches have been conducted so far trying to establish relationships between corporate sustainability and firm's financial performance on the market and some of the results do not favor sustainability approach. According to Lopez, Garcia and Rodriguez (2007), investing in CS strategies cause costs without any significant additional return in the future and moreover, Friedman (1970), Clotfelter (1985), Navarro (1988) and Galaskiewicz (1997) claim that by doing so firms usually destroy shareholders' wealth. Despite firms and investors have beliefs that corporate sustainable strategies have the capacity to create a long-term value, researches could not prove a positive relationship from their samples and the period analyzed. However, López, Garcia and Rodriguez (2007) showed that the negative impact on financial performance is self-correcting over a period of 7 years since the differences diminish over time.

To exemplify, López, Garcia and Rodriguez (2007) analyzed the connection between CSR and certain key accounting indicators and examined whether there exist clear differences in performance indicators between European firms that have engaged the CSR concept (inclusion in the Dow Jones Sustainability Index) and others that have not (Dow Jones Global Index). The sample was composed of 110 firms analyzed for the 6-year period (1998–2004). They selected several variables to measure firms' performance focusing on the growth of net profit and the business development measured in terms of the revenue trend (growth/drop through the period). They also considered other variables such as assets, capital, profit margin, return on earnings, return on assets and cost of capital. Their statistical analysis confirmed differences in performance between group of firms belonging to different indices and that these differences are related to CSR practices. They discovered a short-term negative impact on performance, being produced by firms included in Dow Jones Sustainability Index as sustainability practices means incurring additional expenses in research, training and risk prevention. Engaging in sustainability-related activities may require time, effort and investment and therefore cause a decrease in profitability on a short horizon. However, their findings also showed that the negative impact on performance on long term diminishes.

Furthermore, others argue that sustainability may simply be a type of agency cost since managers might receive additional benefits (i.e. bonuses for accomplished CS goals) from integrating environmental and social incentives in the firms' strategy rather than provide financial benefits to the firm's shareholders (Brammer and Millington, 2008). By doing so they will not consider CS integration appropriateness, but the only short-term effect which will satisfy the bonus objectives. Thus, we can expect a negative impact on financial performance of the firm (Baloti & Hanks, 1999; Brown, Helland & Smith, 2006; Preston & O'Bannon, 1997).

On the other hand, many researchers came to a conclusion that there is no correlation at all. According to Curran and Moran (2007) and García-Castro, Ariño and Canela (2010), firms do not gain or lose any value in case of investing funds in CS. According to García-Castro, Ariño and Canela (2010), the positive relationship between social performance and financial performance becomes a non-significant when endogeneity is properly taken into account. They used a panel based on the 658 US-firms covering a period from 1991 to 2005 included in KLD database, which is an independent rating agency specialized in the assessment of corporate social performance considering a range of dimensions related to stakeholder concerns. The methodology included dependent variables (ROE, ROA, Tobin's Q, MVA), independent variables (social performance) and control variables (size, industry and risk effects).

The last and the largest segment of scholars found a positive correlation. For instance, Lo and Sheu (2007), van Dijken (2007), Consolandi, Jaiswal-Dale, Poggiani and Vercelli (2009), Cheung (2010), Lourenço, Branco, Curto and Eugenio (2011) analyzed and compared CS and firms' financial performance and proved the positive correlation.

In particular, Lourenço, Branco, Curto and Eugenio (2011) investigated market views on CS performance related to market capitalization, considering the relationship of assets' size and profitability with CS performance. The empirical analysis relies on 600 firms from USA and Canada in the Dow Jones Global Total Stock Market Index at the end of 2009. It includes firms that belong to the Dow Jones Sustainability Index North America (higher level of CS performance) and firms that are not included in the Dow Jones Sustainability Index North America (lower engagement in CS). Their results indicate that CS performance has influenced significantly the stock prices over the widely used accounting measures such as earnings and book value of equity. However, further analysis suggests that we should not focus on the corporate sustainability itself. The findings showed that investors undervalue large profitable firms with low level of CS performance, which face greater public scrutiny and pressures from stakeholders.

In addition, also Lo and Sheu (2007) examined the impact of corporate sustainability on market value, and they ended up confirming the positive correlation. Their sample consisted of large US non-financial firms (337) included either in Dow Jones Sustainability

Global Index USA or in S&P 500, in the period from 1999 to 2002. They used the listing in the Dow Jones Sustainability Global Index USA as the proxy for corporate sustainability and the Tobin's q as the proxy for firm value. The methodology used includes univariate tests followed by a multivariate setting by controlling firm size, access to the financial market, leverage, ROA, sales growth, investment growth, industrial diversification, credit quality and industrial effects. Their key finding is that sustainable firms are rewarded with higher valuations in the marketplace.

According to a research conducted by Eccles, Ioannou and Serafeim (2013), whose main goal was to analyze the effect of CS on operational processes and performance, confirmed that "high sustainability companies", which by the mid-90 adopted the societal and environmental policies (on average 40% of the policies identified), generate significantly higher stock returns and accounting performance compared to other firms. This fact suggests that the firm engagement in such policies may be a source of competitive advantage in the long term. Their analysis showed that undertaking such strategies ensures a more integrated employees, a more secure working environment to operate, a more loyal customer base, better relationships with all other stakeholders, greater operational transparency, a more collaborative society and a better innovation ability. The data used in the research matched a sample of 180 US companies that voluntarily adopted sustainability policies by 1993 ("High Sustainability companies"), ranked to a matched sample of firms that adopted almost none of these policies ("Low Sustainability companies"). The researchers tracked the stock market performance of firms in both groups from 1993 to 2010.

Moreover, other similar theoretical and empirical studies have been discussed and analyzed. For instance, many researchers focused specifically on the link between environmental activities (eco-efficiency) and economic performance. Some detected that there was a neutral or even negative relationship. Therefore, Freedman and Jaggi (1982), Ingram and Frazier (1980) and Walley and Whitehead (1994) argue that environmental actions are costly due to extensive research technologies involved in developing green processes or products to reduce harmful impacts on the environment and adhere to eco-efficiency standards. However, considering the papers conducted so far, we can see that they are rather old which implies that organizations in the past did not have a clear idea of how to integrate such strategy in the business model to successfully extract the value added from the eco-efficient strategies. On the other hand, looking at recent research papers, we can observe an evolvement in the findings. Hence, a positive relationship has been proven meaning that organizations that invest their funds in the environmental policies, i.e. eco-efficiency, can achieve more economic value using less input depending on certain sectors (i.e., Al Najjar & Anfimiadou, 2012). Nowadays, consumers increasingly support environmentally friendly firms and thus, more and more firms are searching and engaging in the opportunity to maximize their income while reducing costs by investing in eco-friendly projects. Eco-efficiency is a kind of a management control tool, which reduces a

firm's impact on the environment and simultaneously create more value for shareholders and stakeholders (Hammer, 2002; Sinkin, Wright & Burnett, 2008; Bauer, Guenster, Derwall & Koedijk, 2010).

Thus, Young and Tilley (2006) emphasize that firms need to integrate eco-efficiency into their business operations. In doing so, they will enable to enhance financial performance and consider the environmental implications as well. Thus, they suggest that the theory of eco-effectiveness requires firms to develop new ways in carrying out processes and methods to recycle waste. The evolution of such system does not bring an immediate effect but brings profit on a longer term, eventually enabling a firm to become sustainable.

Moreover, Bauer, Guenster, Derwall and Koedijk (2010) provided an insight to the long-term corporate environmental financial performance debate by focusing on the concept of eco-efficiency. Their research paper confirms the positive link between market performance and integration of eco-efficiency and their findings strongly reject the notion, expressed by CSR sceptics, that the benefits of adopting a strong environmental policy are unlikely to outweigh the costs. In addition, the results suggested that the market's valuation of environmental performance has been time variant, which may indicate that the market incorporates environmental information with a drift. As an input data, they used a sample of US-quoted firms and a database of firm-level eco-efficiency scores produced by Innovest Strategic Value Advisors, examining the relationship between corporate eco-efficiency and financial performance over the period from 1997 to 2004. Taking into consideration an accounting- and market-based measure, they capture different ways in which eco-efficiency influences financial performance using return on assets, which represented operating performance and profitability, and Tobin's q , which was a proxy for a firm's market valuation.

In conclusion, we can say that prior researches used many different approaches to tackle and measure the concept of CS, and therefore the results differentiate. Above, we have described in detail several researches on CS and firms' market value, which will be of assistance in our empirical research. Moreover, prior research papers left many opened questions for further investigation.

2 CASE STUDIES

We have decided to demonstrate how CS strategies engagement works in real life cases putting theoretical perspective aside. Therefore, we have chosen three firms from the Oil and Gas industry, which will be used to conduct our case study analysis. We will try to extract the most important approach characteristics of different CS strategy integrations in the core business model, of which some bring more and some less successful outcomes. As demonstrated below, Neste Oil, Eni and Royal Dutch Shell will serve as examples to show different CS practices, some more and some less successful. Moreover, our main

objectives are to identify the differences between their approaches towards sustainability and final impact on their financial performance, if there is some.

We will firstly describe the industry itself and its recent evolution. Furthermore, we will take a look at the firms' business profile, financial performance, latest developments and CS practices. We will try to identify the historical record of sustainable acts and describe the implemented CS strategies. In addition, in Royal Dutch Shell case we have described the events which have prevented them from being considered a high-level sustainable firm. In conclusion, we will touch the future strategies of each firm and their approaches. In the last part of the chapter, we will compare the three case studies' CS approach and provide our opinion.

2.1 Oil and Gas Industry Overview

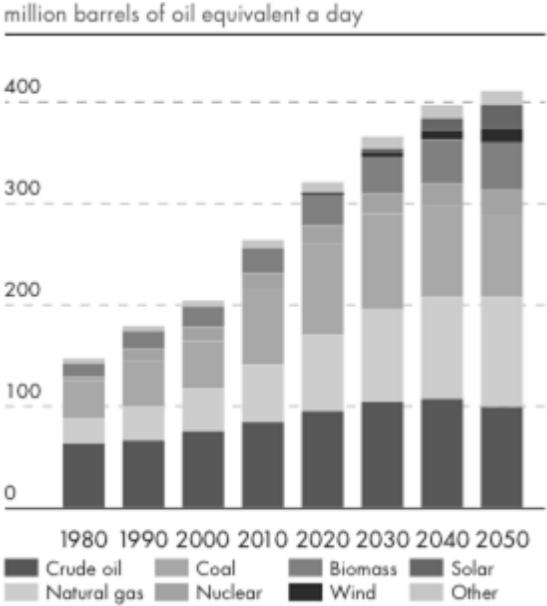
Fundamentally, oil and gas industry is not considered as an eco-friendly industry. The inputs for their products are non-renewable fossil fuels, which are facing eventual expiration and therefore the input itself cannot be considered sustainable. It is believed that with the current demands for oil and gas we could run out of them somewhere between 2025 and 2070. Scientists believe that we might have already reached peak oil production, which is, according to the theory written by Marion King Hubbert (1956), a point in time where oil production is at its maximum and enters in terminal decline (Kerr, 2011). In addition, oil and gas exploitation has become more expensive as the sources have become scarcer forcing firms to use new techniques of drilling thus making production more expensive. Despite all these facts, the oil industry is still one of the most profitable industries in the world. Moreover, oil and gas industry is also environmentally hazardous, which means it is accountable for nearly 2/3 of greenhouse gas emissions. Taking everything into account, the oil and gas industry has really made us wonder how do firms under question cope with the public's pressure to become greener, how do they tackle the pressure of higher costs generated by new techniques and lastly how do they cope with the pressure of the eventual fossil fuel expiration.

The oil industry is divided into three parts; upstream, midstream and downstream. The upstream part focuses on exploration and production, the midstream part focuses on the distribution system, and the downstream part focuses on refining, marketing and retail distribution system through gasoline stations and stores. Firms that operate in the upstream and downstream part, such as the three firms under research, are considered integrated (Yergin, 2008).

The current projections show that carbon-based fuels will continue to meet 3/4 of global energy demands by 2040. The outlook indicates that there is an inclination towards lower-carbon based fuels, which will in combination with the increased efficiency lead to a decline in greenhouse emissions. Wind, solar and biofuels are expected to be the fastest-

growing energy sources annually increasing by 6 percent until 2040 still reaching only 4 percent of global energy demand. In total, renewables will approximately account for 15 percent of energy demand in 2040. The evolution of energy sources can be seen in Figure 20.

Figure 20: Projected Global Energy Demand to 2050



Source: Royal Dutch Shell plc Sustainability Report 2013, 2013, p.4.

If we look at the history of oil prices in Figure 21, we can see a sharp drop in the recent times due to lower demand, increased efficiency and a growing switch to other fuels. In addition, The United States, which has become the world’s largest oil producer, imports less oil from foreign producers and has become self-sufficient in terms of oil and gas demand. Furthermore, the decision of OPEC not to cut their oil production capacities (The Economist, 2014) has also had an impact on oil prices.

Figure 21: Oil price movement from 2005-2014



The low oil prices cause problems in terms of sustainability for the consumers' and the producers' side. Firstly, it is not possible to pay price premiums for greener sources of energy when coping with lower oil prices. The main oil consumers are price sensitive and will therefore opt for cheap instead of renewable but pricier source of energy. At the same time, low oil prices mean less profit for oil producers whose production costs do not change with declining oil prices, which means fewer investment funds available for corporate sustainability.

“We believe that demand, not supply could decline” (The Economist, 2013). This statement is a bit contradictory to the nature of oil and gas industry as the biggest fear so far has been the expiration of fossil fuels, but new technologies and change in the consumers' preferences have shifted these problems on the demand side.

Secondly, the transportation industry, which is the biggest oil and gas consumer, has become greener. The rapid advances in the efficiency of internal combustion engines, which are becoming ever more frugal, and the evolution of electrical cars has significantly affected the oil demand. Moreover, even the governments are endorsing the use of “greener” sources of energy by setting up environmental policies., Hence, in our opinion the primary sustainability strategy to gain competitive advantage in the oil industry should be the beyond compliance leadership strategy described in the section 1.4.

Thirdly, another challenge for the oil industry is the rise of bio-fuels, which have become equally efficient as the regular fuels but produce less greenhouse gases and are able to compete on the price level with normal fuels, meaning that some firms have adopted the environmental cost leadership strategy described in section 1.4. Therefore, firms working in the oil and gas industry will have to adapt to the new trends set either by the government or the industry itself.

One thing about oil is clear. It will still play a significant role in the near to medium term future and technologies that will reduce our dependence on fossil fuels will need decades to fully develop their potentials. The estimations show that electric vehicles will comprise

20% of all cars on the road by 2020 (McKinsey, 2014). It has to be pointed out that oil is a crucial segment of our lives, and therefore it will take time to perform these monumental changes and switch to new energy sources.

2.2 Neste Oil Case Study

2.2.1 Profile

Neste Oil is an oil refining and marketing firm established in 1948 in Finland. Its production focuses on high-quality, cleaner traffic fuels. The firm produces a wide range of major oil products and is the world's leading supplier of renewable diesel. The firm had net sales of EUR 17.5 billion in 2013 and employed around 5,000 people. Neste Oil's headquarters are located in Espoo in Helsinki, and the two primary production plants consist of Porvoo and Naantali, both being situated in Finland. Besides, the corporation has activities in around 10 countries around the world but with the main focus in northern Europe. The business of the corporation has been developing continuously over the years.

The core activity of Neste Oil comprises three main business areas: oil products, renewable fuels and oil retail:

- **Oil Products:** Neste Oil's largest business area, which specializes in premium-quality traffic fuels and other high value-added petroleum products. Oil products are processed and refined in the firm's two refineries at Porvoo on the south coast and Naantali on the southwest coast.
- **Renewable fuels:** Neste Oil's fastest-growing business unit following a growing demand for biofuels. Based on its propriety technology, the firm produces and sells particular renewable diesel. Besides, the firm is continuing an active program of R&D on biofuels and raw materials suitable for biofuel usage for the target of becoming the world's leading producer of renewable diesel.
- **Oil Retail:** This business area is responsible for marketing petroleum products through the firm's own service station network and directing sales to firms and individuals. In the end of 2013, the firm had a network of 1,027 stations, from which 990 are in Finland and 237 are diversified in the Northwest Russia, Estonia, Latvia, and Lithuania (Neste Oil, 2013). In 2013, Neste Oil increased its market share of the Finnish oil retail market and accounted for 28.2 % of the country's retail gasoline sales and 39.1% of retail diesel sales.

Neste Oil has been ranked among world's six most sustainable firm in The Global 100 for 2014. For the eighth time in succession, Neste Oil has entered the list of the world's 100 most sustainable firms, which confirms the successful implementation of their CS strategies in the last years. In addition, CDP Forest has listed Neste Oil among the best

performers in the oil and gas sector. Neste Oil is ranked 31st in the 2015 Corporate Knights research on 100 most sustainable firms. Neste Oil has two main strategic objectives:

- Being the preferred partner for fuel solutions in the Baltic Sea area.
- Being the global leader in renewable applications.

Figure 22: Neste Oil's business structure



Source: *Neste Oil Investor Presentation, 2009 pp. 14.*

2.2.2 History

Neste Oil is a relatively young firm with a long history and six decades of oil expertise behind it. Neste Oil's predecessor, Neste, was founded in 1948 to secure Finland's oil supply, and began operations with a tanker bearing the same name. Neste became a listed firm on the Helsinki Stock Exchange, and in merged with Imatran Voima to form Fortum Corporation. The merged oil and electricity firm continued to operate until 2005, when the oil business was spun off as a separate firm and Neste Oil took its place on the Helsinki Stock Exchange. The largest shareholder of Neste Oil is State of Finland with 50.1% of total share outstanding.

In fact, in September 2006, the firm has been accepted to the Dow Jones Sustainability World index and is part of it since then. Besides, Neste Oil has been awarded "Best in

class” recognition for its social performance by Storebrand (financial institution). Furthermore in May 2008, the firm has been granted the Green Office Certification from World Wildlife Fund. This certificate was granted in recognition of the solutions applied in the headquarters’ office that save energy and environment (Kraiem, 2010).

