



UiO : **Centre for Technology, Innovation and Culture**  
University of Oslo

## **Corporate Social Responsibility (CSR) and Innovation**

Exploring the connection between CSR and innovation - at concept level  
and through a case study of the Brazilian oil and gas company Petrobras

*Maria Borgeraas Reinlie*

Master thesis at TIK Centre for Technology, innovation and culture, University of  
Oslo, Spring 2017



© Maria C. Borgeraas Reinlie 2017

## **Corporate Social Responsibility (CSR) and Innovation**

**Exploring the connection between CSR and innovation - at concept level and through a case study of the Brazilian oil and gas company Petrobras.**

**Maria Borgeraas Reinlie <http://www.duo.uio.no>**

**Supervisor: Tuukka Mäkitie**

**Print: Copycat, Forskningsparken**

## **Abstract**

This paper seeks to further explore the connection between CSR and innovation at concept level and through a case study of the Brazilian oil and gas company Petrobras. The purpose of the case study to investigate if it is possible to apply the theoretical discussion in an empirical example.

I found that the theoretical arguments on the CSR-innovation connection from literature were present in Petrobras. Some highlights of my observations were that stakeholders can provide the (social) need-pull in the innovation process, and thus work as a catalyzer for innovation. In addition, strategic CSR can drive a company to capitalize on economic potential outside the firm, and enable corporations to detect opportunities for innovation that they otherwise could have missed.

## **Acknowledgements**

It has been quite the journey writing this master thesis, and it has truthfully been an experience that I am beyond grateful to have had. I sincerely want to thank everyone at TIK, Centre for Technology, Innovation and Culture, at the University of Oslo, for having me as an ESST- Master student at your institute, and for providing such a great Master program. I came from a background in Latin American Studies and Political Science, and the ESST Master was a perfect addition to my academic career, and it has provided me with its unique combination of knowledge. I also have to in particular mention the student consuls at TIK, both Lene and Jord. You guys do such an incredible job at providing students with the best of help, and I want to thank you for making this experience easier and more enjoyable for me.

As I mentioned, this has been a journey, and a quite amazing one, but also a very challenging one. I was very lucky to be given the opportunity to work as an intern at the Norwegian Embassy in Havana, Cuba, this past year, and it was one of the best experiences of my life. It was not the easiest thing to adjust to the cold Norwegian winter when I returned, and on top of that I had even brought home with me Dengue fever, which made me quite sick at the time. But wouldn't you know it: spring is here, the Dengue fever is gone, and I am about to hand in my master thesis!

There is one person in particular that I want to give my utmost gratitude to, and that is my supervisor Tuukka Mäkitie. You have been the best tutor I could have asked for, I know it was not the most ideal situation to have your student in Cuba with little WiFi access at first, but you provided me with some amazing e-mail advice, and helped me get started. Then when I returned you took your time and gave me thorough and extremely valuable feedback, and what I appreciated the most was how you motivated and encouraged me in our meetings. It is a life saver (or thesis saver) to have someone to talk to throughout the process of writing a thesis, it really makes the whole difference. Thank you.

Finally I want to take a second to appreciate my family and friends. I have the most encouraging of people around me, who believe in me and always support me. Mom,

dad, sister and friends: Thank you for being here.

## **Table of contents**

<b>1. Introduction and research question</b>	<b>6</b>
1.1 Challenges to be discussed	7
<b>2. Research design, methodology and structure</b>	<b>10</b>
2.1 Limitations	12
2.2 Corruption scandal in Petrobras	13
<b>3. CSR: definitions, literature review and theoretical exposition</b>	<b>14</b>
3.1. CSR: Definitions and brief history	14
3.2 Important conceptualizations of CSR	16
3.3 CSR in Business Strategy	19
<b>4. Innovation: Definitions, Literature review and theoretical exposition</b>	<b>21</b>
4.1 Definitions	21
4.2 An overview of innovation	22
4.3 Corporate innovation processes	23
4.4 Open Innovation	25
4.5 Social innovation	26
<b>5. A discussion on literature addressing CSR and innovation</b>	<b>28</b>
5.1 Combining CSR and innovation	30
<b>6. Case study of Petrobras</b>	<b>35</b>
6.1 Brazil - decades of healthy economic growth	35
6.2 CSR in Brazil	36
6.3 Petrobras	37
6.4 The greening of Petrobras	37
6.5 A discussion on the role of CSR in Petrobras	39
6.6 Combining CSR and innovation in Petrobras	43
<b>7. Conclusions and discussion</b>	<b>50</b>
7.1 Suggestions for future research	52

# 1. Introduction and research question

This paper seeks to be a contribution to the research on the connection between Corporate Social Responsibility (CSR) and innovation. Separately, both concepts represent a wide range of available literature, and in addition there has been a rapidly emerging discussion during recent years on a connection between these two concepts. Still, CSR is given little attention in innovation studies.

It is not an easy task to connect the overall concept of CSR with the overall concept of innovation (MacGregor and Fontrodona, 2008: 4). Partly because of the massive bulks of literature on both topics, and also because there has yet to appear any general accepted framework to use (Russu and Perrini, 2009: 207). The emerging discussion on the relationship indicates the major interest around the topic, and this paper aims at being a contribution to the field of research that explicitly tries to explore the connection between CSR and innovation.

I start by presenting CSR and innovation separately, before I present the current debate on the CSR-innovation connection. I then do a conceptual discussion on the main theories on the CSR-innovation link, in order to establish some ground lines for the next part of this paper. Drawing from the conceptual discussion, I perform a case study of the Brazilian oil and gas company Petrobras, in order to explore if the conceptual discussion can enable an understanding of the connection between CSR and innovation in Petrobras. My Research Question is thus the following:

- **What is the relationship between CSR and innovation in Petrobras?**

## 1.1 Challenges to be discussed

Today, external stakeholders have a stronger position than ever because of our immediate access to information. It is therefore easier for stakeholders to hold corporations accountable for their actions. If a company acts unethically, it can literally go viral within minutes. This could in turn reap major negative reputational and financial repercussions for the company. In addition, today's stakeholders have a highly sophisticated consumer knowledge, precisely because of their easy access to information. One major facet of modern CSR approaches is that they recognize the importance of stakeholders, and that businesses do not exist in isolation: they are in fact part of the society in which they operate, and be affected by societal changes as well. This indicates that today's modern companies have an even broader set of complex norms and expectations to take into account, in addition to the traditional market forces (Spence, 2010:59).

Corporations will always seek to make profit, and profit is often associated with productivity, efficiency, value creation and innovation. Many CSR scholars are now connecting CSR to precisely these concepts, and as a consequence, literature on CSR and innovation have recently gained a great deal of attention. However, in innovation literature, CSR and innovation are rarely discussed in combination, at least explicitly. Still, CSR is today part of company discussions worldwide, and is seen as an integral part of the search for greater value and competitiveness (MacGregor and Fontrodona 2008: 1).

Oil and gas companies are part of an industry that is subject to major scrutiny from different stakeholders, due to the hazardous nature of their operations on our environment. In addition, the task of behaving responsible in moderns oil and gas companies is further complicated by the multiplicity of the technical, legal, cultural and ethical dimensions of the context in which they operate (Spence, 2010: 69).

The concept of CSR raises the question of what types of activities a company *should* do, making the question both a normative and a strategic one. As a normative question, different perspectives offers a variety of challenges as to how to approach



CSR. Economist and Nobel laureate Milton Friedman (1962), famously argued that the only business responsibility is to increase profits as long as it is in compliance with the law (Spence, 2010: 65), and even that *“few trends could so thoroughly undermine the very foundations of our free society as the acceptance by corporate officials of a social responsibility other than to make as much money for their stockholders as possible”* (Friedman 1962 p. 133 in Carroll, 1999: 277).

CSR has often been subject to criticism that argues that CSR is about self-promotion, self-interest and and “greenwashing”, and where that it is merely a tool for self-promotion, not a core value in business. Many CSR activities today are indeed motivated by self interest: For example, some CSR activities could have as an intention to improve a company's reputation. This could reap indirect corporate benefits in terms of attracting new, socially conscious customers and investors, and it may even strengthen the loyalty of existing stakeholders. If a oil company manages to attract these new and socially conscious customers, they are likely to be willing to pay a premium for “green” electricity or oil that comes from one of the “responsible” oil companies. It could also further reap internal benefits for the corporation, as employees would probably prefer to work for a socially responsible company, which in turn could lead to improvements in employee productivity and create an overall better work environment. In addition, other stakeholders, such as NGOs and grass-root organisations, would also be pleased. These areas could be “win-win” categories of CSR, where corporate environmental investments contributes to building more productive relationships with external stakeholders, liability and other risks may be reduced in the long run, and finally: opportunities, that otherwise might have been missed, may be detected (Spence, 2010: 68). In these overlapping areas - areas that provide mutual benefits for both the corporation and its external stakeholders - exist starting points for innovation (Savitz and Weber 2006 in Grieshuber, 2013: 200).

There have been many studies on CSR, but most focus on companies from Europe and North America, even as CSR has become an important issue in developing countries. The same applies to studies on oil companies’ approach to CSR: most focus has been on European and North American oil companies, and not on oil companies in developing countries (Frynas 2006 in Paes, 2012: 72). Brazil, in spite of a healthy

economic growth during the recent decades, is still classified as a developing economy, and it is thus relevant to pay attention to this region. I also have a background from Latin American Studies, and thus a personal interest for this region.

The arguments presented above forms the foundation of my motivation for further exploring the connection between CSR and innovation, and to do a case study of a major Brazilian oil and gas company.

## 2. Research design, methodology and structure

This study is exploratory, with a qualitative approach through a concept discussion and a case study. A case study is a qualitative research method, and commonly used by social scientists to investigate real-life context by building on the theory at hand (Ischool 1997). The purpose of the case study to investigate if it is possible to apply the theoretical discussion in an empirical example. I chose Petrobras because of their strong CSR agenda, and in order to see if it is possible to find relevant connections between CSR and innovation in Petrobras. In addition, I chose a company that publish annual sustainability reports, in order to use these public publications as research sources.

I first gathered information on the concept of CSR, seeing as CSR was the lesser known topic to me - an innovation student with a specialization in economics and innovation management. I used Google.Scholar.com and Jstore.org as my main data sources. I searched for articles with CSR is their title, and I used as much first hand literature as possible, in order to make sure that it was my proper interpretation of their original content. However, in some instances, the original sources were not easily accessed, and as I saw various authors who referred to the same view-points from the same sources, I decided that it was a clear confirmation that the content was reliable, and I thus used some second hand literature.

Once the history of how CSR has developed was gathered, I added to my search on CSR combined with terms such as *business*, *value creation* and *competitive advantage* in order to gather information on a more cooperative approach to CSR, this was crucial as literature on CSR is massive, and presents a variety of different intentions and approaches, in order to find the aspects of CSR relevant to my thesis. I also loaned the book *CSR and Beyond*, by Atle Midttun (2013).