Climate and environmental protection have always played a significant role in Neste Oil’s operations. They have a long tradition of successful work in this area, and they have systematically monitored the environmental impact of their operations since the end of the 1960s and they continuously prioritize reducing the impact on the environment. Neste Oil’s sustainability is based on four pillars:

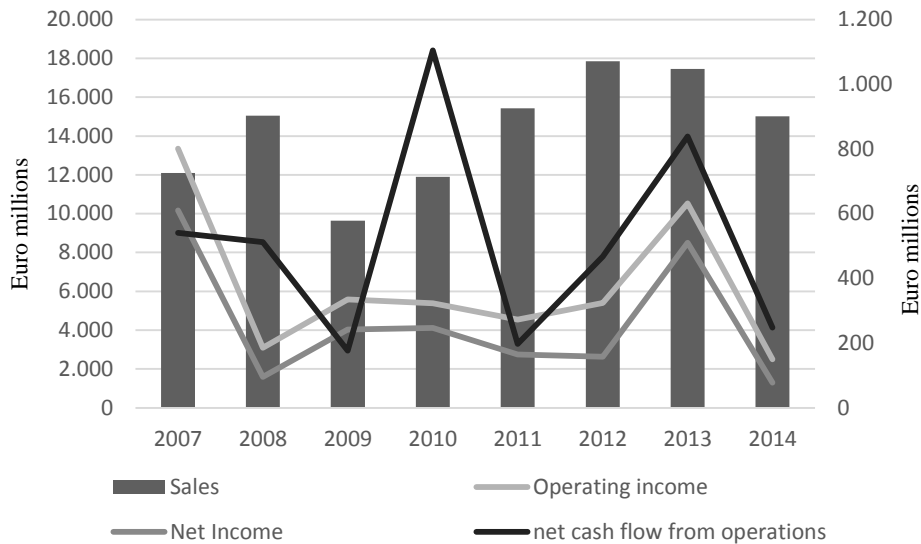
- Social
- Ecological
- Economical
- Good Corporate governance

2.2.3 Profit

Neste Oil’s financial performance in the last several years showed very positive results. In Figure 23 we can see that revenues have experienced a positive trend considering the 8 years period (compounded annual growth rate of 5.4%) except in the last year where we can already notice the deterioration of general oil prices. Likewise, the operational tendency experienced a significant drop in 2014 in comparison to 2013 in which Neste Oil reached its maximum and amounted to EUR 604 million. The main reason for the operating profit increase in 2013 was the reduction of raw material costs which can be explained by waste recycling implementation and the recycled waste being used for the production. Other reasons behind Neste Oil’s good business performance in 2013 are the following:

- First full year of operations at Renewable Fuels with all plants running at full capacity.
- Increasing its sales and customer base, particularly in the US and opening up a new market in Australia.
- Very strong margins in the operating markets.

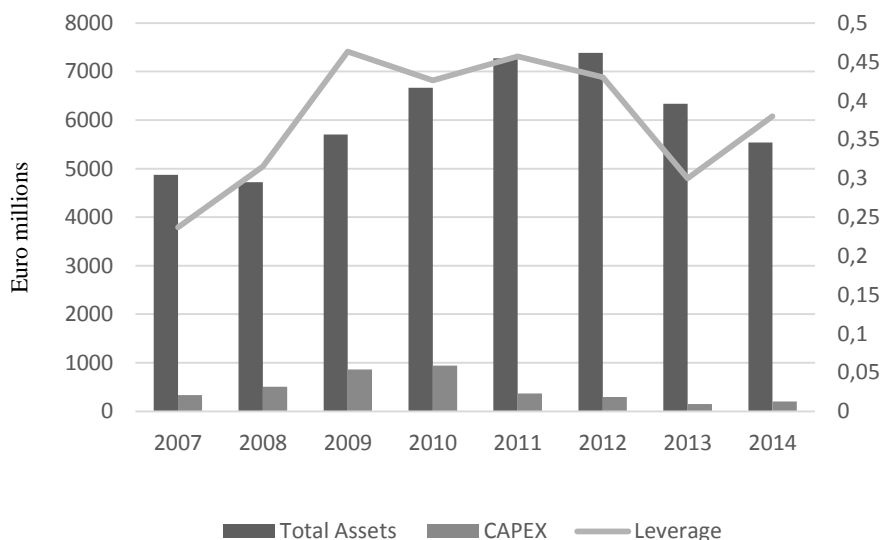
Figure 23: Revenue, operating income, net income and net cash flow from operations
2007-2014



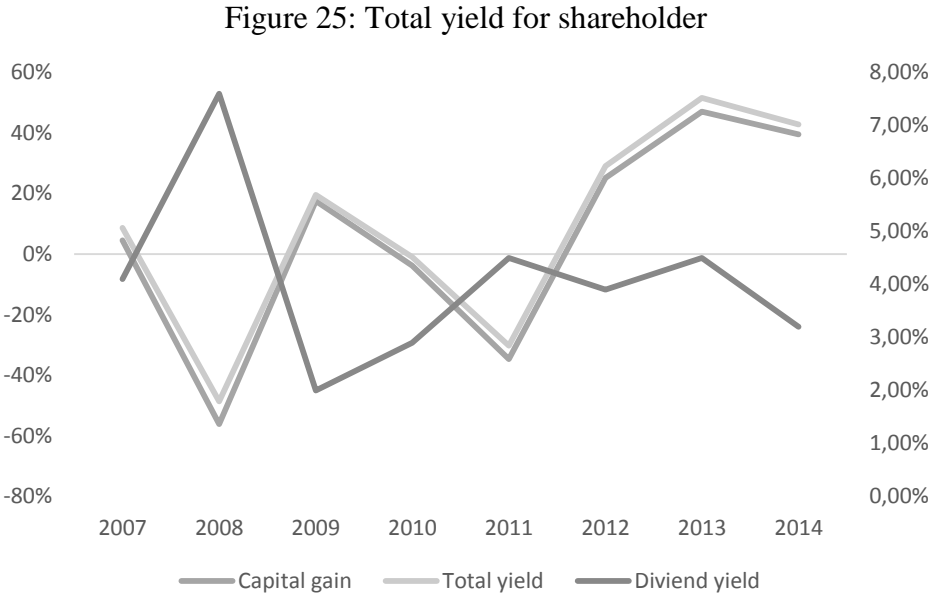
However, in 2014 lower oil prices clearly impacted its key performance indicators. However, we believe that their renewable fuels might not be influenced to such an extent as the conventional oil industry in general. Therefore, we expect that Neste Oil can perform advantageously against Royal Dutch Shell and Eni, whose product portfolio consists mainly out of crude oil.

In Figure 24, we can see that Neste Oil was constantly increasing its total asset portfolio apart from last year when total assets decreased from EUR 7.2 billion to EUR 5.5 billion. Besides, accordingly to the general market situation, their capital expenditures became more conservative in the last few years. For example, in 2010 the number almost amounted to EUR 1 billion whereas in 2014 it lowered to EUR 205 million. Their financial position appears to be highly sustainable with the leverage of 0.38 in 2014.

Figure 24: Total assets, net debt, capital expenditure 2007-2014

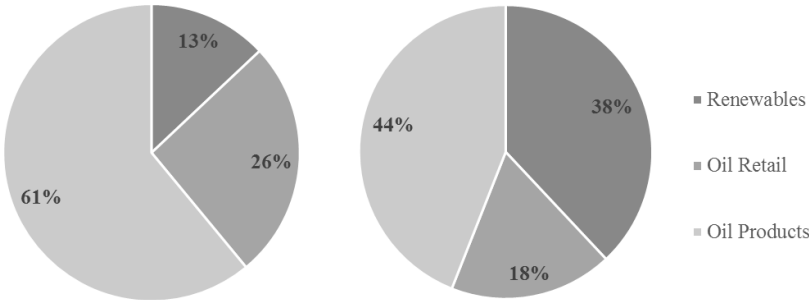


In Figure 25, we can observe the variation of total yield for a Neste Oil’s shareholder. The total yield is composed of annual dividend yield plus capital gain, which is defined by comparing share price variation year to year. We can observe very volatile total yield in the last 7 years due to total capitalization movements since dividend yield remained in the range 3-5% throughout the analyzed period except for the year 2008. Its low level can be explained with the difficult economic circumstances in the last 6-7 years and Neste Oil’s high commitment in the investment activity to discover new raw materials and to improve their processes with new technologies. However, before the start of the global economic crisis (2008), we can see the dividend yield reaching almost 8%.



In Figure 26, we can see Neste Oil’s sales and EBIT by product area. Comparing the pie graphs, we need to emphasize the higher operational margin renewable fuels bring to the firm, which could be treated as one of indicators confirming the added value of CS strategy.

Figure 26: Sales (left) and EBIT (right) by product area in 2013 in %



2.2.4 People

Neste Oil respects human rights and international norms which is underlined with its active sustainability performance towards the stakeholders. They generate prosperity and well-being for their stakeholders by paying taxes, providing employment, thus showing good corporate citizenship in all the countries it operates in. Furthermore, it complies with all national and international laws and regulations, international agreements, and generally accepted corporate governance practices.

Neste Oil takes into notice its stakeholders (society) and strives to develop its operations on the basis of the feedback received. Neste Oil undertook several measures to help the society it operates in:

- educating its employees' children (i.e. plantation workers' children in Malaysia)
- charity work and sponsorship (time, money and actions on behalf of the young)
- human rights compliance
- participation in society well-being organizations and joint projects (Volunteering in Holland)

2.2.5 Planet

Climate and environmental protection play a major role in Neste Oil's everyday operations. They try to persuade the operations within strict environmental limits, and have succeeded to significantly reduce the airborne and other environmental emissions related to their business. In addition, by the efficient use of resources, they continuously reduce the overall usage of natural resources, improve productivity and cut the operational costs.

Moreover, the firm can be recognized as a pioneer in producing high-quality biofuels for aviation use, and it is also the only firm in the world capable of producing renewable aviation fuel on a large scale. For instance, Neste Oil helps airlines firms to significantly minimize carbon footprint and greenhouse gas emissions. Neste Oil's significant accomplishment is its capability of producing/reforming the biodiesel to the level that is 100% compatible with aircraft engines and it is the only firm in the world to produce aviation renewable fuel on a large scale. Furthermore, Neste Oil signed a partnership agreement with Boeing and Lufthansa to start testing and afterwards using its renewable fuel. However, high price of renewable fuel represents a significant obstacle to commercialization and puts its success under question.

2.2.5.1 Ensuring the sustainability standards of their supply chain

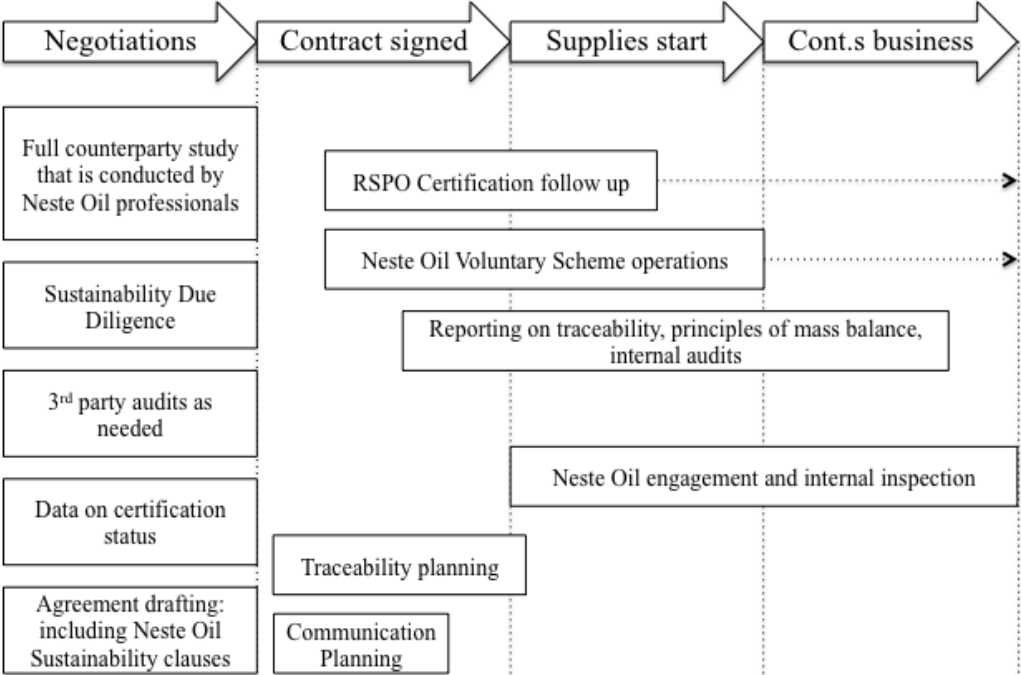
The first of the measures undertaken in respect to the ‘Planet’ concerns their supply chain, in which Neste Oil ensures sustainability at every stage. To clarify, they carefully select all feedstock suppliers, who need to be committed to operating sustainably as all Neste Oil’s renewable inputs can be fully traced back to where they are produced or cultivated.

The supply chain’s sustainability is being respected by the following measures:

- Strict sustainability criteria used when selecting suppliers.
- Contracts (i.e. requirements of the suppliers being the members of the roundtable and Sustainable Palm Oil).
- Traceability.
- Certified feedstock and production plant.

The approach undertaken to control their supply chain can be observed in Figure 27.

Figure 27: Neste Oil Supply chain control process



Source: S. Honkanen, BioRefine annual seminar 2011: Responding the sustainability challenges at firm level, 2011, p.21

2.2.5.2 Product development

One of the primary undertakings for realizing Neste Oil’s vision of renewable fuels is called NExBTL (Neste Oil’s Hydro treated Vegetable Oil (hereinafter: HVO)). It is a type

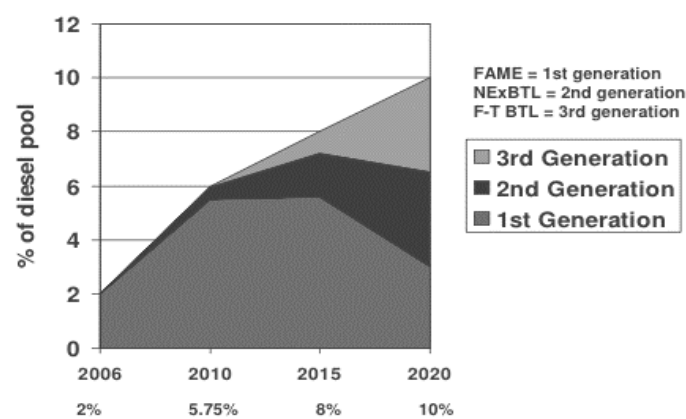
of renewable fuel based on Neste Oil's own research and development and produced out of renewable raw materials.

Neste Oil has undertaken specific criteria when deciding on new raw materials:

- applicability
- features of sustainable development:
 - carbon footprint (greenhouse gas emission balance)
 - water footprint
 - nutrients
 - land use
- availability for industrial scale production
- economical perspectives

According to Figure 28, Neste Oil has divided biodiesel type in three generations. The first generation, called FAME, was produced in 2000, while the second generation of biofuels is generally considered as a better option over the first generation. The second generation of biodiesel produced by Neste Oil, NExBTL, considerably impacted the fuel industry, and has therefore been used in large amounts. NExBTL is produced from forest and crop residues and from non-food energy crops whereupon no conflict of using food for energy purposes occurs. The third generation (F-T BTL) biodiesel is expected to be put into usage in 2015 and gain importance before 2020. We can also observe the European market share evolution of fuels, which indicates that bio fuels will gain a substantial proportion of the market share in 2020.

Figure 28: Biodiesel Generations - Market share Evolution European Perspective



Source: Neste Oil, *Second Generation Biodiesel and Sustainability Requirements*, n.d., pp. 5.

HVO, being a drop-in fuel, offers significant benefits to various target groups:

- Measured by product quality, it easily outperforms both conventional biodiesel and fossil diesel (for clients).
- It is fully compatible with fossil diesel (for clients):
 - It can be used in all modern diesel engines without any modifications (passenger cars, buses, trucks, etc.).
 - It meets automotive manufacturers' toughest quality specifications.
 - It can be used in diesel engines as such or blended with fossil diesel.
- XTL end product quality with excellent cold properties (for clients).
- It can be transported and stored like fossil diesel (for distributors).
- It is a fuel which helps to resolve issues with the climate change and consequently urban air quality (for society and environment); the greenhouse gas emission over the entire life cycle of NExBTL biodiesel is estimated to be 40-60% lower in comparison to fossil diesel.

2.2.5.3 High control of water usage and waste recycling

Water and steam are used in the firm's operation, monitored at every single step in their operations in terms of: input flows, water usage efficiency, cooling water and wastewater management. The largest proportion of the water usage is linked to the firm's refineries (96%). Refining renewable fuel is highly water-efficient as water is exclusively used to generate steam. Water level assessment have been produced for Neste Oil's refineries covering the input and output water volumes at these sites. Neste Oil's vision is to develop a water balance tool that will measure water usage per every product or production line which will be integrated in their processes. Regarding the water usage, all of the refineries employ closed-cycle cooling systems. The process water in these systems is cooled by using water from the surrounding sea or air-cooling, and seawater is returned to the sea after use.

To emphasize its sustainable orientation, Neste Oil strives to highlight the water awareness within its own organization and the oil industry in general by taking part in a development project coordinated by Environmental Science for the European Refining Industry organization, which aims at increasing the specific industry's (oil and gas) understanding of water usage and the impact of wastewater and cooling water. On the other hand, Neste Oil pays a lot of attention to waste recycling implemented at the firm's refineries with the goal to eventually reduce the level of operating waste and engage in the greater waste recycling. Waste management is continually evolving, in particular aiming at identifying new ways of making use of waste streams.

2.2.5.4 Energy efficiency

In addition, Neste Oil aims to reduce its overall energy consumption particularly in refining and logistics since enhancing cost efficiency and low-emission refining are the key

drivers to improve energy efficiency. The firm has been making continuous progress on improving energy efficiency. As part of its effort, Neste Oil set up several energy saving targets for the future, in specific energy-saving target of 660 GWh to be achieved by 2016.

Neste Oil also focuses on the energy efficiency of their transport activities undertaking several measures to reach its goals. For example, energy efficiency at sea has been improved by introducing basic speed of 13.5 knots for tankers. The energy efficiency of vessels was furtherly enhanced by cleaning ships' hulls and propellers of algae and barnacles that have significantly affected the fuel consumption. Evidently, Neste Oil is not taking into consideration only water usage and waste recycle since their approach aims widely on reducing all energy used in their supply chain by trying to identify cost savings at every step of its supply chain process.

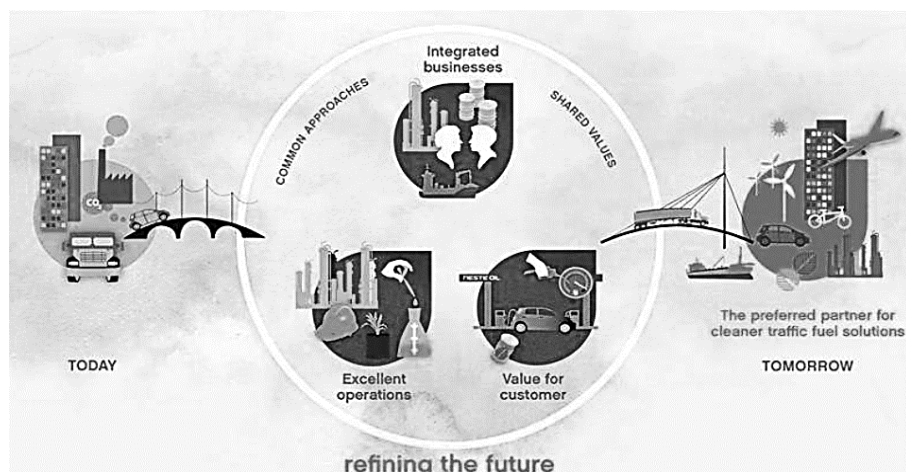
2.2.5.5 Climate change strategy

Climate change is a hot topic and global challenge, responding to it effectively calls for a number of parallel approaches. Fighting the reduction of greenhouse gas emissions during the product's life cycle is one of the main drivers of Neste Oil's cleaner traffic strategy. The firm aims to reduce transport-related greenhouse gas and other emissions by producing cleaner transportation of fuel solutions. Therefore, Neste Oil provides carbon footprint calculations covering their entire life cycle of its products and strives to continuously improve the overall performance of its climate footprint. The firm began with the climate program in 2012 with the focus on the current status of the existing policies and measures directed at fighting the climate change. The program's long-term objective is to reduce traffic related GHG emissions through renewable fuel solutions and in addition reduce the Neste Oil's own impact on climate through cost-effective improvements.