I then searched for literature addressing both CSR and innovation, where both were

mentioned in the title. As there were fewer articles with both words in the title, I also accepted titles that had CSR and concepts that could be linked to innovation, such as *competitive advantage*, *economic growth* and *value creation*. I found relevant articles that used the term sustainable instead of CSR, and I allowed this when it was combined with *innovation* in the title, and (later) with *sustainable reporting* in oil and gas companies.

After gaining knowledge on the current discussion on the CSR and innovation connection, I had a better foundation to understanding what type of innovation literature to use. I used the *Oxford Handbook of Innovation and Managing Innovation*, and I used the literature provided on *innovation processes*, *social innovation* and *open innovation*. I found it useful to use these books as they are clear and pedagogically written, and I was looking for concrete information on certain aspects of innovation. I also wanted to provide a general overview on innovation, and I found Fagerberg's guide on innovation (*Innovation - a New Guide*, 2013) to be particularly useful for this purpose, because it describes some challenges and complexities in the development of innovation, that I indeed have experienced myself when exploring a connection between two such major concepts. I also enjoyed it from my personal position of being an innovation student, because it clarified some challenges that an innovation student often will experience personally.

I then discussed the CSR-innovation connection at a conceptual level, drawing from the current discussion of the subject matter, and with a clearer understanding of the most compatible elements of both concepts in mind.

Further, I narrowed my search to concentrate around CSR in the oil and gas sector, and on sustainability reporting in the oil and gas industry. Further, I narrowed it down to specifically be about Petrobras and their CSR and sustainability reporting.

As research sources I used public documents from Petrobras, mainly their annual sustainability reports, from 2007 till the latest version from 2015. I also used information provided from their website, and their Strategic Plan and Business and Management Plan 2017-2021. I used an interview of their former CEO, and other more specific academic studies on Petrobras, as research sources. It was useful to use

other analyses on Petrobras, because it is difficult to get a proper grasp of internal changes and dynamics through their own publications.

In addition, I googled Petrobras and relevant subjects, and used articles published on renowned websites and other online publication sites. I also had to search for terms such as the GRI indicators on corporate reporting on sustainability, and the ISO standardizations that Petrobras use, and on general information relating to challenges in the oil and gas industry and how they operate.

## **2.1 Limitations**

One limitation to my research is that there is not a specific framework available to use on how to link CSR and innovation, I have therefore built my own CSR-innovation framework. Many methods have been tested in various studies, and some promote potential frameworks and even new definitions of the term for activities that inhabits a combination of both CSR and innovation. Still, in my case I found that the most useful and logical method would be for me to use the literature on the connection as a discussion base at a conceptual level, and then turn to Petrobras with this information and explore if these dynamics could be found in Petrobras. I then avoid “flaws” in other approaches if applied to my research, seeing as it is the only one of it's kind.

I also have to take into consideration the fact that I study documents from Petrobras themselves. I have to assume that they promote themselves in a positive manner and that I can not be certain that their statements represent actuality. Still, I have tried to counter for this by using concrete information, such as on financial statements and other, independent studies. In an ideal world, I would have been able to spend time in Petrobras, interview their employees, observe their actions and experience the context first hand.

## **2.2 Corruption scandal in Petrobras**

Java Jato, meaning car wash in portuguese, is one of Brazil's largest corruption

investigations, and they were the ones that uncovered a massive web of corruption at Petrobras in 2014. The corruption consisted of companies bribing senior Petrobras officials and other public offices to get paid large sums for contracts with the company. The corruption was discovered in 2014 but experts estimates that the corruption has been going on for 10 years (telesur 2016).

Interestingly enough, this marks almost exactly the time when CSR was first incorporated into the business strategy in Petrobras, in 2007. Currently, over a hundred politicians face criminal charges, and a once powerful politician has been sentenced to 15 years in prison for a corruption scheme at Petrobras (Capital News 2017). The corruption scandal is sitting up a whole lot of drama in the Brazil's political scene (Forbes 2016b).

I chose to test the empirical findings from literature on CSR and innovation on Petrobras because of their strong CSR agenda. A corruption within Petrobras is clearly raising a question on Petrobras' legitimacy. In fact, the entire oil and gas industry raises questions of legitimacy regarding CSR activities, and it would be highly controversial to applaud an oil company for its CSR efforts if they at the same time are tearing down the Amazon jungle. However, this paper is not really about Petrobras. My aim is to explore CSR-innovation connection from a conceptual discussion, and then testing these theories on a company that has a strong CSR and innovation agenda. In addition, as mentioned in chapter 1.1, it is interesting to test CSR efforts in an industry that attached to a wide set of stakeholder that would benefit from more responsible corporate behaviour. If I were to investigate the CSR-innovation link in a company that fully orient themselves towards CSR and sustainable innovations, it would not be that interesting to test the CSR-innovation connection.

# **3. Corporate Social Responsibility: definitions, literature review and theoretical exposition**

I will in this section give a an overview of the concepts of CSR and innovation, and discuss the key arguments from literature on the explicit connection between the two concepts.

## **3.1. CSR: Definitions and brief history**

The concept of CSR is widely discussed both in theory and practice, but there is still the need for a more precise definition (Weber, 2008: 247). Some reasons for the inconclusiveness of CSR definitions, is that the concept is rooted in its interchangeable and overlapping characteristics with other terminologies, and that the character of CSR is ever-changing as its practice expansion is aligned with increased demands from society and development issues (Rahim 2013: 14). The concept of CSR is fluid, to some scholars CSR it is a source of competitive advantage, and others connect it more to being a response to the increasing demand from key stakeholders (Rahim, 2013: 15).

The European Commission provides a wide definition of CSR that states CSR as “*the responsibility of enterprises for their impact on society*”. And that in addition to compliance with the law, companies can become socially responsible by “*integrating social, environmental, ethical, consumer, and human rights concerns into their business strategy and operations*” (European Commission 2017).

CSR is not a new concept, it was a major topic of interest in business in the 1960s and 1970s (Carroll 1999). By the 1960s, CSR was referred to as corporate philanthropy where its engagement was understood in a broad sense, and where not necessarily

connected with business strategy (Vogel 2005 in Preuss 2011: 19). This phase of CSR is aimed at “doing good to do good”, presenting only an indirect link between corporate philanthropy and shareholders interests (Friedman 1970, Vogel 2005 in Preuss 2011:19). This type of CSR received criticism for being static and not giving sufficient attention to their context (Beaulieu and Pasquero 2003 in Preuss 2011:19) and not being integrated into a company's strategy and operations (Weaver et al. 1999, Grayson and Hodges 2004 in Preuss 2011:19). CSR then experienced a downfall, and was more or less ignored by managers during the 1980s, (Dierkes and Antal, 1986: 107) - a decade that was perhaps more focused on the concept of shareholder-return as the main business focus.

Then CSR made a comeback, and has reemerged as a business concept during the past three decades. As a response to the criticism of not paying enough attention to its context, a second wave of CSR developed, now with a strategic approach at its core (Burke and Logsdon 1996, Van de Ven and Jeurissen 2005, Porter and Kramer 2006 in Preuss 2011:19), where the intention was to of make CSR relevant to business.

In the 1992 Earth Summit in Rio de Janeiro, the concept of eco-efficiency was indorsed as a management philosophy to encourage businesses to be more competitive, more innovative, and more environmentally responsible in order for companies to, both separately and collective, reach the Agenda 21 action program that was agreed upon during that conference (Stigson, 1996: 289-290). It is interesting that the concept of eco-efficiency was first coined by business. The UN requested a business input to the Rio process. The Business Council for Sustainable Development therefore did a report where it defined eco-efficient companies as those who produce more useful goods and services, those that add value, and who at the same time focus on reducing pollution and their consumption of resources. In other words: produce more from less. Eco-production therefore offers benefits in terms of reducing production costs, and it reduce pollution through process change rather than the end-of-pipe approaches of the industrial revolution (Stigson, 1996: 290). Eco-efficiency focus on value creation, and this focus is in tune with society's expectations and thus provides a powerful reason for business to evolve and reform



along these principles. At the same time, it also signals a significant shift in focus: a focus on real customer needs (Stigson, 1996: 291, 292).

## **3.2 Important conceptualizations of CSR**

Archie B. Carroll's (1991) pyramid of CSR is one of the most influential conceptualizations of CSR. It consists of economic, legal, ethical, and philanthropic responsibilities (Carroll 1991: 40), and these areas each make up components that together form CSR. Carroll argues that the economic components in CSR (the economic responsibilities corporations should have) is that it is "... *important to perform in a manner consistent with maximizing earnings per share*" and "... *to maintain a strong competitive position*", "... *to be committed to being as profitable as possible*", "... *to maintain a high level of operating efficiency*" and finally that it is "... *important that a successful firm be defined as one that is consistently profitable*" (Carroll 1991: 40).

When it comes to the legal components of CSR, it refers to companies' responsibility to follow the law. The ethical components refers to the company's responsibility to meet societal norms and morals, and not compromise them in order to achieve corporate result, that is, to go beyond compliance with the law. The philanthropic element is about charitable actions, where for example corporations engage in voluntary activities in their local communities (Carroll 1991:40-41). In addition to Carroll, Ed Freeman (1984) also expressed his view that the stakeholder's role no longer was merely instrumental, but normative - making corporations subject to evaluation on their social performance (Huse in Midttun, 2013: 49).

Another important conceptualization that gained great attention was Elkington's (1997) "triple bottom line" (3BL) approach: *people, profit, planet* should be the main components in measuring a corporation's ultimate success, in addition to the traditional financial bottom line (Norman and MacDonald, 2004: 243). He made this

term famous in his publication *Cannibals With Forks: The Triple Bottom Line of 21st Century Business*, (Norman and MacDonald, 2004: 244). This conceptualization has had major influence on modern CSR literature, and it demands that a corporation is responsible to its stakeholders, not just its shareholders.

Wood (91) made distinctions among the principles of CSR, processes of corporate social responsiveness and outcomes of corporate behaviour and states that ‘the basic idea of corporate social responsibility is that business and society are interwoven rather than distinct entities’ (Wood in Moir 2001: 1). Cannon (1992) also discusses the relationship between business, society and government, and he identifies that the primary role of business is to produce goods and services that society wants and needs, and that there is an interdependence between business and society in the need for a stable environment (Cannon 1992:33 in Moir 2001: 1-2). Cannon (1992) was also an important contribution in the discussion on the relationship between business, society and government, arguing that there is a crucial interdependence between business and society as they both need a stable environment to thrive (Cannon 1992:33 in Moir 2001: 1-2). During this discourse the concept CSP (Corporate Social Performance) was introduced, but quickly replaced by CSR1 (Corporate Social Responsiveness) and then CSR2 (Corporate Social Responsibility). Donna Wood (91) was a crucial contributor in defining these concepts (Huse in Midttun, 2013: 49).

On the more critical literary contributions towards CSR we have market liberalist Friedman (1970) contributed to the critical view of CSR and argued that there was no role for CSR in business stating that “there is only one social responsibility for businesses, to use its resources and engage in activities designed to increase its profits as long as it stays within the rule of the game, which is to say, engages in open and free competition without deception or fraud” (Friedman 1970: 178).