2.2.6 Level of integration

The level of integration of CS strategy in Neste Oil's core business model is extremely high, which can be observed in the analysis above. The firm provides their customers with products that help tackle sustainability issues such as the global climate change. Its main CS strategy bases on using natural resources and focusing on eco-efficiency, which is a specific CS strategy deeply integrated into firm's core business model. In this manner, Neste Oil has been trying to build a maximally sustainable supply chain and energy efficient business which will account for its CS leadership in the oil industry. The core business strategy integrating sustainability performance is well represented in Figure 29.

Figure 29: Neste Oil business strategy



Source: H. Salmenpohja, Case study: Hydrotreated Vegetable Oil, a drop in biofuel. Latest development update from Neste Oil, 2012, p.4.

In addition, we have noticed that Neste Oil has other revolutionary visions concerning its CS performance. For the near future, Neste Oil has planned to opt for new raw materials such as waste fat from the fish processing industry and used cooking oil used for advanced bio fuel production. Advanced bio fuels exhibit characteristics, which exceed minimum requirements of the fuel specification but also fully comply with Red Flags Rules and Member state sustainability legislation.

In conclusion, Neste Oil has been trying hard to prove its engagement to the strategy of producing sustainable and ethically viable biofuels. Neste Oil's management always argues that sustainability is a central component of their strategy and integral to all their operations (Neste Oil Report, 2014). As a part of their cleaner traffic strategy, the investments amounted to EUR 1.5 billion in the clean tech business over the last 5 years and the NExBTL renewable diesel is an excellent tool in combating the climate change. They aim to continue in this direction in order to maintain the reputation as one of the most sustainable firms in the world successfully fighting their competitors. Another positive move toward the future sustainability model can be seen by the recent multiyear partnership agreement between Neste Oil and Cellana, which is the leading developer of algae-based feed stocks for biofuels, animal feed, and nutritional oils. Therefore, all the firm's undertaken actions point to Neste Oil's determination to stay loyal to its values and to continue investing in renewable raw materials.

The firm's sustainability related measures are calculation of the greenhouse gas emissions that the production of raw materials and the biofuel generate throughout the life cycle, carbon footprint calculations for its products covering their entire life cycle, water usage management etc. Considering the measures, we can conclude that CS strategy integration level is very much in line with the "Synergistic CS" level described in Chapter 1.5. The characteristics of Neste Oil's CS integration level are:

- CS consists of well balances 3 dimensional approach (Profit, Planet, People).
- Stimulating a network of experts to furtherly research and develop the system which will support the CS strategy and goals in the future.
- stakeholders orientation
- Prices based on the perceived value still expected to increase.
- SRI orientation.
- Full info on CS performance.
- Minimizing the impact on the environment.
- Strategic partnership approach for the constitution of sustainable supply chain.
- Systemic quality control.

2.2.7 Strategy

Neste Oil manages two principle CS strategies both integrated into the Neste Oil core business model, one belonging to the business unit of conventional fossil fuel production and the other one to the “renewable fuels” business unit. “Conventional fossil fuel” unit implemented the CS strategy which is in accordance with the “Eco-efficiency” described in the Chapter 1.4. On the other hand, the strategy engaged in the “renewable fuel” unit is corresponding to the measures undertaken by “Environmental cost leadership” strategy, again described in Chapter 1.4. As explained in the theoretical part, the second strategy is very typical of the oil industry, which is being challenged by the biotech industry, which is substituting oil with renewable bio-fuels, which tend to be cheaper and environmentally non-hazardous. As mentioned, it is forecasted that renewable biofuels will gain significant market share until 2020, which means that this particular approach undertaken by Neste Oil is expected. However, the key element is still the pricing as renewable fuels need to be economically viable to serve their purpose of a perfect substitute for conventional fuels.

On the other hand, water control and waste recycling approaches coincide with the definition of "Eco-efficiency". The financial results confirm that Neste Oil is able to turn cost into profit by identifying hidden opportunities for innovations as explained by the theory. Reducing costs, by optimizing resource productivity (i.e. water) and converting waste and by-products into sources of new revenue, is just one competitive advantage visible and its overall result has been the reduction of the environmental impact. However, eco-oriented mindset is first required and only then the strategy can trigger radical eco-innovations and technologies which can lead to improvements in resource utilization thus becoming sources of competitive advantage.

The eco-efficiency can generate gains beyond borders of a single firm as mentioned before. Thus, Neste oil is heading exactly in this direction to reduce environmental impacts of

broader processes. Again, their primary objective is to first recycle waste and then use it for energy purposes. By using significant amounts of waste and residues in its renewable diesel production, Neste Oil is contributing to operating highly efficiently with the used resources. In fact, waste and residues currently account for over a half of the renewable inputs that Neste Oil uses today.

2.3 Eni Case Study

2.3.1 Profile

Eni is an Italian firm operating in industries of oil and gas (Exploration & Production, Gas & Power, Refining & Marketing), electricity production and sale, oilfield services, construction and engineering. In these categories, it exhibits a significant leading international market position. However, its main stream of revenues comes from oil and gas category. It employs 82,300 people in 85 countries around the world, and its headquarters are located in Rome, Italy. As mentioned, the firm operates in the field of energy and tries to become one of the most socially and environmentally responsible firms in its sector, by promoting its openness towards all of its stakeholders and building a sustainable future by investing in innovation and research. The integration of corporate culture within its business model helps the firm to achieve its mid and long-term strategic objectives. Every action Eni undertakes is based on endorsing the society and contributing to the well-being of the communities involved in the working process by protecting the environment, investing in technological innovations and energy efficiency, as well as limiting and decreasing the risks of climate changes. Moreover, Eni's mission is committed to growth in the activities of finding, producing, transporting, transforming and marketing oil and gas, and what is more, they value their employees, who continuously work on improvement and excellence, and the environment where they operate.

Exploration and Production is Eni's primary division. It is present in 42 countries, and it focuses on exploring and producing oil and gas. Its main strategy is to deliver organic production growth with increasing returns on capital, leveraging on a high-quality portfolio of assets and its efficient use, involvement in competitive large projects and long-standing relationships with host regions. They are targeting high geographical diversification with economies of scale benefits and project synergies. More than 3/4 of the production comes from either onshore or shallow-water, which has a positive impact in terms of risks and operating costs.

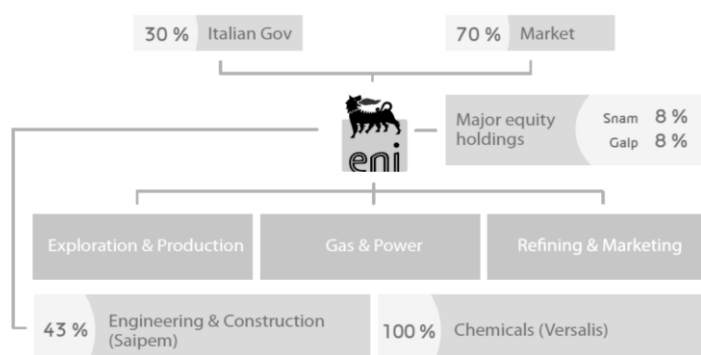
Meanwhile, Gas and Power division is present in every phase of the gas value chain: supply, trading and marketing of gas and electricity, gas infrastructures, and LNG supply and marketing. Eni exports more than 60% of its gas outside Italy and its competitive advantage in the European gas market is supported by multinational approach, long-term

gas offer guarantee, access to infrastructure, market knowledge, strong customer base and wide product segment.

The third and the last division is Refining and Marketing (R&M), which focuses mainly on the Italian market and Central-Eastern European countries. Eni is the largest refiner in Italy and elsewhere and is the leading operator in retail marketing of fuels with a market share of around 30%. In the R&M unit, Eni strives to accomplish the objectives of cutting costs and enhancing margins to gain profitability.

On the other hand, taking into account the current oil and gas situation in the European market, Eni has been continuously attempting to produce hydrocarbons in sub-Saharan Africa, the North Sea, the United States, Latin America, Australia and in the areas of high potential, such as the Caspian Sea, the Middle and Far East, India and Russia. In addition, Eni, through the ownership of Saipem SpA, plays a role of the leading contractor for the supply of engineering, procurement, project management and construction.

Figure 30: Eni's business structure



Source: Eni, Factsheet, 2015, p.1.

As mentioned before, Eni's high commitment to sustainability was rewarded by its inclusion in the major sustainability indexes. For example in 2010, Eni has been included in Dow Jones Sustainability World index, Dow Jones Sustainability Europe and FTSE4Good sustainability index. In 2014, Eni has been included in the Dow Jones Sustainability World index for the eighth consecutive year.

2.3.2 History

First corporate sustainability measures undertaken by Eni date back to 1954 when the firm created Metanopoli, which is an area dedicated to work and welfare of its employees. In 1956, Eni invested into the foundation of the international school for the study of hydrocarbons, which is now offered by MEDEA Master's Degree, which trains Eni's

employees to improve their professional skills. Afterwards, Eni invested a considerable amount of money in health and training center for its personnel located in Venice, Italy. Already in the 80s, Eni engaged itself in setting up a center for pollution prevention and establishing the first research program on energy and renewable sources. Between 1990 and 2000, the firm was involved in many environmental and social initiatives to promote sustainability (i.e. UNICEF agreement on a program of child vaccination and a plan of health education). In addition, Eni built a center for research on energy, environment and economy. In this period, Eni also published the first official report on health, safety, and environment in connection with its operations worldwide. Moreover, before 2000, Eni already started with the installation of solar panels in the Republic of Congo (Eni Sustainability report, 2014).

After 2000, Eni signed the agreement on transnational industrial relations and CSR and implemented a separate function within the firm, which was responsible for raising issues in this area. In 2006, Eni launched the ‘‘Sustainability project’’ to clearly define goals and process integration in their current business model. Consequently, also a sustainability report was published.

Since 2013, Eni has been continuously putting its efforts in CS and investing in green innovations to maintain and renew production objectives in the operating areas. The integrated bio refinery projects and Versalis’ production of biochemical, chemicals for lubricants and green diesel for bio refineries can be listed as an example of such trend. Research and development forms the base of Eni’s continuous development of its old traditional business and serves as a main source to launch highly innovative activities, which derive from a careful observation of the changing operating environment. The firm is implementing a management model, which seeks to make the innovation process more systematic by adopting a ‘‘bottom-up’’ approach with the goal to reach green and inclusive growth defined in the Global Conference on Sustainable Development in Rio 2012. Accordingly, Eni is well aware of the fact that innovation contributes to business turnaround and long-term growth; the so-called sustainable growth.

2.3.3 Profit

The firm’s business model pursues long-term value creation for its stakeholders by delivering profitability and growth by improving efficiency and mitigating risks exposed to. Its financial results and sustainability performance are highly dependable on the efficient use of the capitals, which has resulted in operational excellence, asset integrity, handling of operational risk and preservation of health, safety and environment. This approach contributes to several value creation effects i.e. lower cost of capital, reduction of working capital, leverage optimization, mitigation of market volatility and positive effect on credit worthiness. Moreover, it triggers many M&A opportunities, which can support the firm’s long-term growth.

In Figure 31 and Figure 32, we can observe Eni's recent financial performance. Even though the market situation has not been very fruitful, the company achieved a positive Revenues trend (CAGR=6%) throughout the analyzed period also due to continuous investments in Research and Development. Moreover, a very definite trend of operational income can be observed with the exception of the last two years, in which we can notice the impact of falling oil prices. In other words, the drop in net profit in 2014 is reflecting a continuous deterioration of energy conditions affected by considerably lower Brent prices (benchmark prices for purchases of oil worldwide), which have significantly reduced revenues in the Exploration & Production segment. However, the company significantly decreased its leverage, which reflects its good financial standing in terms of liquidity. Total assets are constantly increasing reaching EUR 146 billion in 2014. On the other hand, capital expenditure remains constant moving within the range of EUR 12-15 billion on yearly basis (11-13% of Sales).

Figure 31: Revenue, operating income, net income and net cash flow from operations 2007-2014

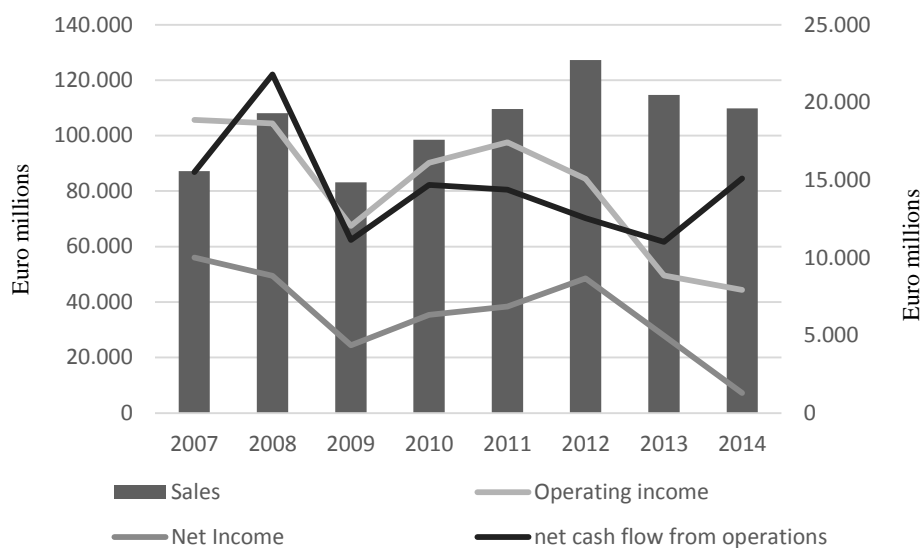
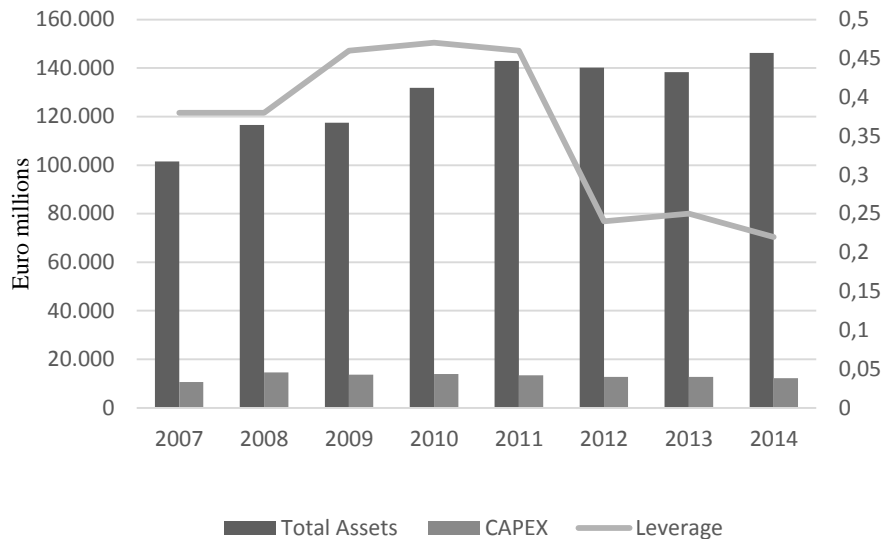
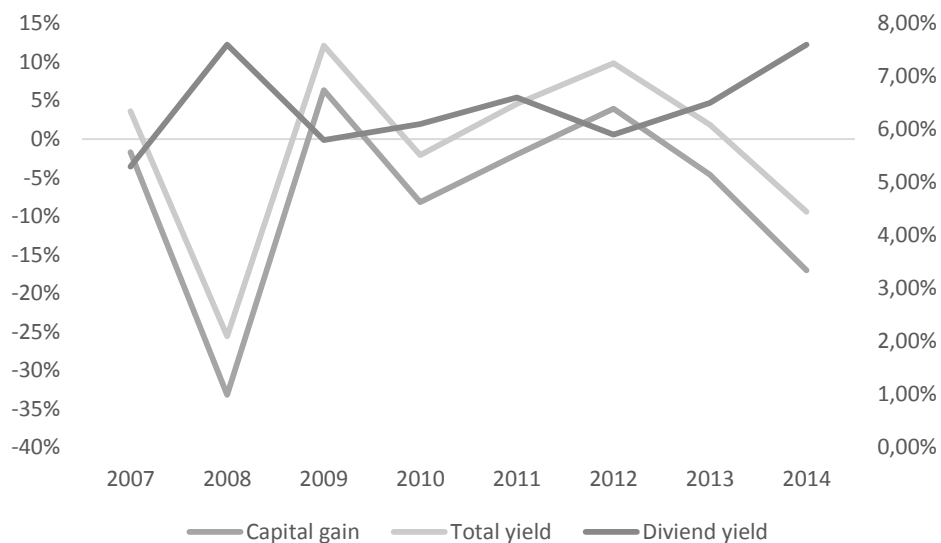


Figure 32: Total assets, net debt, capital expenditure 2007-2014



The total yield for shareholder (dividend yield + capital gain) especially depends on the market capitalization variation. We can observe a big drop in value following the beginning of the economic recession and afterwards recovery of the value. After 2009, it is quite constant staying within the range of 0-10% and in the last period reflects very well the oil market situation in the 2014 with a significant drop of the market value. Meanwhile, the dividend yield is relatively high compared to the industry average, varying in the range of 6-8%. However, in 2014 it was expected to move above 9 % but again, the current oil market situation with extremely low oil prices has severely cut revenues and dividend levels. Similar situation is forecasted for 2015 as well. The total dividend yield of an Eni's shareholder can be observed in Figure 33.

Figure 33: Total yield for shareholder



2.3.4 People

Eni is aware of the importance of nurturing relations with all its stakeholders as they provide opportunities for mutual exchange, growth and enrichment, creating conditions for continuous dialogue, helping to build trust, improving the information quality of decision-making processes and reducing conflicts between different stakeholders.

Concerning the society, Eni invested a significant amount of money in the construction of hospitals in order to improve the living conditions of its stakeholders (i.e. Saudi Arabia, Armenia). They always strived to maximize its stakeholders'/society's welfare by participating in many agreements on social initiatives (i.e. Algeria, Pantanal region-water system). Besides, it is worth mentioning that Eni is among the first European firms to establish a Code of Conduct.

2.3.4.1 Governance

Eni's operations are based on the strong culture of integrity, which derives from transparency, fight against corruption, respect of human rights, labor, and people's health and safety. Therefore, Eni's strategic tool for growth is creation of decent work.

With the establishment of the integrated risk management unit, they protect their brand value and corporate image, which plays a crucial role in the oil & gas industry. In addition, Eni precisely defined the board's role in connection with sustainability. The so-called responsible leadership includes the ability to adopt sophisticated decision-making strategies and effectively propagate the value of integrity and responsibility. The responsible leadership concept also includes the overall fight against corruption. Therefore, anti-corruption trainings are obligatory and is extended to all people at risk, in Italy and abroad. It tries to clearly illustrate the critical internal and external anti-corruption laws and to provide knowledge and tools to recognize a potentially criminal conduct, actions to be taken, risks, responsibilities and consequent sanctions.

2.3.4.2 Safety and Human rights

Eni's focus on human rights has developed at a very early stage, which is demonstrated by the strategies, systems and processes undertaken so far. In 2013, Eni focused on putting in place various aspects of the management system on business and human rights. The effort to integrate a human rights perspective into impact assessment and risk management processes is being conducted alongside ongoing activities in the priority areas identified by the human rights compliance assessment.

On the other hand, Eni requires its employees' full preparedness which contributes to their safety and high-level efficiency. To reach that goal, Eni averagely organizes 170,000 hours of training per year. In addition, the firm quarterly issues the report on safety performance

to top management. The firm's main goal is to support managers at all levels to actively promote the culture oriented towards the achievement of excellence with regard to safety.

2.3.4.3 Local territory and community development

Eni is aware that great variety of contexts in which it operates and the diversity of its workforce are special elements of its business, which represent a life-important resource that should be properly valued through a non-discriminatory management. Transparency, dialog, and respect for local communities are the preconditions for effective cooperation aimed at adding value to the region. However, sometimes transparent communication with stakeholders is not enough. Thus, Eni leads an open dialog with NGOs with the aim to involve them in the operation which decreases the risk of negative branding and operational distress. Furthermore, Eni benefits the local territories by employing the locals and building public premises, which is crucial for regional development.

The firm is aware that transparent acting and proactive relationships on the territory and community engagement should be introduced from the very beginning. For instance, in Mozambique Eni organized a workshop "Operating responsibly within Mozambique's natural and social environment" in order to clearly pass the message of its sustainable business model to local stakeholders, which helped them understand the benefits Eni would bring along its business operations. Moreover, in 2013, a large event was organized with respect to knowledge management based on the development of African communities (65 courses with over 5,600 participants).

The Integrated Hinda Project is another good example of Eni's adequate conduct, which targeted to promote the development of the communities surrounding its facilities. The 4-year project very soon recorded significant results in priority intervention areas of health, education, access to drinking water, agriculture, building capacity and community participation. In addition, interventions to facilitate access to energy, promotion of women involvement in the training and raising awareness activities are integral parts of the project. Regarding agriculture, several social initiatives took part in improving rice and manioc cultivation, improving seed quality and agriculture techniques and creating large scale agriculture, in order to reduce the dependence on food import.

Furthermore, another very successful approach adopted by Eni is a strategic partnership with local firms. For instance, a strategic agreement with Sonangol (national oil firm of Angola) on future joint activities and projects in the oil and gas sector will bring long-term growth for the territory and for Eni. According to the agreement, Eni and Sonangol will set up a joint team aimed at studying the potential of the non-associated gas presence in the highly promising area. Conclusively, as it is clear that gas will play a crucial role in sustaining the local economy, the joint team with Eni's proprietary expertise and

substantial experience in developing gas resources worldwide will benefit the country and its society to a large extent.

2.3.5 Planet

Environmental protection is an integral part of Eni's operations. Eni conducts its activities in conformation with international agreements and standards respecting laws, regulations and national policies of the host countries. Eni's environmental management is based on the principles of prevention, protection, information and participation and focuses on:

- the environmental issues identification
- adoption of the leading innovative technologies, the use of a system for the prevention of adverse environmental events linked to specific activities of production units
- the mitigation of environmental risks
- the adoption of methodologies for the protection of biodiversity.

2.3.5.1 Natural resources and biodiversity

Eni's commitment towards the environment is the base of their sustainability strategy starting at the global conference in Rio in 1992. Since then, Eni continues to demonstrate its high commitment to the environment through the continuous improvement of its results based on health, safety and environment management.

The oil and gas industry is continuously facing challenges regarding the emerging environmental problems. Thus, Eni is highly interested to identify and implement operating technology and working practices that minimize the impact on the environment. Its main strategies toward the environmental issue are:

- the reduction of carbon emissions in all areas of its operations and at the same time emphasizing the energy efficiency,
- the identification of operational practices integrated with activities to ensure the reduction of the environmental footprint and the conservation of natural resources,
- adoption of the best technologies,
- continuous environmental monitoring in every part of their operations.

For more than a decade, Eni has been integrating the management of biodiversity and ecosystem services into its national and international operations. For example, in 2009, the investments in the soil protection and waste management reached € 750 million. In addition, they achieved a zero gas flaring commitment for ten consecutive years. Moreover, Eni's promotions of effective management of water resources, particularly in areas prone to water shortages, brought positive results. For instance, their water usage

optimization goal was reached by water reinjection of 62% of the total water produced in 2014.

Eni does not take into account only water usage, technologies adoption and waste recycle since its approach aims widely at reducing all of the energy used in the supply chain. In addition, the firm's purpose is to carefully monitor the carbon emissions level at every step so as to avoid exceeding the carbon credits received.

2.3.5.2 Climate change

Seeking to rationally use fossil fuels and identifying new options of economic development, access to energy, environment protection and climate change mitigation, should be a challenge to all energy firms. Eni believes that the future energy mix portfolio must consist from more sustainable fuels by promoting low carbon sources, starting with natural gas and non-subsidized renewables, overcoming current technological limits and encouraging research to develop more efficient technologies. In the last years, Eni has tried to fight against the climate change by reducing flaring and increasing energy efficiency. To exemplify, in 2013, greenhouse gas emissions were reduced by 9.9% in comparison to the previous year in all sectors (E&P, G&P, R&M). The change was not only caused by lower production levels, but also by the implementation of specific strategies for reducing greenhouse gas emissions (flaring down activities) and improving actions designed to increase energy efficiency, which was evident in the sector emission indexes for E&P and refining.

2.3.5.3 Sustainable energy and regions development

In all of its production areas, Eni invests in energy infrastructures as well to enable the use of natural gas (gas pipelines, local distribution, LNG terminals, and power stations) by the local communities, which allows for the regional development. Access to modern forms of sustainable energy is a prerequisite for the development of any territory. Moreover, Eni repeatedly conducts strategic assessments of the impact of its activities and afterwards decides on undertaking possible investments. A case of good practice is Eni's investment in four power generation facilities in Congo and Nigeria, which overall account for 60% of Congolese electrical production and 20 % of Nigerian electrical production.

Access to energy is crucial to the firm and therefore it supports the initiatives, which aim at finding practical solutions to sustainable development challenges. In respect, Eni is named the Official Partner of Expo Milan 2015 for sustainability initiatives in African countries. The firm has been titled as such since it promotes sustainability in the African continent, where it is the first international energy firm in terms of hydrocarbon production. The

partnership with Expo Milan 2015 yields a series of initiatives to continuously promote development of the regions where Eni operates.

Eni has neither forgotten its domestic, Italian market. Recently, a new partnership was signed with AcotelNet, which is essential for the development of innovative products and original solutions, which both cater energy efficiency and savings market to be offered to various customers in the B2B and B2C sales of gas and electricity. The main objects of the agreement are the devices "smart meter" which are expected to be of general domestic use in the near future and will eventually be integrated into any electronic device. Smart meter's function is to monitor the consumption of energy, water and gas, and highlight waste, thus it is a development affecting every single individual and not only large industrial and economic realities. This agreement will allow AcotelNet and Eni to implement the theoretical principles of energy savings and turn them into real-life practical applications. Eni's principle is to offer its customers more than just gas and electricity supply by helping its clients to gain greater awareness of their energy consumption and identifying the actions and behaviors that can help achieve real savings (innovative solutions for energy efficiency).

Eni continuously stresses out the importance of innovation, which is the only way to make resources accessible at containable costs with minimal environmental impact. In 2013, the total expenditure on research and technological development amounted to € 197 million, whereas in the next 4 years Eni's forecasts include further investments of about €1.1 billion.

2.3.6 Level of integration

Eni's corporate sustainable engagement is carefully structured by taking into account various business aspects through which CS strategies are transformed into practice. The strategies under question are governance, human rights, safety and asset integrity, natural resources and biodiversity, sustainable energy, climate change, local territory and community development and innovation. Eni's sustainability objectives are met by projects and initiatives defined by Eni's CS division and involvement of all subsidiaries worldwide. The Sustainability unit also monitors progress reports and the achievement of the objectives, which are reported to the firm's top-level management. The incentives for the accomplishment of sustainability objectives are well structured for the top management with a clear correlation between their bonuses and firm's sustainability performance. The latter model allows Eni to ensure better management of business risk mitigation to reinforce firm's performance, improve its reputation and encourage innovations.

One of Eni's key sustainability elements is a dialog and cooperation with the local population and players, which can be clearly observed in its operations. Wherever present with its technology and skills, the local community benefits from the firm be it in Africa or

any other country. This commitment to the local entities is one of the essential strategies which actively contribute to global progress towards sustainable development. Besides, Eni has set up several sustainability-oriented objectives with the goal of their accomplishment by 2017. First of all, it strives to promote decent work conditions worldwide by improving working standards (renewal of CSR agreements with certain organizations), stressing out human rights (consolidation of management system, training events, supply chain audit plan etc.) and increasing gender diversity. Regarding the environment area, Eni has defined 4 main goals to be achieved until 2016: reduction of gas flared by 80% compared to 2007, reinjection of 70% of water production, SO₂ reduction of 740t/year in the refining sector and energy savings of 400 ktoe/year compared to 2010. So far, Eni has been successfully pursuing its set objectives, which will probably be entirely accomplished in 2016 (Eni Annual Report, 2014).

Regarding Eni's historical sustainability performance track record, we can conclude that CS strategy is deeply integrated into its core business, by contributing to value creation. Accordingly, Eni considers sustainability as a driver in the process of continuous improvement that guarantees successful financial, social and environmental results, which eventually reinforce its business performance and reputation. In our opinion, Eni's integration level possesses characteristics, which are in accordance with "Caring CS" level described in Chapter 1.5. The reason which put in accordance the chosen integration level at the moment are the following:

- balancing shareholders' value and their interest
- eco-efficiency
- supporting third-world regions development
- management system on safety and health for several decades
- support of international governance structure
- going beyond legal compliance and profit considerations

The firm has been continuously aware of the necessity to enhance its overall results (social, environmental and economic), which is evident in its commitment to sustainable development, openness to innovation and competition, all of it supported by the firm's long-term vision of the business processes.

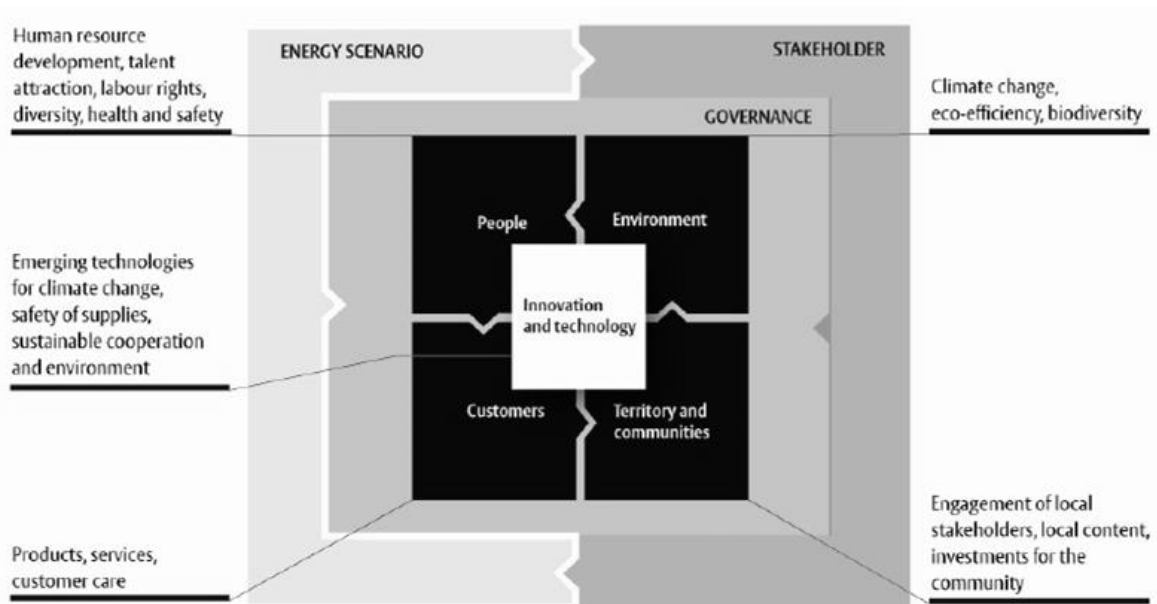
2.3.7 Strategy

Taking into account the firm's measures to enforce sustainability approach, we can observe inclusion of several CS strategies from Chapter 1.4. For instance, the firm's participation in organizations and joint projects clearly coincide with "Beyond compliance leadership" strategy, with which the firm tries to manage their reputation on one side and help develop the regions exposed to poverty on the other. These initiatives strive to achieve the

implementation of environmental programs and familiarize the public with it. In the “Innovation area”, we can identify the elements of the multiple CS strategies described by Orsato in Chapter 1.4 (Eco-Efficiency, Beyond Compliance Leadership and Environmental Cost Leadership). Eni believes that implementation of such approach enables the firm to successfully cope with the competitive environment and consequently reach long-term sustainable growth.

After conducting in depth analysis, we concluded that their principle CS strategy, used as a competitive advantage in the market, is in accordance with Orsato’s “Beyond compliance leadership” or Hart’s “Product stewardship”, which is very alike and both are described in Chapter 1.4. Since Eni operates in resource-intensive industries, it is often under the microscope of eco-activists. Thereupon, in order to respond to the public pressure, the firm has been exposing its “beyond compliance” strategy by going beyond law requirements and advertizing its green credentials and in this way managing well its environmental risks. Eni’s engagement in the development of local communities is exhibited by benefiting its customers via products and services, communicating flawlessly and keeping promises, which is another firm’s approach in the line of solving environmental problems. Moreover, Eni’s regional development comprises education and health facilities construction, which forms part of “Beyond Compliance Leadership” strategy. The measures are described in the following segment

Figure 34: Eni's conceptual model of sustainability



Source: Eni, *Managing the complexity of a sustainable development*, 2009, p. 13.

In Figure 34, you can observe a final summary of Eni’s conceptual sustainability model, which serves to mitigate potential risks of the firm’s everyday operations:

- Political: geographical diversification, focus on core hubs.
- Financial: leverage decrease, improve credit rating, increase of liquidity.
- Operational: balanced portfolio with little exposure to high-risk projects; increased operatorship, know-how and cost efficiency; focus on proprietary technologies.
- Environmental: climate changing challenge, bio fuels.
- Geological.
- Reputational.

2.4 Royal Dutch Shell Case Study

2.4.1 Profile

Royal Dutch Shell, is an Anglo–Dutch multinational oil and gas firm with its headquarters in Netherlands. It is an international group of energy firms with approximately 92,000 employees. Their business model is based on using highly developed technologies and taking an innovative approach to helping build a sustainable energy future. Their principles are based on their core values of honesty, integrity and respect for people, which implies that their strategy tries to involve the principles of corporate sustainability.

Royal Dutch Shell’s strategy target to strengthen their position of being the leader in the oil and gas industry while on the other side undertaking compromises in certain operations to

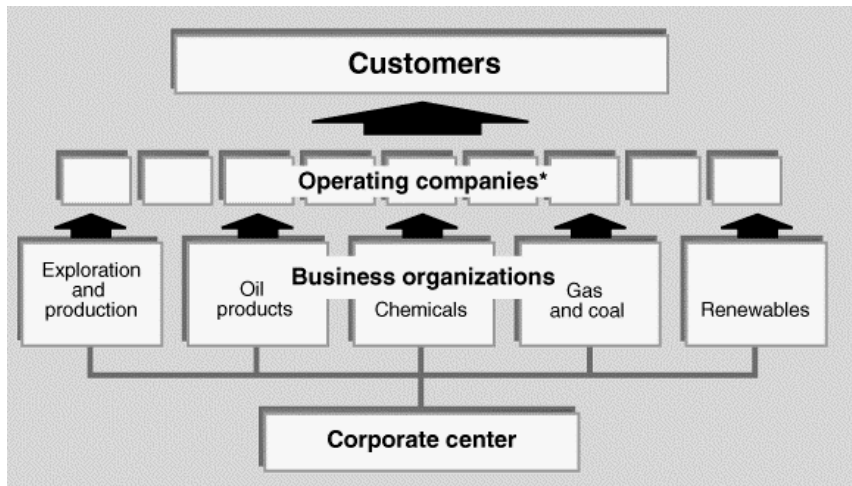
meet global energy demand in a sustainable way. The management looks to bring relatively high returns for shareholders under the condition of guaranteeing safety and environmental responsibility. In order to capture potential future growth, Shell has built up a substantial portfolio of project options. In specific, the options serve to capture energy price upside and manage Shell's exposure to industry challenges from cost inflation to political risk. Shell's main business areas consist of Upstream International and Americas division, Downstream and Projects & Technology.

Upstream International manages the upstream business all over the world excluding North and South America. It searches for and recovers crude oil and natural gas, transports gas and governs the upstream and midstream infrastructure necessary to deliver oil and gas to market. Besides, Upstream International comprises global LNG business and wind business in Europe. As a point of interest, it is worth mentioning that Shell's target for 2015 is to reach 80% of the organic capital investment in the upstream businesses. In Upstream division, the focus is on exploration of new liquids and natural gas reserves and on development of new projects where Shell's technology and know-how add value to the resource holders.

Downstream division comprises manufacturing, distribution and marketing activities for different chemicals and oil products. Manufacturing and supply includes refining, supply and shipping of crude oil. Furthermore, marketing controls the sale of a wide range of products such as fuels, bitumen, lubricants and liquefied petroleum gas (hereinafter: LPG) for home, transport and industrial use. It also produces and launches petrochemicals, raw materials for plastics, coatings and detergents for textile manufacturing, medical supplies and computers. The division also oversees Shell's interests in alternative energy (excluding wind) and CO₂ management.

The last mentioned division is called Projects & Technology and manages R&D, which drives the innovation to create advanced technology solutions. It provides technical knowledge in a way of support to other divisions. Apart from that, it takes responsibility for providing functional leadership within the areas of safety, environment, contracting and procurement in Shell as a unit.

Figure 35: Royal Dutch Shell's business structure



Source: Royal Dutch Shell, 2014, p. 12

2.4.2 History

Since 1997, Royal Dutch Shell has been struggling to show its engagement to external world in order to position itself as a responsible corporate in any way, committed to sustainable development and social disclosure. Shell has a worrying historical track record in terms of human rights abuses and environmental degradation associated with their business operations. The firm has recently shown commitment to corporate sustainable behavior, but some would argue the new attitude is a mere response to the negative publicity received in the past years. Most of the adverse publicity was connected to their activities in Africa, South America, Canada and Philippines. Anyhow, after withdrawing from the Global Climate Coalition in 1998, Shell wished to be seen as one of the pioneer corporations which take climate changes very seriously. From then on, Shell has been working on undertaking measures to be represented as an environmentally and socially responsible firm (O'Donnell, 2011).