CSR is qualitatively different from the traditional concept of corporate philanthropy. It acknowledges the debt that the corporation owes to the community in which it operates. It also defines the business corporation’s partnership with social action groups in providing financial and other resources to support development plans,

especially among disadvantaged communities. This was what Davis (1973) described as the iron law of responsibility; a firm exercising power will eventually be held accountable by society (Hockerts and Morsing, 2008: 5). Most models of CSR are based on the principle that goodwill earned from the stakeholders leads to benefits for the corporation, which again has a positive effect by enabling corporations to enhance further stakeholder value (*ibid*).

Another perspective on CSR is the eco-social perspective. The proponents of this perspective recognize the fact that social and environmental stability are two important prerequisites for the sustainability of the market in the long run. They also recognize the fact that increasing poverty can lead to social and political instability, which in turn can be detrimental to business, which operates from a variety of socio-political and cultural background. Seen from the eco-social perspective, CSR is both a *value* and a *strategy* in ensuring the sustainability of the business. It is a value because it stresses the fact that business and markets are essentially aimed at the well-being of society. It is a strategy because it helps reduce social tensions and facilitate markets (Joseph, 2009: 405). Another emerging perspective is the *rights-based* perspective on corporate responsibility. This perspective stresses that consumers, employees and affected communities and shareholders have a right to know about corporations and their businesses. Corporations are increasingly becoming public institutions whose survival depends on the consumers who buy their products and shareholders who invest in their stocks. This perspective stresses accountability, transparency and social and environmental investment as the key aspects of CSR (Joseph, 2009: 407).

Even though the concept of CSR has been extensively investigated over the past decades, there still does not exist a general accepted and reliable theoretical framework to explain issues related to the activity of a broad range of firms (Russu and Perrini, 2009: 207).

### **3.3 CSR in Business Strategy**

CSR practices are integrated into business models in various ways, because its implementation will vary with what type of market position a company has, and what type of business they are doing. Minimal CSR engagement are described as reactive and defensive business support, while other CSR approaches are strategic, that is, when CSR and the social agenda are aligned with the core business of the firm (Midttun, 2013: 26). A company engaging in reactive CSR is typically responding to attacks from media and pressure groups targeting socially or environmentally unsustainable practices (Zadek 2004: Tulder and Zwart 2005 in Midttun 2013:26). Here, CSR practices can be used as a risk minimizing, safeguarding support function in the selected parts of the organization that require change of malpractice, but the company remains strategically focused on the business as usual. This mode of CSR does not create value creation, nor does it intend to (Midttun 2013: 26).

In more proactive modes of CSR practices, CSR may become systematically integrated into the business model, but it remains a support function without direct value-creating capacity. Indirectly, it may protect value creation in the sense of preventing reputational damage, but it is still a mere support function, not part of the core value creation strategy (Midttun 2013: 26). CSR can become a core value driver and potentially enhance the effect on value creation, if CSR plays a strategic role in the business model. Here, CSR needs to be brought into the strategic domain and societal concerns need to be the central focal point of strategy (Midttun 2013: 27).

Further, there is an even more advanced mode of CSR, where CSR has the highest potential to create value. This is when businesses take environmental and social entrepreneurship. These companies orient themselves towards the burning political issues of today: climate change, alleviation of poverty, pollution, human rights, etc., and these types of companies will usually see high return on CSR investments and will consequentially be early promoters of strong CSR agendas (Midttun 2013:27). The Bottom-Of-the-Pyramid approach (BOP) is another strategic CSR field where low-income markets present unmet needs, here, firms can help create new and

profitable markets in addition to addressing low-income populations urgent needs (*ibid*).

CSR has potential to become a strategic activity adding value in different to business, society and ecosystems if CSR is *integrated* with the strategy of the firm, and not disconnected from their core business operations (Wolff & Barth 2005 in Maas and Boons, 2010: 169). In addition, companies must have the means to measure and monitor the new or added values from the impacts of their activities as strategic CSR requires an assessment of value added (or destroyed) on both the social and economic dimensions. These impacts should be incorporated into management decisions (Maas and Boons 2010: 169). A set of measurements, that can enable managers to select the best measurement approach based on what type of CSR activity they partake in, is proposed in order to understand the impact of CSR: it can be CSR value creation, value redistribution or added value (Maas and Boons 2011: 180).

If managers do not have a clear understanding of the strategic benefits from CSR, they will probably not invest in CSR practices even if CSR can contribute to the long-term success of the firm, it is therefore important to reorient CSR toward a more strategic perspective (Burke and Logsdon, 1996: 495).

There has also been reported of unexpected consequences from an imposed CSR agenda. A study from 2008 found that corporate responsibility, when imposed on Vietnamese suppliers, led to an unsustainable process where they observed potential for a creation of a new form of protectionism. The study highlights the importance of avoiding CSR imposition through building innovative partnerships through a demand driven agenda instead (Russo *et al.*, 2008).

# 4. Innovation: Definitions, Literature review and theoretical exposition

## 4.1 Definitions

The Oslo Manual (OECD report, 2005) provides some concrete distinctions among different kinds of innovations. They define innovation as

*“the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations”* (Mortensen, *et al.*, 2005: 46). Implementation here is when the new or improved product is introduced to the market, or when new processes, marketing methods and organizational methods are brought into actual use in the firm’s operations (Mortensen, *et al.*, 2005: 47).

Innovation activities can either be well-defined innovation projects, or it can be continuous improvements to products, processes and operations. It can be the implementation of a single significant change, or it can be a series of incremental changes that together constitutes a significant change (Mortensen, *et al.*, 2005: 47).

The Oslo Manual defines four types of innovations that can fit a wide range of changes in the activities of a firm: **product** innovations, **process** innovations, **organizational** innovations and **marketing** innovations.

Product innovations are defined as *“a good or a service that is new or significantly improved. This includes significant improvements in technical specifications, components and materials, software in the product, user friendliness or other functional characteristics”* (Mortensen, *et al.*, 2005:17) Both entirely new goods and services and significant improvements to existing products are included (Mortensen, *et al.*, 2005: 47).

Process innovation is defined as “*a new or significantly improved production or delivery method*”. This includes changes in techniques, equipment and/or software (Mortensen, *et al.*, 2005:17). Marketing innovation is defined as “*a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing*” (Mortensen, *et al.*, 2005:17). Organizational innovation is defined as “*a new organizational method in business practices, workplace organization or external relations*” (*ibid*). Further, Edquist *et al.* (2001) have suggested to divide process innovation into two categories: technological process innovations and organizational process innovations; the first being new types of machinery, the other relates to new ways of organizing work (Fagerberg *et al.* 2013: 7). Innovation is no longer exclusively linked with high-technology and/or new products, it is a broad, continuous, systematic activity that takes place throughout the firm (MacGregor and Fontrodona, 2008: 18).

## **4.2 An overview of innovation**

Joseph Schumpeter (1883-1950) was greatly inspired by the dynamic outlook of Marxism in his theories, as he lived in Vienna around the turn of the century, where the German historical school and the emerging neoclassical approach were highly present (Fagerberg, 2009: 20). Schumpeter, however, broadened the perspectives from focusing mainly on financial gain, and thus competitive advantage, through new and more efficient technology to include other types of innovations, such as product and organizational innovation (Fagerberg, 2009: 21). Schumpeter made important distinctions between invention and innovation. The invention is the first occurrence of an idea, whereas the innovation is the first attempt to carry the invention out into practice (Fagerberg, 2013: 1). “*We will simply define innovation as the setting up of a new production function. This covers the case of new commodity, as well as those of a new form of organization such as a merger, of the opening up of new markets, and so on*” (Schumpeter, 1939: 84).

Schumpeter was the first social scientist to develop an approach where he focused on the crucial role of innovation, a source of energy as he described it, for economic and

social change (Fagerberg, 2013: 9). Schumpeter's work received little attention in the decades after his death, when a more static and mathematical equilibrium approach dominated in theories of economy. However, more recently as it has become generally accepted that there is a need for understanding the causes and effects for innovation, Schumpeter's work is still highly relevant (Fagerberg, 2009: 22).

Innovation takes time, and is often the result of a long process of many interrelated innovations (Fagerberg, 2013: 10). Innovation may threaten existing business models, and this is where Schumpeter used the term of "creative destruction" in order to describe the process through which innovation destroys old structures and creates new ones. Organizational innovations may significantly increase productivity and competitiveness. Innovation studies also study how innovation spread/diffuse because imitation is crucial in order for innovations to have a social and economic significance. (Fagerberg, 2013:11).

Disruptive innovation was characterized by Christensen (1997) as a new product that that does not fit in, it underperforms, in regards to the consumer preference connected to the old product, the forces that enabled that product to work. Still, the new product may perform better on a secondary dimension compared to the old product, and could therefore open up a new market space. Eventually, the disruptive innovation improves on a primary dimension that has now allowed for it to appeal to the mainstream customers, who originally rejected the product (Schmidt and Druehl, 2008: 347).

Current management of technology approaches emphasise the need to recognize the disruptive potential of an innovation on industries.

### **4.3 Corporate innovation processes**

There are many different processes of innovation, and there is no widely accepted theory on a specific firm-level process of innovation that manage to integrate both the cognitive, organizational, and economic dimensions of innovation processes in firms. Different scholars will interpret their perspectives into the understanding of an



innovation process. Economists tend to focus on the economic incentive for innovation, organizational specialists would focus on the structural correlation between innovation activities and processes, and sociologists on their social aspects and consequences. In addition, the innovation processes will also vary with the size of the firm, its corporate strategy, and prior experience (Pavitt in Fagerberg *et al.*, 2013: 88). Pavitt therefore suggests a general framework in order to enable a clearer understanding of the complex knowledge in innovation processes. He argues that innovation processes involve the exploration and exploitations of opportunities for new or improved products, processes or services, based either on an advance in technical practice (“know-how”), or a change in market demand, or a combination of the two. Innovation is there for a matching process. In addition, innovation is inherently uncertain, given the impossibility of predicting accurately the cost and performance of a new artifact. It therefore involves a process of either experimentation (trial and error) or improved understanding (theory) (Pavitt in Fagerberg *et al.*, 2013: 89).

Scientific research is one obvious source of innovations, inventions and improvements, and is therefore an important tool in managing the uncertainty of the innovation process in firms. In today’s corporations, organized Research and Development (R&D) has become a systematic commitment of specialist staff, equipment, facilities and resources targeted at key technological challenges (Tidd and Bessant, 2013: 235, 236).

R&D also opens up space for individual inventors to spot new niches and directions, and the knowledge creation provides a *push* that creates a field of opportunity to discover possibilities for innovation (Tidd and Bessant, 2013: 236).

Another key driver of innovation is *need* – the complimentary *pull* to the knowledge *push*. Innovation is therefore often the response to a real or perceived need for change. Basic need for food, clothing and security, led to early innovation as society evolved. Today, the need pull operates on a more sophisticated level, but via the same process (Tidd and Bessant, 2013: 237). The need pull is also found inside the organization, and works here as a driver for process innovation (Tidd and Bessant, 2013: 239). This

type of innovation has a common pattern: it's about "doing what we do better", but occasionally it involves a major leap (Tidd and Bessant, 2013: 240).

Innovation is not always about commercial markets and consumer needs, there is often a *social need* providing the pull for new products, services and processes (Tidd and Bessant, 2013: 240). Sometimes the increase in the urgency of a need or the extent of demand can have a forcing effect on innovation (Tidd and Bessant, 2013: 242).

## 4.4 Open Innovation

Openness to new ideas and solutions is considered essential for innovation projects, particularly in the early phases. This has to do with a fundamental characteristic of innovation: that every new innovation consists of new combination of existing ideas, capabilities, skills, resources, etc. It therefore follows logically that the greater the variety of these factors within a given system the greater the scope for them to be combined in different ways, producing new innovations which will be more complex and sophisticated (Fagerberg, *et al.*, 2013: 10). Modern firms are not closed systems, and they have learnt that they are able to learn from interacting with external sources, and this also put pressure on others to do the same (Fagerberg, *et al.*, 2013: 11).

Innovating firms must be able to cultivate the capacity for absorbing (outside) knowledge, the "absorptive capacity" (Cohen and Levinthal 1990 in Fagerberg, *et al.*, 2013: 11). This could be a challenge for many firms, as they over time have developed their own firm-specific-knowledge that usually leads to routines and how to do thing incrementally. This may constrain innovation. It is thus important to allow groups of people within the organization sufficient freedom in experimenting with new solutions (Ven de Ven 1999 in Fagerberg, *et al.*, 2013: 11), and establishing patterns of interaction within the firm that allow for it to mobilize its entire knowledge base when confronting new challenges (Nonaka and Takeuchi 1995; Lam, Ch 5 in Fagerberg, *et al.*, 2013: 11). Such organizing also involve to the firm's relation to outside partners, where frequent communication with the respective partners leads to beneficial "strong ties" that creates a network. Such networks are useful for managing

and maintaining openness (Fagerberg, *et al.*, 2013: 11-12)

## **4.5 Social innovation**

Social innovation is defined as *“innovations that are both social in their ends and in their means. Social innovation are new ideas (products, services and models) that simultaneously meet social needs (more effectively than other alternatives) and create new social relationships or collaborations.”* (EU Commission 2012 in Osburg 2013:17).

Social innovation is increasingly becoming an important component of “big business”, as large organizations realize that they can only secure a licence to operate if they can demonstrate some concern for wider communities in which they are located. CSR is becoming a major function in many businesses, and many make use of measures such as the “triple bottom line” (where people, planet and profit are equally important factors in the foundation of a company) in order to monitor and communicate their focus beyond profit making. By engaging stakeholders directly, companies are also better able to avoid conflicts, or to resolve them when they arise. In some cases, this involves directly engaging activists who are leading campaigns or protests against a company (Tidd & Bessant: 600). Social innovation requires a proactive attitude from the firm, that is, when a company actively anticipates the long-term effects of a CSR strategy (MacGregor and Fontrodona, 2008: 9).

The term Corporate Social Innovation (CSI) was first introduced by Rosabeth Kanter, who argues that firms should use social issues as a learning laboratory for identifying unmet needs and for developing solutions that could create new markets (Hockerts and Morsing, 2008: 14). It could be innovation aiming at social improvements, where the innovation has a clear social purpose. Drawing from this is the “Base of Pyramid” (BoP) approach, where corporations focus on meeting unmet needs of low-income populations in order to create new and profitable markets, and at the same time provide immediate social benefits for the community (Hockerts and Morsing, 2008: 15). In addition, eco-innovations - sometimes referred to as sustainable innovations,

eco-design, eco-preneurship, or clean technology venturing, has been labeled as a “source of creative destruction” (Hart and Milstein, 1999, cited in in Hockerts and Morsing:15).

## **5. A discussion on literature addressing CSR and innovation**

Open Innovation could be a clue as to where certain dynamics between CSR and innovation might be revealed, because one aspect of Open Innovation involves significant stakeholder interaction and collaboration in order to receive results (Osburg, 2013: 15). In addition, Open Innovation also compliments certain aspects of social innovation. The most pressing global issues of today, require collaboration between different sectors, and can not be solved by one sector alone (Osburg, 2013: 15). As innovations takes time, and require diffusion/imitation in its development process, collaboration across different sectors might help catalyze this process. In addition, innovations tends to be risky, and CSR can be a tool in reducing risk (MacGregor and Fontrodona, 2008: 6), thus balancing each other out in the risk-assessment aspect of an innovation.

Two main knowledge sharing aspects, relevant for cross-sectoral collaboration in social innovation, is presented in Osburg 2013:

### **1) Outside-in processes**

These processes integrate external knowledge into the innovation process and therefore enhance a company's internal knowledge base through the integration of external stakeholder knowledge, either through loose collaborations or formal agreements (Osburg, 2013: 15).

### **2) Inside-out processes**

These processes focus on the externalization of knowledge where companies can provide technology or knowledge to capitalize on potential economic benefits outside the firm, or it can be used to run processes of joint development (Osburg, 2013: 15).

CSR-driven innovation is when the end result is products and services with some sort

of social purpose, and where the production process is driven by the values of creating social products. Innovation-driven CSR is more aligned with the creation of social processes. The end result may not have a solely social rationale, but the output was developed in more socially responsible manner (MacGregor and Fontrodona, 2008: 14). MacGregor and Fontrodona (2008) found in their study on 60 SMEs in Europe that companies would either have a *reactive* or *proactive* approach to CSR, and they found that the most successful companies were proactive, and they also had the highest level of CSR implementation.

Siegel (2001) and Bansal (2005) (from Gallego-Álvarez, *et al.*, 2011: 1709-10). argued for a correlation between R&D innovation and CSR, given that companies must apply principles of corporate responsibility to their products, productive processes and practices that require changes in the technology applied. Sustainable firms thus need to adopt innovation in processes and products to increase energy efficiency, reduce the consumption of materials (Bansal 2002 in Gallego-Álvarez, *et al.*, 2011: 1709-10) and the impact of the products/services on the environment, the CO<sub>2</sub> emissions, etc., and CSR will therefore be a driver of firms' innovation practices (Gallego-Álvarez, *et al.*, 2011: 1709-10).

For CSR to trigger innovation, CSR must be *effective*. For example, philanthropic actions like donating money without a connection to the business model do not make the CSR activity effective for the corporation. One needs to search for the overlapping fields that benefit both the corporation and the stakeholders, those areas that holds interests for both stakeholders and the organization: the “sustainability sweet spot” (Savitz and Weber 2006 in Grieshuber 2013:200). There are in these overlapping areas that there exist starting points for innovation. CSR act on both operational and strategic level as well as on the level of culture and values (Grieshuber, 2013: 200). If effectively integrated into the business plan, CSR create synergies for shared value (Crets and Celer, 2013: 79-80). The concept of shared value is defined by business moguls Michael Porter and Peter Kramer (2011) as *policies and operating practices that enhance the competitiveness of the company while simultaneously advancing the economic and social condition in which it operates. Shared value creation focuses on*

*identifying and expanding the connections between societal and economic progress* (Porter and Kramer, 2011: 6, in Crets and Celer 2013:78). Companies can use social issues as a learning lab to identify unmet needs and create new solutions, which in turn can create new and profitable markets to be entered. This is *strategic CSR*, where CSR is integrated into the core business strategy (London, 2012: 221), and where CSR then adds value to the corporation on different dimensions such as business, society and ecosystems (Maas and Boons 2010: 169). The strategic focus on CSR can come from a reactive attitude like acting as a response to pressure from stakeholder groups, or from an economic calculus like resource efficiency and risk reduction, or as a strategy by anticipating strategic opportunities by implementing CSR in order to gain competitive advantage (Grieshuber, 2013: 199).

From pursuing strategic CSR, unexpected opportunities for innovation could be a direct consequence (Asongu, 2007: 4). CSR could therefore be used as a framework to detect and identify these innovations, and thus enable the corporation to take advantage of them (Asongu, 2007: 5). Most firms remain focused on CSR as a tool to reduce risk and operational costs, and a study from 2008 found that only firms with very high social performance ranking think about CSR as a means to drive product innovation (Hockerts and Morsing, 2008:15).

## **5.1 Combining CSR and innovation**

There are aspects of CSR that could be thought of as useful for enabling innovation in firms, such as stakeholder interaction. CSR suggests that companies ought to realize that they have to meet the needs of a wider set of stakeholders, and this interaction could reap benefits in terms of innovation because, in innovation, it is important to know and understand the needs of customers/stakeholders.

Strategic and proactive CSR can act as a mere support function in a firm (that is, when it is not necessarily part of the core value creation strategy), but it can still indirectly reap benefits in terms of a positive reputation (preventing reputational damage) and thus be in the best interests of their stakeholders. In a more advanced

mode of CSR, where CSR becomes a core value driver and plays a strategic role in the business model, CSR will enhance the effect of value creation because it will meet more precise needs of stakeholders, strategically.

In an even more advanced mode of CSR, CSR will play a leading role in shaping the way a companies will orient themselves, for example towards preventing climate change. Here, CSR has the highest potential to create value in terms of innovation, because it will wholeheartedly meet the needs of their stakeholders, and their main focus and strategy will be on a specific issue. It would be like creating a niche market, where a company knows the exact needs of a certain type of customer, and their absolute objective, is to meet these needs.

It is not unusual that a company introduces/aims an innovation to a niche market first, before expanding into mass production. It is in fact a sophisticated marketing strategy in order to reach commercial success, used for example by the electric car manufacturer Tesla: they introduced their first car to a niche market first, and they then used the generated income here to finance technology development, and as volume increases - prices go down (D'Arcy 2013).

In a niche market, the customers knows exactly what they need, and these needs ought to be met precisely. This group of customers are the most helpful in perfecting and testing an innovation. Here, strategic and sophisticated interaction with stakeholders is essential for the firm because it is crucial to understand the needs of their customers. Strategic CSR in its most advanced mode, will enable this crucial interaction with stakeholders and thus the company's potential to meet the needs of their stakeholders. This is where CSR have the highest potential to create value, and these types of firms will consequentially se high return on CSR investment and be early promoters of strong CSR agendas. Similarly, in innovation, firms who manage to meet the exact needs of their customers will see high return from advanced stakeholder interaction and usually be early promoters of strong innovation agendas.

There are also aspect from the innovation process that is complementary to the CSR focus on stakeholders. In specialized R&D, the knowledge creation can provide a push that creates opportunities for discoveries. The complimentary pull to the



knowledge push, is characterized as the need. This need comes from the stakeholders, both outside and inside the organization and often there is a social need providing the pull for new products, processes and services. This is a complementary factor in the CSR and innovation connection. Drawing from the innovation literature, we could say that CSR could potentially work as the knowledge push in the innovation process because a focus on CSR can create specialized (CSR) knowledge for the organization, and the complementary pull (need) identified from stakeholder interaction, will thus enhance the need-pull interaction in the innovation process. We could also look at it the other way around: CSR could be the social need from stakeholders inside or outside the organization, and the knowledge push will be developed in specialized R&D laboratories, aimed at meeting these needs and thus enhancing the opportunity for discoveries and innovations aimed at solving this need. This demonstrates the two faceted dimensions of CSR: it can act as both the need and the pull in the innovation process.