It is undeniable that Shell's intents in respect to CS have been clearly visible. For instance, the firm mentions sustainability-expressions in its annual reports from 2004 on. The significant increase in sustainability and environmental issues indicates an intentional shift in the firm's marketing strategy. However, Shell has not yet carried out the corporate sustainability performance concern and neither has it scaled back its exploration and production activities. On the contrary, Royal Dutch Shell has ambitious plans of increasing annual extraction by 5 %. Hence, the firm's potential for sustainable growth is questionable as scaling back production is not a probable scenario for Shell since its worth is measured in production volumes and proven reserves.

Shell has a track record of several bad sustainability performance cases. As our case study structure follows the TBL division, we will try to insert the bad CS performance cases under the corresponding dimension. The mentioned cases are the following:

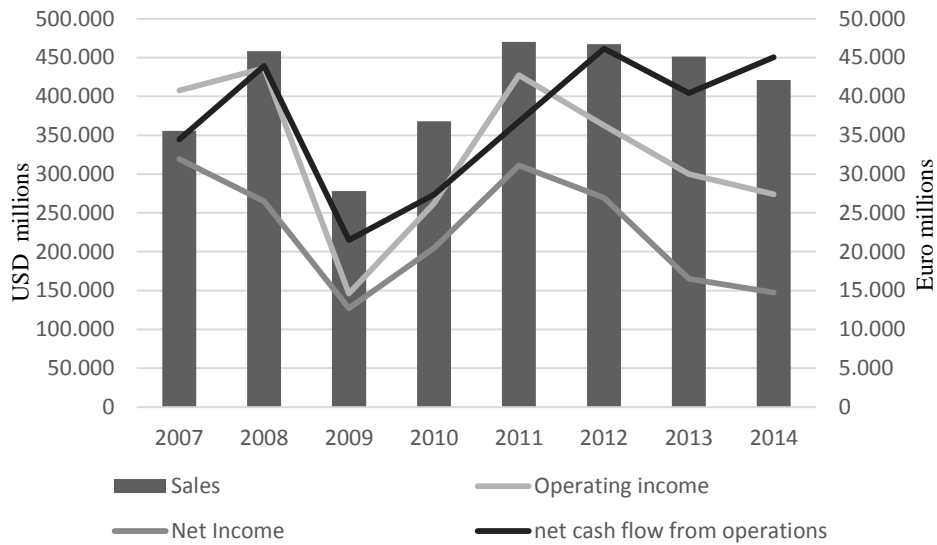
- Nigerian case (oil spills, human suffering, conflict and corruption)
- Brazilian pesticides case (pesticide diseases, pollution)
- Mining the Canadian oil sands (pollution)
- The Brazil's sugarcane partnership (bad labor conditions, violation of prime occupants' rights)
- Fracking unconventional gas (water overuse, pollution of water and air)
- Philippines- an oil depot case (corruption, human rights violation)
- Partnership with Siemens to develop a pilot gas-fired power station in Norway (climate change issue)

Conclusively, Shell has been facing a wide range of sustainability issues throughout its operations such as the climate change, the rights of indigenous people, the livelihood and well-being of nearby communities, health problems, endangered species, working conditions, lobbying, pollution, increasing pressure on land for bio-fuels, biodiversity, safety, paying taxes etc.

2.4.3 Profit

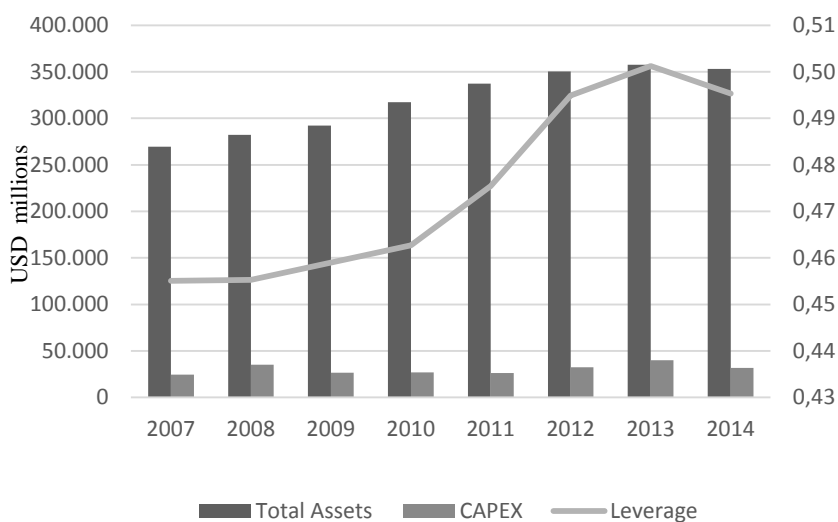
In the last 7 years, Royal Dutch Shell's financial performance has experienced a positive trend in reaching close to USD 467 billion of sales in 2012 and afterwards we can witness a decrease to USD 421 billion. However, in the last 4 years period, a negative trend in the net income can be observed and also the net income margin dropped from 7% to 3.5% in 2007 and 2014 respectively. This can be accounted by an increase in the cost of goods sold and exploration investments. In addition, depreciation and amortization expense increased significantly compared to the previous years this can be an explanation for the operating/net income drop in the last few years. The year 2009 stands out because of the global economic recession impact when oil prices and demand fell dramatically. Thus, in 2009, we can observe the reduction in revenues by 36% compared to year 2008. Shell's revenues, operating income, net income and net cash flow from operations are presented in Figure 36. As displayed Shell generated USD 45 billion of cash flow from its operating activities in 2014, which is the maximum amount in the last 7 years. We can see that the gap between cash flow and operating income is widening what, meaning that they are very good in cash collection activities. The sales of liquefied natural gas increased to around 24 million tons, which is an increase of 22% compared to 2013 though it mainly reflects the contribution of acquiring part of the Repsol LNG portfolio.

Figure 36: Revenue, operating income, net income and net cash flow from operations 2007-2014



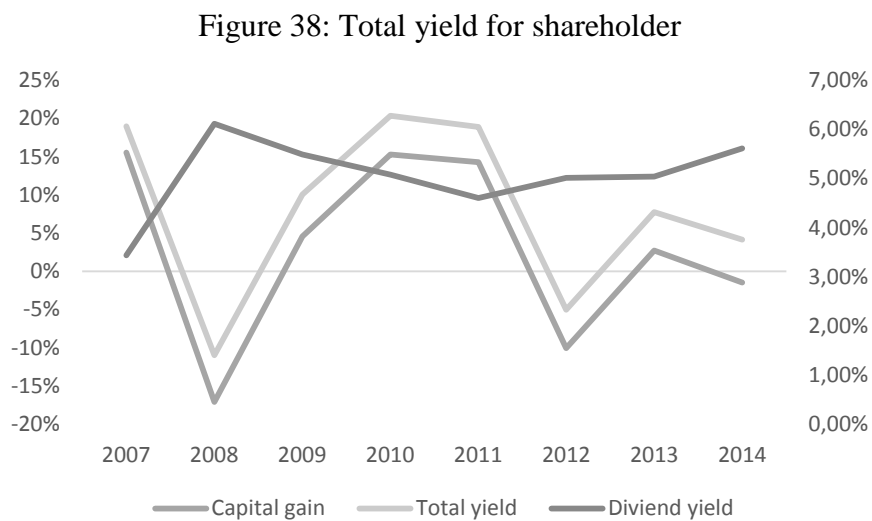
Looking at the total assets, we can see the constant slight growth, which is backed also with certain acquisitions of parts of other companies (i.e. acquisition of Repsol LNG portfolio in 2013, BG Group acquisition on-going). Its leverage is constantly increasing due two main reasons: a decrease of equity in particular its reserves and continuous increase of total debt. Instead CAPEX is maintained in the range of USD 30-40 billions what is a significant amount even for a corporation of this size in terms of assets. Moreover, it is one of the biggest CAPEX spenders in the oil and gas industry (Shell Annual report, 2014).

Figure 37: Total assets, leverage and capital expenditure 2007-2014



In Figure 38, we can observe Shell’s excellent market performance, which is surprisingly contradictory with our hypothesis about the correlation between CS performance and firm’s market value. It can be seen that total yield trend is quite similar to Eni and Neste Oil case studies. As result of economic recession, Shell faced a significant drop in the total yield and afterwards it recovered to the levels before crisis, reaching total yield return for shareholder of 20% in 2010 and 2011. The number is significantly higher than in Eni and Neste Oil case. In our opinion, this number can be explained by the fact that Shell is one of the largest and most profitable oil firms in the world. However, we can see the drop of total yield in the last years for which there might be several reasons. One of them could be the oil market situation in 2014. Secondly, in our opinion, the new European renewable energy targets defined by EU contribute to poorer share performance since Shell will be forced to restructure its business portfolio significantly. In addition, accordingly to our master thesis hypothesis, also wrong CS decisions and issues could start weighing on the firm's share performance.

Moreover, at the beginning of 2015, Shell decided to cut more than USD 15 billion in spending and freeze its dividend in an effort to plug dwindling revenues from oil sales, after the company reported a sharp slide in the last quarter 2014 due to the plunge in crude prices.

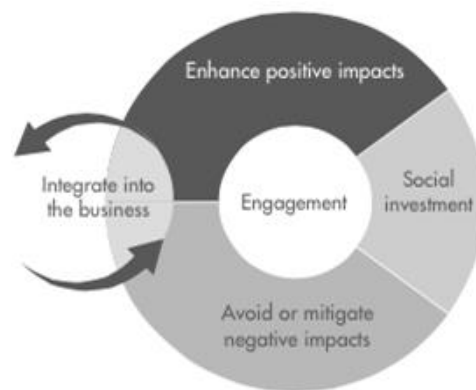


2.4.4 People

Since Shell’s business has been planned to operate profitably in the long term, community engagement is fundamental as it helps to build people’s trust and is the basis for responsible operations. It is evident that Shell creates many business opportunities for local people, which consequently endorses their social status. Moreover, Shell is aware of the importance to provide new jobs, payment of taxes and royalties and sourcing from local

suppliers. In addition, Shell has set up social performance teams which include experts in indigenous peoples' rights, cultural heritage, land acquisition, resettlement and livelihood restoration. Besides, Royal Dutch Shell trains people as community liaison officers, who are often local residents, to respond to community feedback. Figure 39, extracted from their annual sustainability report, shows the scope of their activities regarding social performance implemented with the aim to create a positive presence in the communities.

Figure 39: Shell's social performance process



Source: Royal Dutch Shell plc Sustainability Report 2013, 2013, pp.8.

Munteanu and Guo (2011) recognized Shell's positive social sustainability factors in terms of:

- less than negligible contribution to governments worldwide,
- preference over employing nationals,
- high-quality training courses,
- increasing diversity representation in staff employed,
- care expressed for its own employees,
- inclusion in various best employer listings,
- drop in fatalities at work,
- improving safety performance,
- no funding rule regarding contributions to political parties,
- well-defined and considered human rights policy,
- involvement with many social organization around the globe and ,
- running many social projects in countries that need it.

On the other hand, many bad practices of "people related performance" are present in Shell's business. Munteanu and Guo (2011) recognized examples of bad practices in local contracting and procurement, employee turnover, human rights policy and improvement

actions, indigenous people rights violation, social partnership and community involvement. In addition, one of the main issues is high focus on the firm's employees only neglecting other stakeholders, which is not necessarily bad, but in this case other groups of stakeholders suffer from disadvantageous position. Thus, regarding the "people" dimension, Shell lacks enough human rights protection to be understood as fully socially sustainable. Even though the firm shows signs of concern towards social sustainability, NGOs require sinless acting for the future by inclusively balancing the interests of all stakeholders groups.

A positive-negative confrontation of Shell's operational event is the Nigeria case, where Shell's contribution to the government's revenue is substantial. But on the other hand, its operation there is highly contested by locals and environmentalists because of the great damage caused to societies and ecosystems (Donovan 2011, p.1). Furthermore, Shell's subsidiary Philippines Shell Petroleum Corporation owns a massive oil depot in Manilla, Philippines. For many years, a large number of citizens have demanded oil depot to be removed due to health and safety reasons. However, Shell's power and influence have been able to get court orders and city ordinances overruled. Nevertheless, there are still ongoing legal proceedings, and therefore Shell's moving out might still happen along with the extra cost exposure (Milieudéfense, 2011).

To conclude, Shell's negative historical track record appears to harm the firm to a great extent, therefore major future changes by Shell's social performance are required in order to be recognized as socially responsible entity by wider society.

2.4.5 Planet

According to Shell Sustainability report (2014), the firm generally improved its environmental performance. The main exception has been the flaring performance which also led to an increase in the overall greenhouse gas (GHG) emissions. However, according to Shell, a series of projects are being in progress so as to reduce the flaring. In respect to the environmental responsibility, Shell said they had implemented several measures to improve its performance (Shell Sustainability report, 2014):

- Managing its own emissions coming from factories: CO₂ emissions have been reduced by 20% since 1990 and are planned to be furtherly reduced.
- Capturing and storing CO₂: Industrial plants produce a large amount of man-made GHG. Shells plans to move forward with the projects on CO₂ separation and storage technologies.
- Structure the operations and produce fossil fuels by producing less emission.
- Developing low CO₂ forms of energy: Shell believes that biofuels will become an important energy source. The company will first focus on the 1st generation of biofuels

such as ethanol (a low-carbon biofuel) generated from sugar cane (Raízen, Royal Dutch Shell's firm in Brazil), corn and wheat blended with gasoline.

- Improving customers' awareness about energy efficiency, for instance by offering new fuel versions (such as Fuel Save) and in addition providing courses about more efficient driving in terms of fuel consumption.
- Contribution to the creation of international frameworks of carbon CO₂ regulation. Shell is actively participating and lobbying for clear international regulations.

In addition, we have recognized other positive acts reported in Shell's sustainability report: many technologies to reduce waste, fresh water usage, and energy consumption; well-developed procedures and measures for conservation and biodiversity protection; less oil spill incidents. Shell has been working on reducing the environmental impact by helping to meet the world's growing energy demand. They have placed strict environmental standards to manage greenhouse gas emissions, reduce energy use, minimize consumption of fresh water, protect biodiversity and decrease waste amount. The firm makes many efforts to reuse waste as it was done in its Indefatigable Field in the UK North Sea, where the materials from decommissioned oil platforms were recycled or reused.

Munteanu and Guo (2011) tried to evaluate Shell's past environmental performance through the indicators of waste disposal, fresh water usage, water recycled, energy consumption, energy efficient investments and technologies, greenhouse gas emissions, breakdown of spills and discharges and awareness of environmental impact of products. Therefore, the most important factors pushing the firm toward unsustainable performance, are recognized as:

- not equal representation and inclusion of locations into environmental projects and actions
- significant waste disposal increase
- expected further increase in fresh water and energy consumption
- a range of problems in operations held in Africa (Nigeria), South America and Canada
- reliance on natural gas as main future energy output
- fluctuation of oil spill volume
- compromises undertaken in order to copy other market players and increase profitability

Considering these facts, there is a sense of disregard for the environment in the name of profit (Munteanu and Guo, 2011).

To specify, although Shell strives to improve its waste disposal, it fails to improve its environmental performance from the waste disposal perspective due to several factors

Firstly, waste gas increased and its disposal has great long-term environmental damage. Secondly, concerning water usage, Shell is one of the biggest consumers of fresh water and consequently it implemented several measures, programs and technologies to reduce it. However, regardless of the benevolent attempts, they admit that their consumption may increase with the development of non-conventional resources, such as biofuels (Royal Dutch Shell 2011, p.51).

As mentioned, Shell's reliance on natural gas is substantial. Most of Shell's operations are now gas rather than oil-based and the firm has invested heavily in Brazilian bioethanol. Shell is even increasing supplies of natural gas, with which it expects to fully meet the growing energy demand. The advantage of LNG is its easy transportation from remote areas to distant markets. Shell pioneered in the production of the LNG 5 decades ago, which positions it as one of the largest LNG supplier. On the topic, recent EU developments on renewable energy goals for 2030 do not correspond to Shell's vision since its renewable portfolio is rather neglecting. However, as Shell spends between €4.25-4.5m a year lobbying the EU institutions, it successfully lobbied for gas to remain an important source of energy supply. Shell attempts to publicly display the GHG reduction as the unique climate objective after 2020, allowing the market to identify the most cost efficient energy sources to meet this target (for Shell this is gas) and in this way preserving competitiveness of industry, protecting employment and consumer buying power, to drive economic growth (Neslen, 2015).

As analyzed so far, Shell's historical track record is showing us many contradictory CS acting regarding the environmental performance and we will present certain cases listing them in chronological order.

2.4.5.1 Brazilian pesticide case

From 1977 onwards, Shell produced a type of pesticides for a decade or more, which assumingly had a negative impact on the community where the factory was located. In the early 90s, it turned out that people living near the plant had some degree of contamination from metals or pesticides, which resulted in various health problems.

The reason for mentioning such an old example is the fact that bad sustainable performance cannot be hidden from the world even when outdated and will perpetually be harming the firm. To exemplify, it can be mentioned that in August 2010, a Brazilian court judged that Shell should assume responsibility for medical treatment of all former employees of the Paulínia facility, and pay about EUR 490 million (Milieudefensie, 2011).

2.4.5.2 Pilot gas-fired power station in Norway

In 2000, Shell began developing a pilot gas-fired power station in Norway, which would capture its CO₂ emissions and pump the gas underground. Consequently, technical and ethical questions arise over the use of this questionable technology assumingly developed to resolve the climate change. Oddly, CO₂ injection was used for what is known as “enhanced oil recovery” gas being injected to increase the pressure of declining fields. This approach was sold to the public as a solution to the climate change but was actually used to extract more oil. On one hand, we can observe a smart business move, but on the other, Shell misled the society, which does not comply with responsible sustainable acting.

2.4.5.3 Mining the Canadian oil sands

Due to oil scarcity, oil firms have been investing in unconventional oil resources. In general, unconventional oil production has greater environmental impacts than conventional oil production. Oil sands are one of the world’s most significant energy resources and provide an important source of energy for North America. However, they are very energy and water-intensive and must be developed responsibly which does not favor sustainable performance. Moreover, the Canadian oil sands are Shell’s largest unconventional oil reserves. Since 31 December 2010, Canadian oil sands amounted to 26% of Shell’s proven oil reserves.

The extraction of oil from tar sands has many features typical of industrial mining: digging up the earth; using lots of energy and water; selling the product; creating a huge lake with toxic waste. The oil sands industry is seen as the source of increasing pollution in the Athabasca River and its tributaries via air and water pathways (Schafer, 2014; Milieudéfense, 2011). In addition, the UK Advertising Standards Authority noted considerable social and environmental impacts by oil sands developments including those on water conservation, greenhouse gas emissions, land disturbance and waste management (Vidal, 2008).

2.4.5.4 The Brazil’s sugarcane partnership

Royal Dutch Shell and the Brazilian sugar and ethanol producer Cosan S.A. have signed binding agreements to form a joint venture named Raizen, which will help sugarcane ethanol, a renewable source of energy, to consolidate itself worldwide and strengthen Brazil’s position in the international biofuels trading business.