Interaction with stakeholders, and enabling identifications of needs, is closely linked to the concept of open innovation. Innovation requires openness, and innovative firms are usually good at absorbing outside knowledge, this ability is referred to as the “absorptive capacity” and this quality is necessary in a firm with frequent communication with stakeholders and outside partners, in order to create strong-ties-networks.

In order to create innovations that are social in their ends and means (social innovation), open innovation is necessary. Knowledge sharing relevant for collaboration between different industries can be outside-in processes where external knowledge is integrated into the innovation process. Knowledge sharing can also be an inside-out process, where inside capabilities in a firm (knowledge, technology) can be provided in order to capitalize on economic potential outside the firm, or in joint developments. If a company with a strategic CSR agenda for example aims at developing a new and environmentally friendly production process (process innovation), they would need to integrate external knowledge as to how to do so. They would have to absorb outside knowledge on sustainable production and development (outside-in process). If a technology company aims a CSR activity at

developing the local community in which they operate, they could share their inside knowledge (technology) and capitalize on economic potential outside the firm; a good relationship with their local community, and the possibilities of creating beneficial partnerships and trained workers within the community.

The connection between CSR and innovation has two directions: it can be CSR leading to innovation (CSR-driven innovation), an example could be if a company seeks to produce an environmentally friendly product, resulting in product innovation from a focus on CSR. It can also be innovation-driven CSR, where the innovation has a social process, but the product itself is not of any social purpose.

There are certain overlapping areas between stakeholders and the corporations - areas that offer benefits for both stakeholders and the corporation, that starting points for innovation can be found, described as “the sustainability sweet spot” (Grieshuber 2013). It is here important that the corporation has the available means to be able to detect such areas and take advantage of the possibilities when they arise. This is mentioned by various scholars in different ways: Asongu (2007) talks about the unexpected or unintended consequences (innovation) from CSR, Maas and Boons (2009) describe CSR and value creation and emphasise the importance of being able to measure and monitor the potential outcomes, in order to reap benefits from them. Explicitly, they do not mention innovation, implicitly however, one would draw from their study that innovation could be one of those value creation. For example, if a company engages in a CSR project that offers training for future professionals in their company, they would have to have to be ready and able to make use of new business ideas that could arise from this project, and seize the opportunity.

Innovation is not always about commercial markets and consumer needs, it can be a social need providing the pull product, process, organizational or marketing innovations. Sometimes, the increase in urgency of a need, or the extent of a demand, can have a forcing effect on innovation (Tidd and Bessant 2013). Here, CSR may be the social need, for example an employee's need/right for a safe work environment, and this need might press forth organizational innovation within a company. CSR might also be outside demands on corporate issues, for example environmental NGOs

and activist groups who will put pressure on a corporation to act with corporate responsibility toward the environment. This pressure, the extent of demand, might “force” an organization to take actions and to come up with innovative solutions. A corporation could therefore exploit such needs and demands, and use them to their own advantage.

The highlights from the conceptual discussion on the CSR-innovation connection from this chapter, would be the following:

- Strong CSR promoting companies have the highest potential to receive high return of innovation because of the sophisticated stakeholder interaction that enables them to perfect innovation for their customers.
- The aspect of stakeholders and collaboration in Open Innovation, strongly overlaps with CSR and its emphasis on stakeholders
- CSR is compatible with the *innovation process* literature, and can be understood as the knowledge *push* in the innovation process, because through certain open innovation/CSR dynamics, a company collaborates with external partners (stakeholders), and the accumulated (CSR) knowledge provides the knowledge push
- Perhaps more commonly than acting as the knowledge push in the innovation process, CSR can be understood as the complementary (social) *need-pull* to the knowledge push in the innovation process, thus catalyzing the innovation process. The need is detected from stakeholder interaction, and is further processed through R&D or other specialized firm-specific efforts.
- CSR can drive a company to capitalize on economic potential outside the firm, and enable corporations to detect opportunities for innovation that they otherwise could have missed.
- For CSR to spur innovation, a company must be equipped at detecting and monitoring the potential benefits from CSR and incorporate these benefits into their business strategies.

## **6. Case study of Petrobras**

### **6.1 Brazil - decades of healthy economic growth**

Brazil, one of the four original BRIC countries, has experienced decades of economic growth, overtaking in 2011 UK's position as the world's sixth largest economy. From 1980 to 2011, Brazil's Human Development Index (HDI) increased by 30.8 percent (Global Sherpa 2017). Still, the country has major regional differences, and almost thirty percent of the population live below the poverty line, mostly in rural areas (About Brazil 2017). Uneven distribution of land is a significant cause of social inequality. Successive governments have formulated proposals for land reform but they have yet to be successfully implemented. A small number of landowners control extremely large areas, whereas several hundred thousand people continue to have no access to fertile land. Even in recent years, the situation of the indigenous people have deteriorated due to land conflicts (Netherlands Enterprise Agency 2016).

Brazil has a comprehensive employment legislation, but in practice these more than nine hundred separate articles form an obstacle to compliance, due to inadequate enforcement and corruption. Brazilian law place stringent requirements on companies, and can be extremely detailed and complex, and there is often discrepancy between legislation and what happens in practice. The judicial system is often slow and not always impartial, where those with influence and good contacts are likely to enjoy preferential treatment. There are frequent reports of corruption in Brazil, and the risk is greatest when dealing with government officials at state or municipal level in matters such as tender applications, VAT liability, municipal property taxes, access to municipal services, planning permission or other forms of licence or permit. The Brazilian business culture emphasise interpersonal relationships and status, and somewhat less attention to personal responsibility or strict compliance with the law, making it difficult to draw a line between acceptable relationship management

practice and corruption (Netherlands Enterprise Agency 2016).

## **6.2 CSR in Brazil**

CSR has been an important business concept in Brazil since the 1960s, and over the years the CSR movement in Brazil has grown tremendously. In 1998, Brazilian entrepreneurs founded ETHOS, the main CSR organisation in the world. In 2009, there were 1367 member companies. ETHOS engage in research, publications, manuals, training, campaigns, CSR awards and presents its own system of CSR indicators and benchmarking. The CSR indicators of ETHOS give a good insight to the CSR priorities of Brazil, a country that still suffers from social inequality, discrimination and corruption.

The emphasis of CSR in Brazil used to be aimed at the collective, social aspects such as labour relations, distribution of income, equal treatment and social investments by companies. Today, more attention is given to the environment by companies, seeing the environment as part of their own production process. In recent decades, the number of Brazilian companies who uses the ISO 14001 standard, a criterion for an Environmental Management System, have grown rapidly. For projects or activities that may have a significant environmental impact, an environmental study is required.

Brazilian companies practice CSR with a degree of sophistication unparalleled in Latin America: they lead rankings of corporate responsibility in the sub-hemisphere due to a unique creativity that, in the best cases, make profits and ethics go hand in hand. Ricardo Young, president of the ETHOS Institute for Business and Social Responsibility, argues that many businessmen and men already have a very advanced vision. For example, they know that even if they manage to reduce water consumption per unit produced, the impact will increase if sales increase, and some even go as far as to discuss limiting production (Scharf 2008).

## 6.3 Petrobras

Petróleo Brasileiro S.A., commonly referred to as Petrobras, is a semi-public Brazilian multinational oil and energy corporation with headquarters in Rio de Janeiro. It was established by Brazilian federal government in 1953 in order to impose state monopolisation on oil exploration, production, refining, but not distribution (Dantas and Bell, 2009: 831). During early 1980s, Brazil experienced a debt crisis and this added urgency to increase oil production in deep water basins, and to produce their own unique innovations. Petrobras therefore focused efforts on catch-up technologies, and they have become pioneers of the development of deep water technologies. These efforts required collaboration, and also a significant change in collaborations as their new, specialized techniques required appropriate collaboration specialists (Dantas and Bell, 2009: 831).

The Brazilian government owns more than 50 per cent of Petrobras' common shares with voting rights, while the Brazilian Development Bank and Brazil's Sovereign Wealth Fund (Fundo Soberano) each control 5 %, bringing the state's direct and indirect ownership to 64 % ([Petrobras Capital ownership](#)).

Petrobras are present in the exploration of oil and gas; production, refining and supply of crude and oil products; and generation of electric power using renewable energy sources. Petrobras has 134 production platforms, and is considered the world's fourth largest energy company by US consultancy PFC Energy. Petrobras operates in 12 Latin American countries, including Chile, Mexico, Peru, Colombia and Bolivia, but is however currently withdrawing from the Argentine market ([BNamericas](#)).

## 6.4 The greening of Petrobras

In an article in the Harvard Business Review of March 2009, former CEO of Petrobras, José Gabrielli de Azevedo, spoke of the greening process of Petrobras after some major environmental disasters in the early 2000's. In January 2000, 350,000 gallons of crude oil leaked into the Guanabara bay near Rio de Janeiro, just three

years after the another major Petrobras spill in 1997. Due to a lack of modern sensors, oil poured out for two hours before the leak was detected. Petrobras was fined \$25 million and there were major demonstrations by local fishermen and Greenpeace activists. Six months later an even bigger leak occurred at a refinery near Curitiba, a million gallons of oil poured into rivers. Petrobras was fined \$115 million and experienced a major flood of bad press, being addressed as having “an embarrassing level of incompetence” by BBC. Then, in March of 2001 their P-36 oil platform, at the time the world's largest floating production platform, sank. 11 Petrobras employees were killed, and 300,000 gallons of oil leaked. In response to these major human and environmental disasters, from 1999 to 2001 Petrobras created a new director-level position for health safety, and environment and launched the Program for Excellence in Environmental and Operational Safety Management, called PEGASO. This was a \$4 billion initiative where more than 4000 separate projects were designed to prevent accidents (Gabrielli de Azevedo 2009).

However, a studied carried out by Bruno S. Silvestre et al. (2016), analyzed the Health, Safety and Environment Management System (HSEMS) in Petrobras to identify recommended practices for process safety management systems (PSMS) in the oil and gas industry (Silvestre et al., 2016: 1 and 8). They found that a focus on goals related to productivity and efficiency made oil companies less attentive to the health and safety of their employees as well as impact of their operations on the natural environment (Silvestre et al., 2016: 6). Another study argued that some of the most important strategy elements in Petrobras had little or nothing to do with sustainability aspects, vice-versa (Hourneaux Junior et al. 2016: 203). This study also argued that several aspects and indicators from the GRI G4 indicator list (GRI 2013) were not observed in the Petrobras Sustainability Report 2013 (Hourneaux Junior et al. 2016: 211). Interestingly they found that Social dimension, the most extensive in Petrobras Sustainability Report 2013, was also the one with most missing indicators. However, they found certain adherence to TBL (triple bottom line) concerns in Petrobras' sustainability reporting, but the focus seems to remain on compliance and legislation. The authors also observed a high importance of stakeholders (Hourneaux Junior et al. 2016: 212).

Another study, from 2007 (when Petrobras for the first time made CS an integral part of its mission and business strategy), argues that the opening of the Brazilian oil market and Luiz Inácio “Lula” da Silva’s presidential victory in 2006, as well as the global trend of a more responsible business behaviour, greatly influenced managerial decisions to pursue an intense CSR strategy. The study found that the CSR practices of Petrobras, were in fact aligned with their long term business strategy (Black, 2007:1).

## **6.5 A discussion on the role of CSR in Petrobras**

According to the arguments on the connection between CSR and innovation, a clear point has been made regarding the importance of well integrated and strategic CSR, in order to have the highest potential for innovation. It is therefore relevant to take a closer look at Petrobras’ CSR positioning, and I will do so by presenting how CSR has been reported in Petrobras, from its very first introduction in the 2007 Report, to the latest version available from the year 2015.

At a first introduced to Petrobras, through their online profile, one can immediately notice the self-proclaimed focus on social and environmental responsibility as they state that they “*undertake our activities with socio-environmental responsibility, and that is why we are among the world's most sustainable corporations. We have been listed on the Dow Jones Sustainability Index since 2006, with the spotlight on the ongoing improvement of the corporate governance practices and on the adoption of international transparency standards.*” (Petrobras 2017).

The Dow Jones Sustainability Index (DJSI) identifies companies that are that “*are best equipped to recognize and respond to emerging opportunities and risks resulting from global sustainability trend*” (DJSI 2017), and it is thus a solid indication that Petrobras is indeed an efficient adapter of sustainability trends.

The fact that Petrobras publish an Annual Sustainability Report, in addition to their Annual Report, is also an indicator of their CSR efforts, and that they take their CSR efforts serious and evaluates their own performance. One should assume that the



content of these reports are presented in a way that is beneficial for Petrobras, however, economic investments should be a reliable source of information. I will therefore present a brief overlook of their investments in CSR projects, collected from their Sustainability Reports from the years 2007, 2009, 2010, 2013 and 2015, respectively.

A sustainability report is published in order to assess a company's sustainability efforts, and it works as a tool for improving the company's sustainability index. Petrobras use the Global Reporting Initiative (GRI), the most common global framework setting parameters for sustainability reporting (GRI Guidelines 2017). For environmental management, they use the ISO (International Organization for Standardization) 14001 standard (ISO 2017), and for health and safety management they use the OHSAS 18001 (SAI Global 2017), in addition to internal procedures and guidelines (Petrobras Sustainability Report 2012: 33) and through the ten principles of the UN Global Compact that Petrobras incorporated in 2003 (Social and Environmental Report, 2007: 3).

The first Sustainability Report from 2007, then called the Social and Environmental Report, starts off with a quote from former CEO, José Sergio Gabrielli De Azevedo: *“The Petrobras challenge is now to become an international benchmark in social responsibility for business management, contributing to sustainable development”* (Social and Environmental Report, 2007: 1).

Petrobras invested R\$ 585.8 million (186.3 million USD) in cultural, environmental and social and sport projects in 2007, and they presented the aim of the Petrobras Citizenship and Development social program, to invest R\$ 1.3 billion by 2012 in *“projects that contribute to reducing poverty and social inequality in Brazil”* (Social and Environmental Report, 2007: 3).

The CSR-investments from 2007 are high, and the CSR focus is also incorporated into their business strategy, yet, the type of projects invested in could be characterized as what some scholars refers to as “soft CSR”, that is, CSR activities that could be better described as philanthropic donation/charity and it is not an advanced mode of strategic CSR. However, its seems to be a future objective to align CSR to their

business strategy, and focus more on stakeholder interaction: “...main tasks are to create Social Responsibility (SR) corporate guidelines and strategies, including aspects of stakeholder relations” (Social and Environmental Report, 2007: 16).

In 2009, Petrobras published both the Annual Report and the Social and Environmental Report in one single publication, arguing that “*To Petrobras, the Sustainability Report is an essential tool for transparency in monitoring, disclosing, and rendering accounts to its stakeholders about economic, environmental and social performance* (Social and Environmental Report, 2009: 4). This demonstrates the shift to a more integrated CSR agenda, where the CSR efforts are in fact presented along the same lines as their overall annual performance.

In 2009, the total investments in cultural, social, environmental and sports projects are amounted to R\$ 464.5 million in 2009 (Sustainability report, 2009: 1), a little less than in 2007. Petrobras started the production in the Pre-Salt layer in the Santos Basin in 2009, and this also marks the year where the Department of Health, Environment and Safety was created to improve workers’ conditions, especially in reducing accidents and occupational hazards. The social investment fund focused much of their resources in the areas of income generation and job opportunity, training and education for qualified professionals. When it comes to energy efficiency and sustainable development projects, much attention was given to implementation of sustainability projects at various stages of oil extraction and environmental projects in the Amazon. At the exploration and production stage, most attention is on developing clean technology and reduction of residues, and some outcomes from the long-term environmental strategy have been the implementation of a maximum admissible limit (MAL) for its solid residue generation and water reuse in the refineries in São Paulo (Nem Singh 2010).

The 2010 Sustainability Report, printed for the first time on Vitopaper (recycled plastic), shows quite an increase in total investments in its external social, cultural, environmental and sports projects: R\$ 707.8 million. Investments in environmental projects alone amounted to R \$ 257.7 million, a tremendous increase from all earlier years: R\$ 44.6, R\$ 51.7, R\$ 53.8 and R\$ 93.9 in respectively 2006 till 2009. The high

investment on environmental projects in 2010 is concentrated on operational processes.

Oil leaks, energy consumption and greenhouse gas emissions, increased in 2010. Petrobras aims at maximising energy efficiency and reduce greenhouse emissions, by aiming to invest R\$ 976 million on these areas between 2010 and 2015. From 2006 till 2010, they have invested R\$ 404 million on reducing emissions and energy efficiency. In 2010, Petrobras had some oil production spillages, amounting to 668m<sup>2</sup> in 2010, compared to 254 m<sup>2</sup> in 2009 (Petrobras Sustainability Report 2013: 3).

Investments in cultural and social projects increased in 2013, especially investments in social projects: Petrobras invested R\$ 391 million in 2013, compared to R\$ 201 million in 2012 and R\$199 in 2010 (Petrobras Sustainability Report 2013: 3). They plan on spending R\$ 4.5 million on R&D in a time span of five years (2012-2017) . *Sales revenues also went up in 2013, in addition to R&D investments, amounting to R\$ 304.890 and R\$ 2.4 billion respectively (Petrobras Sustainability Report 2013: 17)*

It is clear that the role of CSR has become more strategic element, and is presented as part of core business values in Petrobras, from the year span 2007 till 2015. In 2009, the sustainability report and annual report is presented in one single publication an indication of a view of CSR efforts as an integrated part of the evaluation of the overall performance of the corporation. This marks a shift to strategic CSR in Petrobras. Then, in 2010, environmental investments reach an all time high, and R&D is given its own chapter in the sustainability report, unlike in 2007 and 2008.

Petrobras has had a general, steady growth in sales revenue since 2007, reaching its peak in 2015. However, in 2014, the year when the Petrobras corruption was exposed, they experience their first net loss of R\$ 21.6 billion. Then, in 2015, an even bigger loss is reported in the sustainability report: R\$ 34.8 billion, partly due to low oil prices, and in part because of the corruption scandal that leaked in 2014 (Gillespie 2016). The loss reflects a result of -11% net margin (Petrobras Sustainability Report 2015: 3). Petrobras still had a solid investment in R&D in 2015, a total of R\$ 2 billion (Sustainability Report 2015: 27). The financial loss continued in 2016, but production grew (Donovan 2016), and plans to invest in strategic partnerships in 2017 and 2018

(Forbes 2016a).

## **6.6 Combining CSR and innovation in Petrobras**

This section discusses the dynamics between CSR and innovation in Petrobras by looking at certain CSR efforts from Petrobras' 2015 Sustainability Report. In addition, three separate academic studies on Petrobras and their stakeholder relations are added to the discussion. I will then discuss whether the dynamics found in the previous discussion on CSR and innovation at concept level in chapter 2.7, can be found in the potential connection between CSR and innovation in the case of Petrobras.

In 2015, Petrobras won their third OTC (Offshore Technology Conference) Distinguished Achievement Awards for Companies, Organizations, and Institutions (OTC 2017) for their technology developments for oil and gas production in the pre-salt layer of the Brazilian coast, the highest award an oil company can be given (Petrobras magazine 2015), making it reasonable to claim that Petrobras is a highly innovative company.

In addition, I have argued that is evident that CSR is given a great deal of attention in Petrobras, to the point where it is perceived as an integrated and strategic mode of CSR. Other researches have also acknowledge Petrobras' commitment to CSR efforts (Paes 2012, Martins et. al 2013). Their values highlights *ethics and transparency*, and *respect for life, people and environment* (Strategic Plan and Business and Management Plan 2017-2021: 14,15), and strategic CSR demands that CSR is part of the core business value. The annual publication of a sustainability report, and the vast investments on CSR projects (social, environmental and cultural projects) further indicated its economic commitments to their CSR values. Major environmental accidents by Petrobras was one of the pressing reasons for Petrobras to start their "greening" process.

Innovation is also part of Petrobras' vision for their company identity, as they state

that they want to be “*An integrated energy company focused on oil and gas that evolve with society, creating high value, with a unique technical capability*” (Strategic Plan and Business and Management Plan 2017-2021:14). Major R&D investments (R\$ 2 billion in 2015) and three OTC awards, indicated Petrobras’ commitment to innovation.

In the 2015 Sustainability report, Petrobras presents their efforts in providing a consistent communication with their stakeholders. When it comes to their customers, they keep a permanent dialogue with them “*...through meetings and periodic visits in order to improve business and technical relationship*”. Further, they state that they then realized that there was a “*... need to innovate and improve the internal process management...*” (Petrobras Sustainability Report 2015: 25). This is an example of how a CSR effort (it is a CSR effort because it meets the stakeholders’ need for an inclusive dialogue) led to the realization for Petrobras, that there was a need to innovate and improve their internal process management, an observation that could have risked not being detected if they did not invest efforts in valuable stakeholder interaction. It is therefore an explicit example on how CSR, in practice, led to process innovation (if, in fact, the new and improved process was implemented by Petrobras). However, that is not to say that if a firm puts forth a CSR effort it will automatically lead to innovation. Still, it is an indication of how the overlapping areas of interest - the sustainability sweet spot - can provide starting points for innovation (Grieshuber 2013), and that these areas can be detected from following CSR guidelines in regards to stakeholder interaction. Once the potential opportunities for innovation are detected, like with any other innovation, the corporation needs to be able to take advantage of these - often unintended - consequences of CSR, and manage to incorporate them into the innovation process. This example also demonstrates one of the directions between CSR and innovation: this is CSR principles leading to the innovation outcome. CSR acts here as the catalyzer for detecting the social *need-pull*, and this pull will enable the innovation process together with the knowledge push, in that in this case would come from management evaluators.