The partnership under question had favorable and unfavorable outcomes. Firstly, sugarcane was supplied by occupiers of indigenous lands, which demonstrates Shell’s lack of social criteria for supplier selection, and respect for the indigenous population. Secondly, the working and living conditions of sugarcane harvesters were unacceptable (Milieudéfense, 2011). Moreover, this situation led to Cosan’s name being included in the “dirty list” of slave labor published by the Brazilian Ministry of Labour and Employment. Even though

slave labor is common in Brazil's sugarcane industry, Shell should not have had permitted to establish partnership with such firms. The last CS issue linked to the mentioned partnership was massive monoculture land use. In future this might cause several environmental problems, such as deforestation in the Amazon and Cerrado region and GHG emissions from ethanol production.

2.4.5.5 Unconventional gas fracking

High-volume fracking is a rather new phenomenon causing environmental damage and health risks. The fracking causes enormous water uses and water sources pollution. Besides, big quantities of greenhouse gas emission are released in the populated area (Franco, Martinez and Feodoroff, 2013). Respectively, Shell has been furtherly expanding its position in unconventional gas industry (tight gas, shale gas and coal-bed methane) without carefully considering the harmful impact on the environment (Milieudéfense, 2011).

The prevailing problem seems to be Shell's ignorance towards the environment by stating that it makes no difference whether gas is conventional or unconventional in terms of environmental and health risks. The firm sees natural gas as a cleaner version of coal representing a bridge to a low-carbon energy future. In other words, Shell promotes natural gas (including unconventional gas) as coal replacement. Contradictory, just the opposite seems true for unconventional gas as the GHG emissions increase compared to coal in the near-term (Milieudéfense, 2011).

Even if Shell's fracking operations could be performed without compromising clean environment, the issue of where to get massive amounts of needed water remains. One of Shell's options is to get water from the sea, which seems to be a suitable solution at first glance, especially because Shell has committed to provide a full compensation to any landowner with evidenced negative impact of the firm's activities. Nonetheless, land pollution is difficult to be proved, which makes this approach infeasible or even inappropriate (Milieudéfense, 2011).

2.4.5.6 Nigerian case

The most recent example of a bad sustainability practice is the Nigerian case, where the Nigerian citizens filed a civil lawsuit against Royal Dutch Shell in a Dutch court. They accused them of negligence with regard to the prevention and proper cleanup of oil spills. They claim that oil from Shell installations has leaked onto their fields and into their fishponds.

Most environmental problems, such as oil spills and gas flares happened in the Niger Delta. Oil spills from oil installations (pipelines, flow lines, well-heads, flow stations,

storage tanks etc.) were occurring on a regular basis between 2006 and 2010 and they are clearly linked to violations of several internationally recognized human rights stipulated by the United Nations. However, to clean up its reputation, Shell excused itself by claiming that 72% of the spillage was due to sabotage/theft by third parties thus negating its own guilt.

In oil production, Nigeria is the most important country for Royal Dutch Shell. During the period of 2006-2010, Nigeria amounted to around 16% (annual average profit of USD 1.8 billion) of Royal Dutch Shell's worldwide production of oil and liquid natural gas and thereupon giving up on one of its core resource markets is hardly possible.

Shell was held responsible for the spillage of the estimated 546 million barrels of oil over the last 50 years, which cost the firm dropping out of the respected Dow Jones Sustainability Index from 2010 on. The latter event caused a big reputational damage to the firm.

To conclude on this dimension, Shell's commitment to environmental sustainability cannot be denied regardless of its underlying motives. However, when studying Shell's business performance, one gets unintentionally overburdened with the negative image of the company. Regarding the "planet" dimension, Shell performed less successfully compared "people" front because the objectives to be reached are much more complex and Shell is not in the position to put environmental performance before financial one. Therefore, Shell's future looks unfavorable since its plans will continue to rely on conventional fuel which comes as a bit of contradiction especially in the era of sustainable thinking.

2.4.6 Level of integration

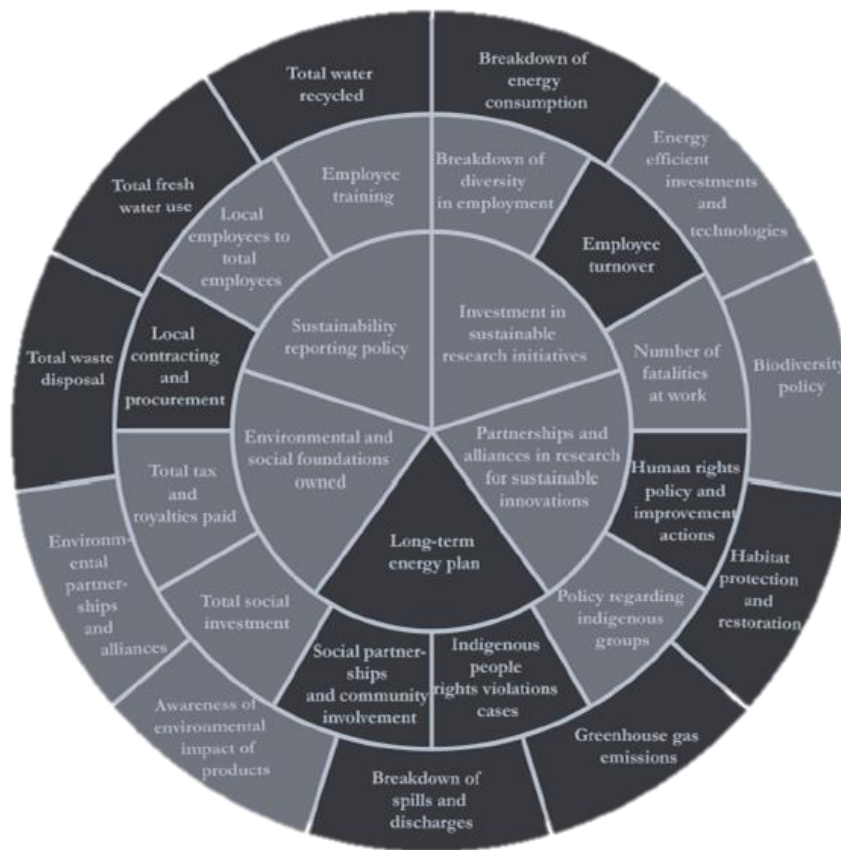
Shell understands "Sustainable development" as helping to meet the world's growing demand for energy in economically, environmentally and socially responsible ways' (Shell's Annual report, 2014).

The case study unveiled the contradictory nature of Shell's operations as on one hand, it positively influences the economies of the world, but at the same time it negatively impacts the society and environment in general. The research of sustainability awareness, conducted by Munteanu & Guo (2011), has provided a more in-depth look at how Shell balances the urgent need to protect and preserve on one hand and seeks to meet the global oil demand on the other.

Figure 40 represents Shell's operational duality in respect to CS performance. It is presented as interplay between good (lighter pools) and bad practices (darker pools) containing 28 important CS indicators. Shell can be regarded as an organization embracing sustainability as far as the company still makes good profit. It can be concluded that Shell

performs less successfully on the environmental front, partly because of more difficult measures to create and apply in relation to the nature of its business and the more strictly defined and clear-cut calculations to report. We can say that environmental improvement through mainly restoration, protection, and conservation requires more time to reveal itself as compared to the more visible social changes. Another way to explain this duality is to look at it from the perspective of two inter-dependencies, not only the equilibrium between profitability, environment, and society, but also the interplay between the environment, society, and strategy (Munteanu & Guo, 2011).

Figure 40: Duality of Shell operations



Source: Munteanu & Guo, 2011, p.81

Shell can be classified as a greenwash company (Basey, 2013; Pearce, 2009). One of the projects, with which Shell started its greenwashing activities, was the oil sands in Canada - one of the most climate-impacted approaches to produce oil. Several years later, Shell continues to greenwash its image by presenting itself as an environmentally responsible company, but at the same time the firm continues investing in the carbon heavy oil production and works on weakening the climate initiatives.

In October 1997, Shell announced establishment of fifth core business, Shell International Renewables. The new program invested \$500 million in order to exploit the renewable

energy market for advertising. The advertisements appeared in the Financial Times, one of which read: “Shell is playing a major part in the move from oil and gas, and now we’re planting the seeds of renewable energy with Shell International Renewables, a new business committed to making renewable energy viable.” (Stockman, Rowell and Kretzmann, 2009). In reality, the indicated environmental investment was a greenwash rather than an actual move in its business model, since Shell has successfully slowed down the growth of renewable energy in Europe (Neslen, 2015). In March 2008, Shell also announced it was divesting from the London Array. This was set to be one of the world’s largest wind projects. A year later, Shells also announced it would no longer invest in wind, solar or hydrogen due to portfolio fit and especially due to the returns outlook compared to other opportunities (Stockman, Rowell and Kretzmann, 2009).

Furthermore, in 2007 Shell launched the campaign with the name “Don’t throw anything away, there is no away” articulated in various European newspapers and magazines. The advertisement showed a classic refinery outline with flowers rather than smoke coming out of the chimneys. It gave the impression that Shell’s refineries are getting cleaner, which suggested that Shell’s products and services have a minimal impact on the environment. Moreover, the advertisement claimed: “We use our waste (carbon dioxide) to grow flowers”. In contradiction to the advertisement, the data shows that in 2007 Shell produced 100 million tons of GHG emissions whereas only one refinery recycled carbon dioxide for growing plants.

Recently, Shell has launched aggressive advertising campaigns promoting its conversion to "new energy future" of wind farms, hydrogen fuels, fuel made from marine algae, etc. Shell has invested more than USD 1 billion in the wind power, but still its renewable portfolio is negligibly small. Moreover, in 2014 Shell pulled out of what would be the world's largest offshore wind farm in the Thames estuary.

Besides that, in Europe Shell has spent millions of Euros publishing adverts and circulating executives’ public statements so as to convince EU decision makers and the general public about its attempts to reduce energy use and curb GHG emissions. In fact, just the contrary is going on as behind closed doors, the firm has been fiercely lobbying against greenhouse gas reduction plans as mentioned in the ‘Planet’ section (Weis, 2012).

2.4.7 Strategy

Shell is aware that sustainability remains crucial for structuring a competitive long-term business strategy. Their approach to sustainability is based on reinforcing their position as an industry leader while helping to meet the global energy demand in a responsible way. Shell’s approach toward CS is based on three primary principals shown in Figure 41:

- Running a safe, efficient, responsible and profitable business.

- Sharing wider benefits where they operate.
- Helping to shape more sustainable energy future.

Figure 41: Royal Dutch Shell's approach to sustainability



Source: Royal Dutch Shell plc Sustainability Report 2013, 2013, p.5.

Shell's strategy is based on preventing incidents and minimizing adverse environmental and social impacts in their projects and facilities.

However, Shell optimistically addresses the topic of its future energy portfolio. As part of the efforts to brand itself as a progressive new-energy firm, Royal Dutch Shell has begun to invest in off-shore wind energy. To support this strategy, Shell entered into a partnership agreement in the Blyth offshore wind project in Northumberland stating that wind energy should profit everyone and harm no one. Even though the latter is a laudable statement, the firm fails to recognize that renewable energy will come as a solution to climate changes only in the case of fossil fuel energy replacement. Despite Shell invested into offshore wind energy, it believes that fossil fuels will remain the dominant source of energy for decades to come and that renewable energy cannot meet the world's energy demand. But this is a prescription designed as a description: It comes from the firms, which dictate the nature of our energy supply.

We can assume that oil firms, Shell among them, will continue to spend enormous amounts of money on lobbying to prevent policies that would require changing their core business. These corporations must continue to produce growth and profit, and neither of them is likely to be attained by increasing the investments in renewable energy beyond their current rate. However, hope for greener energy future is not necessarily lost. The capital spent on renewable energy may encourage green consumers' behavior and motivate outside investments in renewable energy technologies. The adoption of new legislation could impact the long-term behaviors and investments of oil firms. Considerable persistence on

behalf of large corporations will be required, due to the complexity of the industry's nature, but nonetheless there is still hope for a sustainable future change in the long term.

2.5 Case studies comparison

2.5.1 CS strategies and their level of integration

Above, we have presented three different firms operating in the same industry. Our intention was to show you the difference between the cases in terms of:

- Level of CS performance
- Level of CS integration in the core business strategy and risks
- Overall impact on financial performance

Analyzing Neste Oil, Eni and Royal Dutch Shell case studies, we have come to important findings in respect to the above qualitatively examined variables. First of all, Shell is one of the world's biggest, most valuable oil firms, 35 times bigger than Neste Oil in terms of total assets (EUR 5.5 billion vs EUR 290 billion) while Eni can be inserted somewhere in the middle with total assets of EUR 80 billion. It is true that all three firms operate in the oil and gas industry, but they differ in their missions and visions, product portfolio and in the way they operate, what can be understandable due to the substantially diverse size of its business.

As concluded in the theoretical part of our thesis, the environmental and social dimensions are deeply interconnected. Therefore, unless Shell performs better in environmental sustainability, there will not be a major improvement in social one. In other words, poor environmentalism will lead to weak social sustainability. This is indicated by the compromises Shell has made by favoring profitability instead of sustainability. Except for biofuels, Shell does not have any significant involvement in renewable energy. The firm is neither involved in electric cars production though it has a small interest in research for cars with hydrogen as an energy carrier. With certain portfolio divestments, wind and solar energy are no longer part of Shell's investment portfolio though it still has some wind farms in the USA. Those events further deteriorate the CS performance and eventually also the integration level of CS strategies if there would be some. In other words, through the case study analysis, we have realized that Shell is not really engaging in CS but is rather a green washer, trying to repair the damages from the past and to change the stakeholders' perception rather than aiming at a sustainable future. As mention, Shell is well known as a "green washer" in the worldwide society and this kind of reputation will be difficult to loose.

On the other hand, with other two firms analyzed, Neste Oil and Eni, certain CS strategies can be easily recognized in either case. Furthermore, regarding the CS level of integration, we can witness a high commitment from each of the firms. Perhaps, in case of Neste Oil the integration level could be categorized as one step higher, also thanks to the product portfolio composition including and growing the proportion of renewables.

Eni can be listed as remarkably successful example of in depth integrated CS strategy as invests in the infrastructure in the less developed regions through which it sells its products (gas and oil), but at the same time provides the community with significant benefits. Despite the fact, that Eni deals with environmentally questionable business, it has managed to be perceived as a highly CS firm whereas Shell hasn't succeeded to be understood as such so far (known as a "greenwasher"). To conclude, Eni conducts responsibly toward the society and toward the environment where its operations take place. By undertaking such approach, Eni backs the concept of sustainable growth and states that sustainability is of utmost importance for long-term growth and shareholders' satisfaction. And from what we have seen and analyzed so far, we believe that Eni heads to even more promising business outcomes.

Furthermore, sustainability is a crucial part of Neste Oil's operations and strategy. In order to reduce its carbon footprint and act against climate change, they provide their clients with renewable fuel solutions and they will continue the strategy of cleaner solutions development and sustainability throughout their supply chain, and the increase of renewable fuels in their portfolio can be observed on annual terms. In addition, we believe that two principal CS strategies, Eco-efficiency and Environmental cost leadership, each implement for different business unit are harvesting the good financial performance. Also we believe that this was the only approach possible for Neste Oil since competition in the traditional oil market is very tough.

2.5.2 CS and financial results

We can conclude that good level of CS performance in our three case studies did not bring the expected additional value to financial performance. On one hand, Neste Oil and Eni performed notably, considering revenues, profit, total asset and leverage trend. Positive growth has not been significant, quite the contrary, in Eni's case we can observe a negative trend in the operating/net income in the last 4 years. On the other hand, Shell, classified as a "green washer", has a significantly better pattern even more when we consider the negative publicity and damage reparation costs that occurred.

2.5.3 Stock performance comparison

To furtherly explore the comparison of the three case studies, we decided to compare the three firm's stock price returns in the period from 2005 to 2014. We can see that Eni stock

price has produced the highest returns in the selected period in comparison to the other two. The recent financial crisis has apparently taken a big toll on Neste Oil’s stock returns, which is probably due to the fact that in the crisis investors have less confidence in alternative fuels technologies, which have higher costs and decide to stay with long-established industries. Nevertheless, from 2011 onward, Neste Oil’s stock has gathered pace, which shows investors’ renewed confidence pointing to the fact that renewable energies are the future of oil and gas industry. We can see that in economically simulative conditions, which have ruled the economic environment from 2011 on, investors are more receptive to taking higher risks in new technologies. In Table 8 we can see the returns on the three stocks and the Stoxx 600 index in both of the above mentioned periods, and we can see that Neste Oil’s stock has significantly outperformed the Royal Dutch stock and Eni stock. We have also calculated the Sharpe ration for the period 2005 – 2014, to see the risk adjusted returns. From the calculation we can observe that Neste Oil has the highest return based on risk. From this we can conclude that Neste Oil is perceived less risky than the other two, based on its engagement in CS. On the other hand, Eni’s return-risk relationship, as confirmed by the Sharpe ratio result, is not the best and lags behind Neste Oil’s and Shell’s stock performance quite substantially.

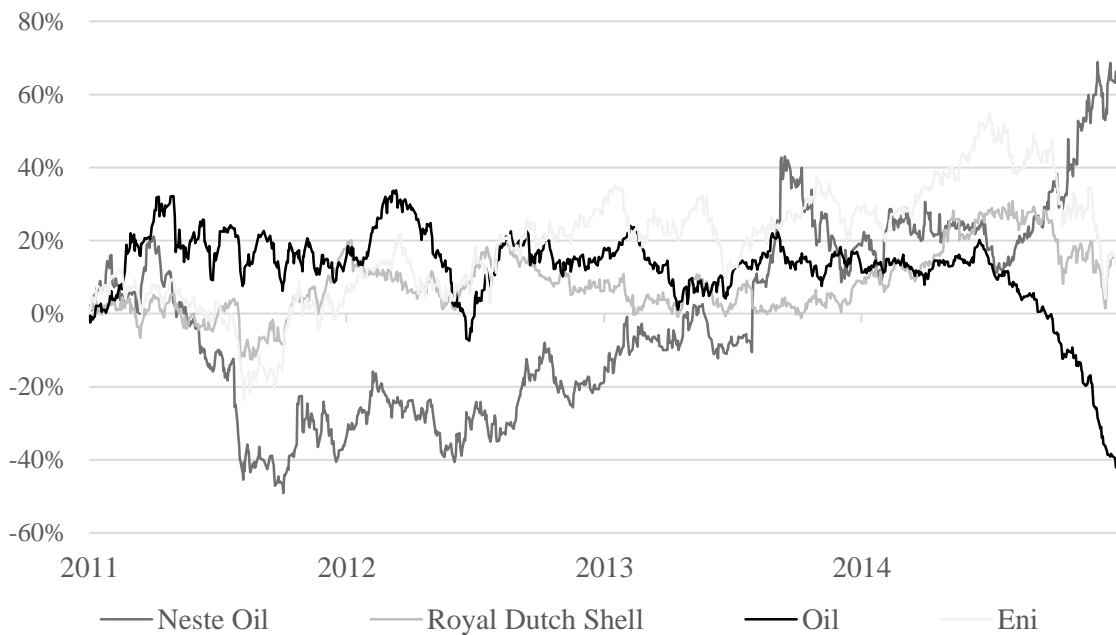
Table 8: Stock return in the periods 2005-2014 and 2011-2014

	Return in the period 2005-2014 (in %)	Return in the period 2011-2014 (in %)	Sharpe Ratio
Eni	12,45	13,54	0,90
Neste Oil	-7,27	66,31	5,89
Royal Dutch Shell	8,68	14,97	4,19
STOXX 600 Index	21,70	23,21	

2.5.4 Comparison against oil prices

Recently, oil has been experiencing one of the biggest drops in prices, and since all of the case studies deal with the oil industry, we decided to compare the stock price returns with the returns on oil prices. It can be seen from Figure 42 that the two stock prices have had completely opposite reactions in the recent oil price drop. We can see that Royal Dutch Shell’s and Eni’s stock has acted accordingly to the oil prices, which reflects the investors’ negative sentiments regarding Royal Dutch Shell and Eni’s anticipated drop in revenues. Meanwhile, Neste Oil has experience one of the strongest rallies in recent history. This can suggest that investors believe their CS strategies are strong enough to withstand any damage from the oil price drop as they are well diversified and generate enough revenues from renewable fuels sources. To furthermore explore how sustainable firms’ stocks act in such events, we added the returns on the DJSIE, and in Figure 42 it can be seen that the index also outperformed the Royal Dutch Shell and Eni’s stock.