A technology highlight that Petrobras introduced in 2015, was a new technique that managed to separate CO<sub>2</sub> from the oil and gas found in pre-salt wells. Once the CO<sub>2</sub> is separated, it can be re-injected and thus avoiding its emission to the atmosphere (Petrobras Sustainability Report 2015: 28). CSR is about going beyond compliance with the law, and there is often national regulatory restrictions on CO<sub>2</sub> emissions. However, Brazil (together with other developing countries) are not facing restriction on their national emissions by the Kyoto protocol (Climate Change News 2015). Therefore, efforts on reducing CO<sub>2</sub> emissions made by Petrobras is here characterized as CSR efforts, because it suggests that Petrobras goes beyond compliance with the law in order to reduce its CO<sub>2</sub> emissions. The new technique on oil extraction is an innovation with an environmental output, and it is an innovation precisely because it avoids emitting CO<sub>2</sub> into the atmosphere. It is however difficult to justify the connection between innovation and CSR in this example, because it could have been any other technique specialized at combating any other challenge. Still, it does indicate how much reducing emissions is driving Petrobras to develop innovative techniques, and it is an indication on how Petrobras reacts to stakeholder needs. Petrobras is not an exception to the scrutiny today's oil and gas companies experience from external stakeholders such as NGOs, activist groups and grass-root organisations. They are aware of the pressure of behaving as environmentally responsible. This raises an interesting observation on the well managed “exploitation” of external stakeholder need: Petrobras has taken the pressure of behaving responsibly to their advantage, and they use it as their motivation in order to capitalize on climate change issues, and gain competitive advantage in the oil and gas industry. Petrobras had ten award-winning innovations (innovations focused on cutting emissions through new technologies in pre-salt layer production) at the Offshore Technology Conference (OTC) (Petrobras Sustainability Report 2015: 28). Innovations are often a result of challenges. It can be minor challenges, such as customer complaints on the lack of an esthetic design of a product, and this stakeholder information could push the corporation to innovate their product design, or make incremental improvements. Climate change is the biggest challenge the world face today. Innovations that manage to respond to the social need for a better and more sustainable development of our environment, would be rewarded at the same level as the challenge they combat,

represents. Here lies the potential for disruptive innovation, that could change the oil and gas industry. Innovation is often most available when real challenges are present, such as in the case of the oil industry today. In the major obstacles that the oil industry is facing, lies therefore the need to drastically innovate. In the context in which oil and gas companies operate, lies as well a social need, and demand, for a more sustainable environmental behaviour from oil companies. These two needs could pull the technology knowledge in this highly technical industry to new dimensions that could potentially change the entire industry. Disruptive innovation create new markets, and perhaps opportunities for a more sustainable future for oil and gas industries lies precisely in these future markets. Innovation in other sectors will also affect the future for oil and gas companies, and and threaten their existing position (Ghouri 2016). (2016). It is therefore in many ways a question of strategically orienting themselves towards being an early adaptor or even the source of creative destruction, and avoid being a late laggard.

An analysis of stakeholders' influence on Petrobras' environmental strategies from 2012, managed to identify a relevant influence of stakeholders on the definition of Petrobras' environmental strategies. The authors also found that it was important for Petrobras to have a good reputation among their stakeholders. The study identified the most important stakeholders in relation to Petrobras' climate change strategies to be regulatory institutions, Brazil's government, community groups, suppliers and the media (to a lesser extent) (Paes, 2012: 86). However, In 2014 another analysis of Petrobras shows how a lack of commitment from Petrobras to engage with local farmers resulted in less innovation for Petrobras. The study argue that Petrobras had an intention of improving the relationship between small-scale farmers and their refineries though a new program. The aim was to built a more inclusive collaborative model through increased participation, where the small-scale farmers were the central stakeholders (C. Zapata *et al.*, in Vazquez-Brust *et al.*, 2014: 28, 290). Petrobras began to deal directly with the farmers and several contracts were signed with the farmers to pay a minimum price for castor beans, and they also included the use of diverse biodiesel sources, both sunflower and cotton - this in order to engage more

farmers. Collaborative agreements were made between policy-makers, Petrobras and grass-root representatives of the farmers, in order to shape the program. This would provide the political and economic incentives for its implementation.

Despite these efforts, both institutional and socio-technical innovation failed to take off. The analysis suggested that the main cause of this result was the unwillingness from Petrobras' technical staff to engage with the farmers perspective, and this resulted in disappointing income generation, social inclusion, biodiversity loss and deforestation. They point to the lack of direct engagement of farmers in the design of the program and that the dominance of institutional and cultural arrangements ended up excluding the farmers and inhibiting the collaboration to take off. The authors therefore emphasised the need for a policy intervention and that Petrobras should promote a more inclusive and sustainable modes of collaborations, based on repeated interactions between Petrobras and the stakeholders, building trust and a common understanding on the course of action (C. Zapata *et al.*, in Vazquez-Brust *et al.*, 2014: 291). This study shows the stakeholder dynamic in the CSR-innovation connection, where the sophisticated stakeholder interaction is of great value, or more precisely in his case, how a lack of sophisticated stakeholder interaction can result in less innovation. The study is also an indication of how benefits from CSR could be missed when they are not properly incorporated into management strategies, and thus overlooked. It is therefore also an indication of the importance of enabling management decisions in detecting and measuring the potential added values from CSR strategies, in order to understand the potential benefits from CSR efforts and thus enabling corporate incentive to pursue strategic CSR.

Another study from 2009 demonstrates how Petrobras experienced various qualitative shifts in its knowledge network and firm-centered knowledge when they made several changes in their decision-making process, associated with the company's use of knowledge networks. The study found that these changes were made increasingly more intentional by Petrobras (Dantas and Bell, 2009: 838). At first, the knowledge accumulation in the networks was a mere by-product from services. It then became integrated into the management perspectives that focused explicitly on using these networks to achieve knowledge accumulation and innovation. These changes made the knowledge network more complex and diverse, as well



did the technological accumulations within the network. The direction and content of the knowledge flows became more diverse, and the sources of knowledge moved from what at first was only concentrated on suppliers, to a wider set of knowledge sources such as academic and technology institutions, and the company itself. This shift resulted in a more diverse, balanced and complementary knowledge production, resulting in a collaborative knowledge production of different technologies and strategic significance for the company (Dantas and Bell, 2009: 838-839). The findings in this study shows how Petrobras was able to make use of external knowledge, and incorporate this knowledge into the knowledge production process within Petrobras, indicating the “absorptive capacity” within Petrobras. In doing so, the knowledge production becomes more valuable for Petrobras. Firm-specific knowledge could constrain innovation, because it leads to routines that again constrain new inputs and the related developments. CSR strategies take into account these added values (or value creations or value redistributions) as they require that firms are able to measure and monitor these potential new values. Firms that are aware of the benefits from the the impact of their activities, will more likely manage to incorporate these benefits into their management decisions, and will therefore be more likely to invest in CSR practices that brings these benefits to the corporation. The value added within the firm is likely to result in innovation, because innovation processes require exploration and exploitation of opportunities for new or improved processes (for instance), and these improvements are based either on an advance in technical practice - “know-how”- and/or a change in market demand. Technical practice could be improved by incorporating external knowledge into their production processes. In addition, stakeholders’ need affect the market demand and could therefore likewise effect improvements, and the innovation process. As innovation processes are uncertain, because of the impossibility of predicting accurately the cost and the performance of a new artifact, CSR could reap outweighing benefits in terms of cost reduction, for example by urging companies to produce more from less. In addition, seeing as CSR strategies will enable the corporation to better understand the social needs of their stakeholders, it will make it easier for the firm to predict the performance of the new artifact - they are already aware of what type of need their stakeholders represent, and can thus act accordingly.

When testing the CSR-innovation connection in Petrobras, the following was found

- CSR is a strategic element in Petrobras' business, adding value in terms of innovation
- Stakeholder interaction led to the realization of the need to innovate the internal process management
- CSR acting as a social need-pull was found in Petrobras, and could thus spur the innovation process
- Developing technologies aimed at reducing emissions, is driving Petrobras to innovate
- A lack of commitment to stakeholders resulted in less innovation
- When knowledge networks in Petrobras became more collaborative, the knowledge network improved and had a positive effect on technological innovation

## 7. Conclusions and discussion

It is difficult to connect the concepts of CSR and innovation for a variety of reasons: there is a lack of a general accepted framework, thus trial and error will probably shape further development. In addition, both concepts, separately, represent a complexity in their respective body of literature where different understandings, re-evaluations, theories, perspectives, conceptualizations, approaches and frameworks, all take part in the overall understanding of the major concepts. In addition, the current research on the CSR-innovation connection is difficult to get a grasp of: different studies have made their own attempts to explore or explain the connection, and due to the conceptual complexity described above, they all differ in their interpretation. It was therefore a challenge to also connect the current literature.

From the current academic debate on the CSR-innovation relationship, there were valuable arguments made as to where one should look for clues in the innovation literature. The most obvious point was made on the important role of stakeholders, and how CSR puts stakeholders at the center. This is one facet of CSR that strongly overlaps with different innovation perspectives. It is crucial for a company to understand the needs of their customers (stakeholders) in order to improve or invent a new product, for example. A high focus on CSR could enable a company to aim their innovations at a calculated, stakeholder-specific need. However, any company that knows their customers exact need will be able to meet these needs, it is not a direct consequence of CSR. CSR could instead be understood as a tool in order to engage with stakeholders, and enhance a company's probability to pay sufficient attention to their stakeholders.

In this paper I asked the following Research Question:

- **What is the relationship between CSR and innovation in Petrobras?**

I have argued that both CSR and innovation are important concepts in Petrobras. I presented the vast financial investments by Petrobras on CSR, retrieved from their Annual Sustainability Reports in order to confirm these efforts. Seeing as Petrobras is a highly advanced, technical corporation, it is not surprising to see a high level of innovation in Petrobras. However, technologies that have an environmental output are relevant to discuss. I found that Petrobras had invested in major CO<sub>2</sub> cutting innovations, and these technologies were awarded by the OTC - the highest achievement an oil and gas company can receive. This indicates the major efforts these developments have received in Petrobras.

In addition, I found that it was possible to align theories on the CSR-innovation connection in Petrobras: I found that Petrobras' permanent (stakeholder) interaction with their customers, enabled Petrobras to detect a need for an improved, internal, management process. Stakeholder interaction thus led to the realization of a need, and therefore innovation as a response to this need. In addition, from a previous study on Petrobras, results showed that a lack of proper communication with their farmers resulted in less innovation in Petrobras. These findings thus illustrate the significance of the stakeholder-innovation connection. Further, these findings also support the theory of the "sustainability sweet spot" - the overlapping areas that provide mutual interest for both the corporation and external stakeholders, and that opportunities for innovation can be found in these areas.