Figure 42: Comparison of stock returns and oil prices in the period of 2011-2014



3 EMPIRICAL RESEARCH ON CORPORATE SUSTAINABLE FIRMS AND THEIR MARKET VALUE

3.1 Goal and purpose of empirical research

The goal of our empirical research is to test if firms, which are regarded as sustainable, are rewarded by the market with higher relative market premium and experience higher yearly growth in relative market premium.

The purpose of this research is to provide empirical evidence to complement the theory that CS brings long-term returns in the form of higher relative market premium, which is important for investors and for firms that operate in the economic environment. We want to provide additional evidence to persuade the firms and the investors to invest into CS strategies.

We are assuming that corporate sustainability is a value increasing strategy, and firms adopting it are increasing their value through either increased profitability or risk minimization. Our assumption is also that sustainability strategies are on the rise and more and more firms will decide for their undertaking with the view to improving the above-stated value drivers or simply to diverse themselves from the other market players.

Based on the examination of a broad range of foreign literature, mentioned under chapter 1.4 we came to a conclusion, basing on our research sample and data availability, that for the basic set up of our empirical research we will lean on the model provided by Lo and Sheu (2007). They conducted a research on whether sustainable firms outperform non-sustainable firms on a sample of large United States firms in the period from 1999 to 2002. We regard this model to be optimal for the start of our empirical research, which shows that sustainable firms have a higher market valuation. Our choice was based predominantly on data availability, which is more accessible for publicly listed firms, as they have to disclose more financial data. The other factor which influenced our choice was, the simplicity and straightforwardness of the model, which made it easy for us to further improve it with several control variables. Another thing that persuaded us to use this model, was the definition of the sustainability variable, which is defined as a dummy based on the inclusion in the Dow Jones Sustainability Index. The model for Lo and Sheu's (2007) research can be seen below (1):

$$q_{it} = \alpha_i + \beta_1 S_{it} + \beta_2 C_{it} + \varepsilon_{it} \quad (1)$$

Where:

q_{it} is firm value

α_i is a scalar constant representing the effects of omitted variables

S_{it} is sustainability dummy

C_{it} are control variables

ε_{it} is the error term

Our empirical research was done on a sample of European firms, and we decided to take a longer observation horizon; from 2005 to 2013. We think that this will improve the model as investing in CS is a long-term strategy and does not bring positive effects on firm's value from the very beginning. In our research, we decided not to merely check for the overall size of firm's value, but also the yearly growth of firm's valuation as we believe that overall firm's value does not show all the potential CS benefits as it mainly shows that firms with higher valuation have more options to explore investments in CS. Therefore, we think that firm's value growth will provide better evidence of positive effects of engaging in CS, which will be evidenced in the second part of our empirical research.

3.2 Description of sample and data collection methods

Our research sample consists of large publicly listed European firms, which are included in Stoxx 600 index. The index consists of 600 European firms, but the structure of the index can change yearly, so we decided to consider the firms that have been included in it at the end of 2013. It has to be taken into consideration that some firms might have been included in the observed DJSIE after 2013, but they are not discussed in our analysis. We also excluded the firms which had missing data, so the final sample consists of 593 firms, which sums up to 5040 observations out of which 1254 are regarded as sustainable, meaning that a certain firm was included in the DJSIE in a certain year. 3786 observations are regarded as other firms, meaning that a certain firm was not included in the DJSIE in a certain year in our observing period. The data viable for the research was collected from secondary sources such as Bloomberg terminal and the RebeccoSAM AG company, which provided us with data regarding DJSIE. All values were obtained in EUR.

Table 9: Profile of the data sample

	2005	2006	2007	2008	2009	2010	2011	2012	2013	TOTAL
No. of observations	515	531	548	554	561	573	580	585	593	5040
No. of Sustainable observations	73	96	106	129	136	148	159	196	211	1254
No. of Other observations	442	435	442	425	425	425	421	389	382	3786

3.3 Description of examined variables

3.3.1 Dependent variable

Our dependent variable is defined as firm's value from a financial perspective in order to research the relationship between CS, and the value created. Financial markets usually assess firm's value based on future profitability. If we assume that there is a perfect capital market, the price of the security is the best available and unbiased estimate of the present firm's value (Fama, 1970).

Therefore, our dependent variable will be, due to complexity of calculation of the real firm's value, calculated by using the approximation for *Tobin's Q* indicator which compares, according to Lang and Stulz (1994), large firm database relatively easily in respect to the comparisons based on stock returns or accounting measures where risk adjustment or normalization is required. *Tobin's Q* also includes price information, and it is defined as a sum of market value, preferred stocks and debt over total assets (Chung & Pruitt, 1994). Therefore our dependent variable will measure the relative market premium firms earn on the market. In the first regression model, our dependent variable will be set as a natural logarithm of *Tobin's Q* to check the correlation of CS variable and the overall firm's value. In the second regression model, dependent variable will be set as a coefficient

comparing firm value in time t to firm value in time $t-1$ and will be specified as *Tobin's Q* growth, where we will be proving that firms that engage in CS experience faster valuation growth. The formula for the calculation of *Tobin's Q* can be observed below (2).

$$Tobin's\ Q = \frac{\text{market capitalization} + \text{preferred stock} + \text{total debt}}{\text{total assets}} \quad (2)$$

3.3.2 Independent variables

We defined the proxy for corporate sustainability as a sustainability dummy, which equals 1 if the firm was included in the DJSIE index, and equals 0 for all the remaining observation years. Here, we assume that a firm remains sustainable for all the remaining observation years from the point of its inclusion in the index regardless of its possible posterior exclusion from the index. Subsequently, we presume that a firm included in the DJSIE engages in CS strategies, and we therefore, consider it sustainable. We are aware that by setting this variable as a dummy we lose the overall level of engagement in CS, but nonetheless taking into account that we are working with large database, this will make the data collection relatively easier and also regardless of the overall size of the sample, such data is impossible to obtain due to DJSIE restrictions.

The *Tobin's Q*₀ independent variable represents the firm value at time zero and should eliminate the problem of endogeneity (S_{it} being correlated with q_t).

3.3.3 Control variables

To further improve our model and exclude the effects of other variables, we included the following control variables to our model, which will in our opinion significantly help improve our regression model:

- **Firm size:** Previous literature has proven that firm size is negatively correlated with firm value (Lo & Sheu, 2007). We contribute this to the fact that bigger firms have less future growth potential and are therefore valued lower by the market. As a proxy to control the firm size, we used a natural logarithm of total assets.
- **Profitability:** The more profitable the firm, the more likely it is that its stock will sell at a premium. To control profitability, we included ROA as our control variable, which is defined as net income over total assets.
- **Sales growth:** There is strong evidence that sales growth is positively related to firm's value (Lo & Sheu, 2007). Therefore, we used yearly sales growth as our Sales growth control variable. ($\text{Sales}_t / \text{Sales}_{t-1}$)
- **Leverage:** Empirical researches have shown that firm's capital structure has an effect on its valuation. They have shown that higher leverage is negatively correlated with firm's value (Rayan, 2008). To control this effect, we included the Debt to equity ratio,

which is defined as total debt over total equity.

- **Investment:** Firm's value also depends on level of investments. (Myers, 1977). Therefore, we decided to use the ratio of Capital expenditure over sales as our investment proxy.
- **Access to financial market:** According to Langsen (1988) firms with high dividend payout ratio should induce lower *Tobin's Q* value as they are less likely to have good investment opportunities and therefore possibility to expand their current assets and on the other hand firms with low dividend payout ratio are more likely to have sound investment plants to expand their venture and should therefore induce higher *Tobin's Q* value. We set up this control variable as a dummy, which equals 1 if the firm has paid dividends and 0 if not. Leaning on the argument above we believe that this variable will be negatively related to *Tobin's Q* ratio.
- **Liquidity:** Liquidity measures if a firm is able to pay its obligations at a certain point in time. We assume that liquidity should have a positive effect on firm's value because firms with higher liquidity are not expected to run into cash flow problems in the near-term future. Additionally holding a higher amount of cash should can also result in higher valuation, as firms have the potential for acquisitions and investments. Theory also suggests that higher liquidity is positively correlated with firm value (Graham, 2001). For this control variable, we took quick ratio, which is defined as (3):

$$Quick\ Ratio = \frac{cash\ and\ equivalents + short-term\ investments + accounts\ receivable}{current\ liabilities} \quad (3)$$

- **Beta:** With beta control variable, we included the risk measure control variable. Beta is a systemic risk measure, which measures correlation with the market. According to Shin and Stulz (2000) *Tobin's Q* is positively related to systemic risk and we expect our result to show the same correlation.
- **Crisis Dummy:** Because of our observation time range, which ranges from year 2005 - 2013, which includes both the pre and post financial crisis year, we decided to add a crisis dummy, which we believe will significantly improve our model. The dummy equals 1 for all years from 2008-2013. We believe that crisis dummy should have a negative correlation with firm's value.

3.3.4 Descriptive statistics

In this subsection, we test our primary hypothesis that sustainable firms are rewarded with higher valuation therefore we compare *Tobin's Q* for sustainable and other firms. Here we used a simple classical two group mean comparison t-test approach. We also performed the test on our independent variable and also on all of the control variables. Our sample was divided into two groups, the sustainable firms group and other firms group. Here we can compare all of the variables based on whether they are regarded sustainable. The result can be seen in Table 10.

Based on descriptive statistics, the results do not support our hypothesis that sustainable firms are rewarded with higher *lnTobin's Q*, as the mean for sustainable observations is at 1,444 lower than the one of other observation, which is 1,768. The results also do not support that sustainable firms earn higher value growth than other firms, where the medians are 1,015 and 1,020 respectively. We attribute this to the simplicity of the approach, as we compare only means of the two samples and do not take into account the time dimension.

From the control variables that sustainable firms are in average larger than the other firms, which support are argument that larger firms are more likely to engage into CS strategies as they have more excess financing available, the medians for sustainable and other firms are 24,044 and 22,609 respectively. From the results we can see that sustainable firms are more likely to pay dividends, which is also in accordance with the theoretical, where we stated that sustainable firms give more focus on keeping shareholders satisfied. The mean for sustainable observations is 0,914, whereas the mean for other firms is 0,861. Another result which supports are argument in theoretical part is that sustainable firms are able to have higher financing form debt, due to their lower riskiness. The mean for the debt to equity ratio for sustainable observations is 5,779, whereas for other firms' observations is 4,761.

Table 10: Empirical research results

Variable	Obs.	Mean	Std. Dev.
All Firms			
Tobin's Q	5040	1,687	1,641
Tobin's Q Growth	5040	1,019	0,201
Sustainability dummy	5040	0,249	0,432
Firm size	5040	22,966	1,83
Investment	5023	0,102	0,293
Sales growth	5026	1,001	2,347
Access to financial market	5040	0,874	0,331
Profitability	5021	0,059	0,088
Liquidity	4071	0,907	0,992
Beta	4940	0,962	0,232
Leverage	5040	5,014	14,437
Crisis dummy	5040	0,684	0,465
Tobin's Q ₀	5040	1,791	1,429
Sustainable firms			
Tobin's Q	1254	1,444	0,687
Tobin's Q Growth	1254	1,015	0,178
Sustainability dummy	1254	1,000	0

Firm size	1254	24,044	1,693
Investment	1254	0,943	0,199
Sales growth	1254	0,975	0,496
Access to financial market	1254	0,914	0,281
Profitability	1249	0,046	0,067
Liquidity	1048	0,772	0,813
Beta	1247	1,015	0,236
Leverage	1254	5,779	14,437

table continues

continued			
Crisis dummy	1254	0,781	0,414
Tobin's Q ₀	1254	1,55	0,638
Other firms			
Tobin's Q	3786	1,768	1,844
Tobin's Q Growth	3786	1,02	0,209
Sustainability dummy	3786	0	0
Firm size	3786	22,609	1,731
Investment	3769	0,104	0,318
Sales growth	3772	1,008	2,347
Access to financial market	3786	0,861	0,346
Profitability	3772	0,064	0,093
Liquidity	3023	0,954	1,043
Beta	3693	0,944	0,228
Leverage	3786	4,761	52,198
Crisis dummy	3786	0,652	0,477
Tobin's Q ₀	3786	1,871	1,599

3.4 Research method

In order to test our main thesis “firm’s implementation of corporate sustainability has a positive effect on its value”, we decided to use panel regression method. Our data sample will consist of 593 European firms from the Stoxx 600 index which sums up to 5040 observations out of which 1254 are regarded as sustainable, meaning that a certain firm was included in the DJSIE in a certain year. 3786 observations are regarded as other firms, meaning that a certain firm was not included in the DJSIE in a certain year in our observing period. Our data is collected in the time frame from 2005 - 2013.

Panel data (longitudinal or cross-sectional time-series data) is a dataset in which the behavior of the sample is observed in a certain period of time. Panel data allows us to control the variables you cannot observe or measure, which is in our case inclusion in the

DJSIE (Torres-Reyna, 2007). Panel data require special statistical methods because the set of observations on one subject tend to be inter-correlated (Lo & Sheu, 2007). To control for firm-specific heterogeneity, a longitudinal model has to be employed. In the panel data model, data is allowed to be unbalanced meaning that the number of observation periods for each of the firm is not necessarily the same.

There are two types of panel data analysis; fixed and random effects model. The fixed-effects model (hereinafter: FE) is used when you are interested in analyzing the impact of variables that vary over time. When using FE, we assume that something within individual may influence or bias the predictor or outcome variables, and we need to control for this. This is the rationale behind the assumption that there is a correlation between entity's error term and predictor variables. FE removes the effect of the time-invariant characteristics so the net effect of the predictors on the outcome variable can be assessed. Another important assumption of the FE model is that time-invariant characteristics are unique to the individual and should not be correlated with other individual characteristics (Torres-Reyna, 2007).

The difference between FE and random effects model (hereinafter: RE) is that, unlike the fixed effects model, the variation across entities is assumed to be random and uncorrelated with the independent variables. An advantage of random effects is that you can include time-invariant variables (i.e. gender). In the fixed effects model, these variables are absorbed by the intercept (Torres-Reyna, 2007).

To correctly choose the model, we performed a Hausman test with the null hypothesis assuming that the preferred model is random effects versus the alternative of fixed effects. It basically tests whether unique errors (u_i) are correlated with regressors and the null hypothesis states they are not. All of the empirical research was conducted with STATA software.

In our research the limitation of using the FE model is that our primary independent variable (S_{it}) is not constant over time is not time-invariant. But based on the results of the Hausman tests seen later in the paper, we have chosen to anyway use the FE model, which should, based on the previously mentioned results, explain our model better.

3.5 Methodological approaches and their results

3.5.1 Testing CS engagement's effect on profitability and risk management's effect on overall size of the firm's valuation

In the first empirical research, we will test if engaging in CS strategies has a positive impact on the overall size of the *Tobin's Q*. Here, our dependent variable will be set as a natural logarithm of *Tobin's Q*. The natural logarithm is taken because a linear formulation

would imply unlimited constant returns to scale in intangible investment, which is unlikely to be the case (Hall, 1993). The preference towards choosing the natural logarithm is also supported by the research done by Hirsch and Seaks (1993) who have, in their research, come to the results which support the proposition that firm and industry characteristics have multiplicative rather than additive effects on the market valuation of company assets, and provide a strong presumption for employing natural logarithm of *Tobin's Q* rather than solely *Tobin's Q*. Our independent variable will be the sustainability dummy, which is defined as previously described under the section Independent variable. Thus we are checking whether engaging in CS has a positive effect on the overall value of the firm. But regardless, at this point, we cannot ignore the fact, that we might also deal with reverse causality in a sense that firm's value affects the sustainability dummy due since firms with higher valuation might more likely engage CS as they have more investment potential to invest in such strategies. All of the control variables which were described under the section on Control variables will also be included in the model. The model can be seen below (2).

$$\ln q_t = \beta_1 S_{it} + \beta_2 C_{it} + q_0 + \varepsilon_{it} \quad (2)$$

Where:

$\ln q_{it}$ is the natural logarithm of firm's value

S_{it} is the sustainability dummy

C_{it} are the control variables

q_0 is firm's value in time zero

ε_{it} is the error term

Based on the results of the Hausman test, we decided to use the fixed-effects model, which explains our model better than the random-effects model, $Prob > \chi^2$ equals 0,000.

3.5.1.1 Empirical results of the first model

Our key finding in the first regression model is that sustainable firms have higher relative market premium than other firms on a sample of large European firms. The dependent variable was defined as the natural logarithm of *Tobin's Q* while the independent variable for sustainability was set in the section of control variables. We also included all of the above-mentioned control variables. To see if our sustainability dummy variable contributes to the level of variance explanation, we have also conducted a research without the inclusion of the S_{it} variable. As we can see from the results in the Table 4, with the inclusion of the S_{it} , we have managed to explain 10% more variance, therefore concluding that the inclusion of the S_{it} positively contributes to the regression model.

As we can see from Table 4, sustainability has a slightly positive effect on \ln Tobin's Q with the corresponding coefficient of 0,039 and it is statistically significant at a 5%

confidence level. This is in line with our expectations. We can see that most of the control variables are statistically significant and are in accordance with our predictions. We find that size is slightly negatively correlated with firm's value with the corresponding coefficient of -0,124, which supports the research done by Lang and Stulz (1994), and is statistically significant at 1% confidence level. We can see from the Table 11 that as expected ROA has a strong impact on firm's value with the corresponding coefficient at 0,978, and is statistically significant at 1% confidence level. The crisis dummy also proved to be statistically significant at a level of 1% and as expected negatively correlated with firm's value with the coefficient of -0,124. The dividend dummy is not in line with our predictions as the results show a positive effect on market value if firms pay dividends with the corresponding coefficient of 0,083 at the statistically significant level of 1%. Beta provided results that were predicted and showed positive correlation with the firm's value, meaning that firms which are perceived riskier earn higher market valuation. It was statistically significant at a level of 1% and a coefficient of 0,079. The leverage variable is statistically significant, but as such does not show any direction of the coefficient at 0,00. The control variables that are not statistically significant are sales growth, investments and leverage. The results can be seen in Table 11. The numbers without the brackets represent the variable's corresponding coefficient, and the numbers in the brackets represent the *t* value of the variable.

Table 11: Empirical research results

	OLS (w/o S_{it})	Random effects (w/o S_{it})	Fixed effects (w/o S_{it})	OLS	Random effects	Fixed effects
Intercept	1,348 (21,36)***	2,152 (14,25)***	1,941 (5,40)***	1,930 (21,36)***	2,240 (14,62)***	1,966 (5,47)***
Sustain. dum.	Excluded	excluded	Excluded	0,050 (4,32)***	0,044 (3,18)***	0,039 (2,47)**
Firm size	-0,017 (-6,30)***	-0,091 (-13,90)***	-0,123 (-11,42)***	-0,074 (-19,36)***	-0,095 (-14,28)***	-0,124 (-11,51)***
Investment	-0,033 (-2,39)**	-0,053 (-2,59)***	-0,028 (-1,24)	-0,124 (-6,70)***	-0,052 (-2,52)***	-0,027 (-1,19)
Sales growth	-0,009 (-2,56)**	-0,001 (-0,17)	0,000 (0,07)	-0,001 (-0,17).	-0,001 (-0,17).	0,000 (-0,03)
Acc. to fin. mkt	0,001 (0,12)	0,076 (5,18)***	0,083 (5,42)***	0,056 (3,53)***	0,076 (5,21)***	0,083 (5,44)***
Profitability	-0,008 (-0,15)	1,003 (18,44)***	0,977 (17,80)***	1,250 (17,67)***	1,004 (18,47)***	0,978 (17,82)***
Liquidity	0,012 (2,45)**	0,034 (4,92)***	0,027 (3,60)***	0,055 (8,67)***	0,034 (4,86)***	0,027 (3,56)***
Beta	0,069 (4,12)***	0,034 (1,46)	0,081 (3,27)***	-0,130 (-5,84)***	0,031 (1,32).	0,079 (3,19)***

Leverage	0,000 (-1,47)	0,000 (-1,78)*	0,000 (-1,87)*	-4,180 (-0,05).	0,000 (-1,77)*	0,000 (-1,87)***
Crisis dummy	-0,003 (-0,35)	-0,129 (-18,23)***	-0,119 (-15,9)***	-0,140 (-13,95)***	-0,134 (-18,52)***	-0,124 (-16,03)***
Tobin's Q ₀	-0,004 (-1,08)	0,13 (17,22)***	0,594 (4,23)***	0,130 (29,76)***	0,131 (17,25)***	0,589 (4,20)***
R2	0,600	0,589	0,538	0,605	0,670	0,635
No. of observ.	3968	3968	3968	3968	3968	3968
No. of firms	470	470	470	470	470	470

Where:

* means statistically significant at 10% confidence level

** means statistically significant at 5% confidence level

*** means statistically significant at 1% confidence level

3.5.2 Testing CS engagement's effect on the growth of the firm's valuation

We regard that level of valuation alone does not prove the positive effects of being sustainable. Therefore in the second part, in order to further research the link between CS and firm value, we decided to explore the correlation between sustainability dummy and the annual growth of Tobin's Q. Herewith we provide an explanation of our thesis that engaging in CS strategies boosts the overall growth of firm's valuation. Therefore, we will test that the firms that engage in CS experience faster market value growth compared to the firms that do not, meaning that investors value engagement in CS. Our dependent variable will be set as a ratio between Tobin's Q ratio in year t and year $t-1$, therefore yearly value growth. The dependent variable will again be the sustainability, whose definition will stay the same as in the previous model. All of the control variables which were included in the first regression model will be included. The model for our regression can be seen below (3).

$$\frac{q_t}{q_{t-1}} = \beta_1 S_{it} + \beta_2 C_{it} + q_0 + \varepsilon_{it} \quad (3)$$

Where:

$\frac{q_t}{q_{t-1}}$ is the growth of firm's value versus previous year

S_{it} is the sustainability dummy

C_{it} are the control variables

q_0 is firm's value in time zero

ε_{it} is the error term

We again performed the Hausman test to define which panel data model is better for our research. And based on the results, we came to a conclusion that fixed-effects model better explains our model, $Prob > \chi^2$ equals 0,000.

3.5.2.1 Empirical results

The key finding of the second part of our research is that sustainable firms experience faster growth in value than other ones, but on the other hand our model was only able to explain 2% of the variance in comparison to the previous model, where we have been able to explain as much as 63 % of the variance. To check whether the inclusion of the S_{it} variable positively influences the explanation of the variance, we have again performed regression models without the inclusion of the mentioned variable. From the results in Table 12 we can see that in comparison to the previous model, the inclusion of the S_{it} negatively affects the variance explanation, meaning that with its inclusion we are able to explain less variance. We found out that sustainability dummy positively impacts Tobin's Q growth at a significant 5% confidence level with a coefficient of 0,045. We can see that this research has produced less statistically significant control variables. The size of the firm remains statistically significant at a level of 5% and negatively impacts the firm value growth with the corresponding coefficient of -0,050. This can be explained that already large firms have lesser growth potential, and therefore experience lesser relative market premium growth on the market, as investors do not see any more growth potential in them. Liquidity remained statistically significant at level of 1% with a positive effect on firm value growth with the corresponding coefficient of 0,034. Beta has remained statistically significant and positively correlated with the *Tobin's Q* growth with a coefficient of 0,120. Sales growth has in comparison to the previous model become statistically significant with a slightly negative coefficient of -0,008. Meaning that the importance of the overall size of sales was displaced by the quality of the product by the market. In other words, it gives an indication that the quantity is rather less important in respect to the quality of the product. Leverage variable has remained statistically significant, but again with a coefficient of 0,00 and does not show any direction of impact on the dependent variable. Investment variable has in comparison to the previous model become statistically significant at a 10% level and a negative coefficient of -0,044, which is not in line with our predictions as higher level of investment should enhance higher relative market premium growth. This can again be explained that the overall size of the investment has been displaced by the more important investment focus on the innovation and development of the business model. The most eye-catching difference between this model and the previous one is that ROA has become statistically insignificant, thus meaning it does not affect the firm's value growth at a statistically significant level. The crisis dummy has also become statistically insignificant from which we can conclude that the pre and post-crisis period do not affect the level of value growth at a statistically significant level. Joined by the dividend dummy, investment and leverage which have in comparison to the previous model remained statistically insignificant. The results can be seen in Table 12. The numbers without the brackets represent the variable's corresponding coefficient, and the numbers in the brackets represent the t value of the variable.

Table 12: Empirical research results

	OLS (w/o S_{it})	Random effects (w/o S_{it})	Fixed effects (w/o S_{it})	OLS	Random effects	Fixed effects
Intercept	1,348 (21,36)	1,348 (21,36)***	1,103 (2,63)***	1,397 (20,49)***	1,397 (20,49)***	1,130 (2,70)***
Sustain. dummy	excluded	excluded	excluded	0,017 (1,87)*	0,017 (1,87)*	0,045 (2,47)**
Firm size	-0,017 (-6,30)***	-0,017 (-6,30)***	-0,049 (-3,85)***	-0,020 (-6,53)***	-0,019 (-6,53)***	-0,050 (-3,93)***
Investment	-0,033 (-2,39)**	-0,033 (-2,39)**	-0,045 (-1,72)*	-0,033 (-2,36)**	-0,033 (-2,36)**	-0,044 (-1,67)*
Sales growth	-0,009 (-2,56)**	-0,009 (-2,56)**	-0,008 (-2,09)**	-0,010 (-2,52)**	-0,009 (-2,52)***	-0,008 (-2,130)**

table continues

continued

	OLS (w/o S_{it})	Random effects (w/o S_{it})	Fixed effects (w/o S_{it})	OLS	Random effects	Fixed effects
Access to fin. mrk.	0,001 (0,12)	0,001 (0,12)	0,017 (0,94)	0,001 (0,11).	0,001 (0,11).	0,017 (0,96).
Profitability	-0,008 (-0,15)	-0,008 (-0,15)	-0,114 (-1,77)*	-0,070 (-0,14).	-0,007 (-0,14).	-0,113 (-1,76)*
Liquidity	0,012 (2,45)**	0,012 (2,45)**	0,034 (3,85)***	0,011 (2,39)**	0,011 (2,39)***	0,034 (3,81)***
Beta	0,069 (4,12)***	0,069 (4,12)***	0,122 (4,23)***	0,066 (3,96)***	0,070 (3,96)***	0,120 (4,15)***
Leverage	0,000 (-1,47)	0,000 (-1,47)	0,000 (-1,78)*	0,001 (-1,46).	0,000 (-1,46).	0,000 (-1,78)**
Crisis dummy	-0,003 (-0,35)	-0,003 (-0,35)	0,000 (0,11)	0,004 (-0,54).	-0,004 (-0,54).	-0,004 (-0,50).
Tobin's Q_0	-0,004 (-1,08)	-0,004 (-1,08)	0,452 (2,76)***	-0,004 (-1,15).	-0,004 (-1,15).	0,447 (2,73)***
R2	0,022	0,022	0,021	0,020	0,014	0,015
No. of observations	3968	3968	3968	3968	3968	3968
No. of firms	470	470	470	470	470	470

Where:

* means statistically significant at 10% confidence level

** means statistically significant at 5% confidence level

*** means statistically significant at 1% confidence level

3.5.3 Testing CS engagement's effect on profitability and risk

In the third empirical research model, we will be trying to find out, which source brings excess value to the firm's valuation, if it engages in CS - increased profitability or risk minimization. With this part we are trying to provide evidence for firms, which one of the two value drivers, bring additional value to the firm. This model is actually a more detailed previous model, where we already proved that CS is positively correlated with firm's yearly value growth, and here we are trying to find out, which value driver affects this positive correlation the most. The research will be done on the same sample as the previous 2 researches. Our dependent variable will again be set as a coefficient between the firm value at time t and time $t-1$. For our independent variables, we will use beta (B), which will measure the volatility of a firm's stock assuming it to be our risk measure. As for the profitability measure, we will use return on assets ratio (ROA), which is according to Hegel III, Brown and Davison (2010) a better measure of profitability than return on equity and it is easily obtainable. To accurately measure the effects of profitability and risk, we added cross-effects, where ROA and B will be multiplied with the sustainability dummy, which again is defined the same as in the previous two models. In addition all control variables, which were included in the previous two models are also included in this one. The model for the regression can be seen below (4).

$$\frac{q_t}{q_{t-1}} = \beta_1 S_{it} + \beta_2 ROA_{it} + \beta_3 B_{it} + \beta_4 B_{it} S_{it} + \beta_5 ROA_{it} S_{it} + \beta_6 C_{it} + q_0 + \varepsilon_{it} \quad (4)$$

Where:

$\frac{q_t}{q_{t-1}}$ is the growth of firm's value versus previous year

S_{it} is the sustainability dummy

ROA_{it} is the return on assets

B_{it} is the risk measure

C_{it} are the control variables

q_0 is firm's value in time zero

ε_{it} is the error term

The Hausman test was again performed to confirm that fixed effect is better fitting for our sample, $Prob > \chi^2$ equals 0,000.

3.5.3.1 Empirical results

The results of this empirical research can be seen in Table 13, however, the results do not offer any conclusive findings. The two added cross-effects variables are not showing any statistical significance meaning that we cannot state that they indeed have a significant effect on the firm's value growth. Sustainability dummy has lost its significance but remains positively correlated with the dependent variable with the corresponding coefficient of 0,065. As for the control variables, we can see that firm size has remained

statistically significant and is negatively correlated with the firm's value growth with the coefficient of -0.50. Beta with a coefficient of 0.123 and liquidity variable with a coefficient of 0.034 remained positively correlated with firm's value growth and statistically significant. Leverage variable has remained statistically significant, but again with a coefficient of 0.00 and does not show any direction of impact on the dependent variable. Investment variable has in comparison to the previous model remained statistically significant and negatively correlated with a coefficient of -0.045. Sales growth has remained statistically significant with a slightly negative coefficient of -0.008. All other control variables are statistically insignificant. The results can be seen in Table 13. The number without the brackets represent the variable's corresponding coefficient, and the numbers in the brackets represent the *t* value of the variable.

Table 13: Empirical research results

	OLS	Random effects	Fixed effects
Intercept	1,391 (20,33)***	1,391 (20,33)***	1,124 (2,67)***
Sustainability dummy	0,064 (1,65)*	0,064 (1,65)*	0,065 (-1,09).
Firm size	-0,019 (-6,56)***	-0,019 (-6,56)***	-0,050 (-3,94)***
Investment	-0,034 (-2,40)**	-0,034 (-2,40)**	-0,045 (-1,70)*
Sales growth	-0,009 (-2,53)**	-0,009 (-2,53)**	-0,008 (-2,140)**
Access to financial market	0,001 (0,08).	0,001 (0,08).	0,018 (1,01).
Profitability	0,012 (-0,21)	0,012 (-0,21)	-0,071 (-1,00)
Profitability Cross-effect	-0,101 (-0,91)	-0,101 (-0,91)	-0,194 (-1,35)
Liquidity	0,011 (2,40)**	0,011 (2,40)**	0,034 (3,82)***
Beta	0,076 (3,95)***	0,076 (3,95)***	0,123 (3,79)***
Beta Cross-effect	-0,042 (-1,13)	-0,042 (-1,13)	-0,009 (-0,16)

Leverage	0,000 (-1,46)	0,000 (-1,46)	0,000 (-1,76)*
Crisis dummy	-0,004 (-0,57)	-0,004 (-0,57)	-0,005 (-0,55)
Tobin's Q ₀	-0,004 (-1,30)	-0,004 (-1,30)	0,450 (2,73)***
R2	0,020	0,014	0,015
No. of observations	3968	3968	3968
No. of firms	470	470	470

Where:

* means statistically significant at 10% confidence level

** means statistically significant at 5% confidence level

*** means statistically significant at 1% confidence level

We believe that these results do not offer any conclusive findings since CS strategies are strategies that have to be implemented throughout the whole firm i.e. from the firms basic values, public image, cost mitigating, improved profitability, etc., which is in line with our theory approach. Therefore, we believe that the whole package brings additional value and growth to firms value, which we managed to prove in the above two researches. Additionally firms in our sample can work on different aspects of CS as our theory suggests (risk mitigation or profitability), thus the firms in the sample take different approaches and the results do not show any preferences to the one or another.

3.6 Assumptions and limitations of the research

We are assuming that corporate sustainability is a value increasing strategy, and firms adopting it are increasing their value through either increased profitability or risk minimization. Our assumption is also that sustainability strategies are on the rise and more and more firms will decide for their undertaking with the view to improving the above-stated value drivers or simply to diverse themselves from the other market players.

We find our limitations mostly in the sample selection due to data availability. Therefore, we are biased towards larger and publicly listed firms whose data is more easily accessible. We acknowledge that in the available data a lot of accounting manipulation can appear and, therefore, might not reflect the actual stature of the firms. We also acknowledge that firms that might have just recently adopted sustainability strategies are not yet harvesting the positive effects of such strategies and thus distort our research. Additionally the measurement of our sustainability variable has limitations as we set up the variable as a dummy, and therefore we are not able to measure the degree of sustainability in each firms. Another limitation is the degree of rivalry in particular industries as firms in less competitive industries, are not under pressure to diverse themselves from other firms and

therefore not maximizing their investment in sustainability strategies or even do not undertake them at all.

3.6.1 Key findings of the empirical researches

After conducting all three empirical researches, we can with confidence say that there is a positive correlation between firm's engagement in CS and its value. We have managed to prove at statistically significant level that both overall size of the firm's valuation and valuation growth are positively correlated with the sustainability dummy, therefore we can conclude that engaging in sustainability has positive effects. Our research is therefore in accordance with other authors that have proved this positive correlation (e.g. Lo & Sheu, 2007; van Dijken, 2007; Consolandi, Jaiswal-Dale, Poggiani and Vercelli, 2009; Cheung 2010; Lourenço, Branco, Curto and Eugenio, 2011) But unfortunately we have not managed to come to a conclusion on which value driver sustainability has the biggest impact, profitability or risk mitigation. Thus, we are leaving the door open for future researches on this sub-section of our research paper. We also see the possibility for further research on different data samples as our focus is solely on publicly listed European firms, and it would also be interesting to see how CS affects non-listed firms.

CONCLUSION

Competitive economic environment has pushed firms to their very limit to try and find their competitive advantages as the public and governments expect firms to become more environmentally sound thus making a contribution to society in helping save the environment. Nonetheless, firms will engage in such practices only when there is high probability of future financial benefits and competitive advantages. Therefore, the only logical way of achieving both is to engage in CS strategies, corresponding properly to their core business models.

We as researches have tried to provide evidence that investing in corporate sustainability improves firm's market value. To provide the base for the thesis, we firstly explored the terms in relation to CS and then we gradually linked CS strategies to firm's financial performance and to the drivers that do not directly relate to financial performance, which summed up to firms' added value. The reviewed theory in the theoretical part suggests that such leverages can only be established, if firms not only adopt such strategies, but truly integrate them in their core business linking their long-term strategy and vision with CS strategies.

To complement the theoretical part, we decided to provide evidence with different research approaches. We believe that we managed to provide different views on the issue as we covered its theoretical, practical and statistical aspects. In the first part, we conducted three case study analyses of firms from oil and gas industry, which is not regarded sustainable

per say. For this reason, we wanted to see how they cope with sustainability challenges. The conclusion we have come to is that each of them has adopted a different approach to challenges dealing with sustainability. We can see that Neste Oil has focused on providing alternatives to typical oil products by producing and developing bio-fuels. Meanwhile, Royal Dutch Shell has approached the issue by trying to establish and maintain a good reputation, which was a done a need to have basis due to bad practices in the past. Whereas Eni's approach bases on innovation and ensuring future consumers by providing access to energy sources to developing regions (Africa, South America). At the time of our research, Neste Oil and Eni were both included in the DJSIE index, which proves they are on the right track. Meanwhile Royal Dutch Shell is lagging a bit despite its dominant financial status in the industry. Therefore, a question arises whether they possess the motivation for coping with sustainability challenges.

We believe the case study analyses have provided a more practical view on real-life sustainability issues and have shown how three different firms from the same industry are coping.

In the second part, we conducted a statistical analysis based on panel data ranging from 2005 – 2013. Our sample consists of publicly listed European firms included in the Stoxx 600 Index. The sample was then divided into sustainable and other firms' observations, based on the inclusion in the DJSIE index. Our first two models proved that firms which are regarded as sustainable earn higher overall size of the valuation and experience higher valuation growth as well. In the part where we tried to prove which lever brings this added value, profitability or risk mitigation, we have not come to any significant conclusion thus leaving the door open for future researches.

We honestly believe that our master's thesis will help firms come to a conclusion that CS is a way forward and that there is no other way of surviving in the evermore competitive market. CS will in the future become "the name of the game" and firms will not be able to survive or enter the market without it. We think our master's thesis has brought several benefits to the research area. Firstly our research was made on a different sample from others, in particular focusing on European market only. And secondly the fact that we have tried to conclude which is the predominant value driver, risk mitigation or increased profitability. With the date used we were not able to offer any conclusive findings in this part, but on the other hand we believe it will serve as an open question for future researches.

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