Another aspect of the CSR-innovation dynamic observed when studying Petrobras, was found in their qualitative shift in its knowledge network and firm-centered knowledge. When their decision-making process allowed for a more comprehensive use of knowledge-networks, the knowledge production improved and added value on technological aspects as well. From this it was possible to draw from CSR-management literature, that firms should be aware of the benefits from strategic CSR in order to incorporate the added values from strategic CSR into management decisions. In addition, it supports the CSR-innovation connection between the uncertainty in the innovation process and the risk assessment benefits from CSR, where CSR can counterbalance the uncertainty of predicting the performance of a new

artifact, by laying a foundation for better understanding the type of external need there exists for new artifact. In addition to the *innovation process* literature, where CSR could act as both the need and pull, Open Innovation also enabled a better understanding of the CSR-innovation dynamic: the aspects of open innovation that focus on stakeholders and knowledge sharing, and a firm's ability to absorb external knowledge, are also found in the CSR-innovation connection in Petrobras.

I also argued that cutting CO2 emission is driving Petrobras to innovate, and this suggest that social, external needs - needs that are coming from stakeholders who hold Petrobras responsible for their actions - are being exploited by Petrobras and can contribute to pushing forth innovation with an environmental significance. This indicates a major innovation potential in this a new era of the oil and gas industry, and I argued that this could perhaps be observed as a beginning for a new market demand, thus raising the question of “disruptive innovation” potential.

## **7.1 Suggestions for future research**

Since CSR and innovation overlap with various terminologies and different perspectives (and often with each other) it is a challenge to actively combine them. In addition, much of the current research on the connection comes from CSR experts. I would therefore suggest for innovation experts to further develop the theories on the connection between these two concepts, and hopefully strategic and innovation-compatible CSR, can receive more attention in innovation studies in the future. Perhaps, as other authors have suggested as well, a better term that combines certain aspects of CSR and innovation should be developed, in order to avoid adding new terminologies onto an already interchangeable concept.

Lastly, the transformation of the oil and gas industry that has already started, could provide interesting observations for innovation scholars, and add an even further relevance to the Schumpeterian innovation approach.

## References

About Brazil 2017: *Corporate Social Responsibility in Brazil*

[http://www.aboutbrasil.com/modules/brazil-brasil/business\\_brasil\\_business\\_brazil.php?hoofd=2&sub=9&art=1389](http://www.aboutbrasil.com/modules/brazil-brasil/business_brasil_business_brazil.php?hoofd=2&sub=9&art=1389)

Asongu, J.J., 2007, Innovation as an Argument for Corporate Social Responsibility in *Journal of Business and Public Policy* (ISSN: 1936-9794) Volume 1, Number 3 (Summer 2007)

Black, John, (2007): *Petrobras*, available here:

[https://gps.ucsd.edu/\\_files/faculty/gourevitch/gourevitch\\_research\\_black.pdf](https://gps.ucsd.edu/_files/faculty/gourevitch/gourevitch_research_black.pdf)

Burke, L., & Logsdon, J. M. (1996). *How corporate social responsibility pays off*. *Long Range Planning*, 29(4), 495-502.

Carroll, A. (1991): The Pyramid of Corporate Social Responsibility: Toward the Moral Management of Organizational Stakeholders, in *Business Horizons*, July – August

Carroll, Archie B.(1999): Corporate Social Responsibility, Evolution of a Definitional Construct in *Business and Society*, Vol. 38 No. 3, September 268-295, 1999 Sage Publications, Inc., University of Georgia

Climate Change News, (2015): *Kyoto Protocol: 10 years of the world's first climate change treaty*.

<http://www.climatechangenews.com/2015/02/16/kyoto-protocol-10-years-of-the-worlds-first-climate-change-treaty/>

Gillespie, P. (2016): Brazil's oil giant loses billions amid corruption scandal. *CNN MoneyInvest*. March 21.

<http://money.cnn.com/2016/03/21/investing/petrobras-brazil-oil-scandal/>

Crets, Stefan, Celer, James, (2013): *The Interdependence of CSR and Social Innovation*, Springer-Verlag Berlin Heidelberg 2013

Dantas, Eva, Bell, Martin, (2009): Latecomer firms and the emergence and development of knowledge networks: The case of Petrobras in Brazil, in *Research Policy* 38 (2009), Elsevier B.V

D'Arcy, Paul, J., 2013, Tesla Model S: The Disruptive Marketing of an Electric Car in *Science of Revenue* January 20

David B. Spence, (2011): *Corporate Social Responsibility in the Oil and Gas Industry: The Importance of Reputational Risk*, 86 Chi.-Kent. L. Rev. 59 (2011). Available at: <http://scholarship.kentlaw.iit.edu/cklawreview/vol86/iss1/4>.

Dierkes, Meinolf; Berthoin Antal, Ariane, (1986): Whither corporate social reporting: is it time to legislate?, *California management review*, ISSN 0008-1256, Haas School of Business, University of California, Berkeley, Calif, Vol. 28, Iss. 3, pp. 106-121

DJSI(2017): *Corporate Sustainability*.

<http://www.sustainability-indices.com/sustainability-assessment/corporate-sustainability.jsp>

Donovan, P. (2016): Petrobras 3Q Loss \$5.4B, or 82 Cents a Share (PBR), *Investopedia*, November

<http://www.investopedia.com/news/petrobras-3q-loss-54b-or-82-cents-share-pbr/>

European Commission, (2017): *Corporate Social Responsibility (CSR)*,

[http://ec.europa.eu/growth/industry/corporate-social-responsibility/index\\_en.htm](http://ec.europa.eu/growth/industry/corporate-social-responsibility/index_en.htm)

Fagerberg, J., D.C. Mowery, and R.R Nelson. (2013): Systems of Innovation: Perspectives and Challenges, in *The Oxford Handbook of Innovation*. New York, Oxford University Press

Fagerberg, Jan. 2009, A Guide to Schumpeter in *Research Gate*, February 2009, available

[https://www.researchgate.net/publication/270794018\\_A\\_Guide\\_to\\_Schumpeter](https://www.researchgate.net/publication/270794018_A_Guide_to_Schumpeter)

Fagerberg, Jan. 2013. Innovation - a New Guide. Version of August 28

Forbes, 2016 b: What Are The Odds Brazil Loses Another President? Dec 12.

<https://www.forbes.com/sites/kenrapoza/2016/12/12/brazil-odebrecht-lavajato-petrobras-temer/#6b8660a86989>

Forbes 2016 a: A Look At Petrobras' Capital Allocation Strategy, Forbes Nov. 22

<https://www.forbes.com/sites/greatspeculations/2016/11/22/a-look-at-petrobras-capital-allocation-strategy/#83e19eb1c962>

Friedman, M. 1970. The Social Responsibility of Business Is to Increase Profits. *New York Times Magazine*, September.

Freeman, R.E. 1984. *Strategic Management: A Stakeholder Approach*. Boston: Pitman.

Gabrielli de Azevedo, J. S. (2009): The Greening of Petrobras, *Harvard Business Review*, March. <https://hbr.org/2009/03/the-greening-of-petrobras>

Gallego-Alvarez, I., Prado-Lorenzo J. M., & Garcia-Sanchez, I-M. (2011): Corporate social responsibility and innovation: A resource-based theory. *Management Decision*, 49(10), 1709-1727.

Global Sherpa (2017): *Brazil – Country Profile, News and Original Articles*.

<http://globalsherpa.org/brazil-brasil/>

GRI2017: *Sustainability Reporting Guidelines*

<https://www.globalreporting.org/resource/library/G3.1-Guidelines-Incl-Technical-Protocol.pdf>

Grieshuber, Eva, (2013): Innovation Through Corporate Social Responsibility? In *Social Innovation* (3), Springer-Verlag Berlin Heidelberg

Ghouri, S. (2016): The Oil Industry Needs To Change Its Strategy Fast. *Oilprice.com*, June 24, 2016. [link](#)

Hockerts, K., and M. Morsing. 2008. "A Literature Review on Corporate Social Responsibility in the Innovation Process." Copenhagen Business School (CBS), Center for Corporate Social Responsibility.

Horneaux Junior, Flavio et al. (2016): Strategic aspects in sustainability reporting in oil & gas industry: The comparative case-study of Brazilian Petrobras and Spanish Repsol, in *Ecological Indicators* 72, Elsevier

Ischool 1997: *The Case Study as a Research Method. Uses and Users of Information*. LIS 391D.2, Spring, <https://www.ischool.utexas.edu/~ssoy/usesusers/1391d1b.htm>

ISO 2017: *ISO 14000 family - Environmental management*.

<https://www.iso.org/iso-14001-environmental-management.html>

Lewis, John Kennedy, (2016): *Corporate Social Responsibility/Sustainability Reporting among the Fortune Global 250: Greenwashing or Green Supply Chain?* (January 10 ). Available at SSRN: <https://ssrn.com/abstract=2850721>.

London, Manuel, (2012): "CSR partnership initiatives: Opportunities for innovation and generative learning." *Organizational Dynamics* 41.3. 220-229.

MacGregor, Steven. P. Fontrodona, Joan, (2008): *Exploring the fit between CSR and Innovation*, 2008 IESE Business School

Martins, Celina Maria Leal, Prevot, Rejane Nascimento, Barros, Franca Denise, (2013): CSR practice and its 'Objects': An Analysis from a Bourdieu Perspective in *Academy of Management Proceedings, Vol. 2013. No 1. Academy of Management, 2013*

Midttun, A. (2013a): *CSR and Beyond. A Nordic Perspective*. Cappelen Damm. Oslo

Midttun, A. (2013b): CSR innovasjon og verdiskaping. *Magma*: [2/2013](#) p. (47-61)

Moir, L. 2001. "What Do We Mean by Corporate Social Responsibility?" *Corporate Governance* 11 (2): 16–22.



[Mortensen, Peter Stendahl](#); [Bloch, Carter Walter](#) ; [Core group on the revision](#) ,(2005): *Oslo Manual - Guidelines for Collecting and Interpreting Innovation Data, 3rd edition. Proposed Guidelines for Collecting and Interpreting Innovation Data.* OECD. <http://www.forskningsdatabasen.dk/en/catalog/2186092207>.

Nem Singh, J. T. (2010): Petrobrás Intensifies CSR Agenda. The Rio Times July 27th:

<http://riotimesonline.com/brazil-news/rio-business/petrobras-intensifies-csr-agenda/>

Netherlands Enterprise Agency (2016): *Corporate Social Responsibility in Brazil.* <https://www.rvo.nl/sites/default/files/2016/11/Factsheet-CSR-Brazil.pdf>

Offshore energy today, (2017: *Investors sue Petrobras over losses caused by corruption.* Offshore energy today Jan. 24

<http://www.offshoreenergytoday.com/investors-sue-petrobras-over-losses-caused-by-corrupcion/>

Osburg, Thomas. 2013. Social Innovation to Drive Corporate Sustainability. T. Osburg and R. Schmidpeter (eds.), Social Innovation, CSR, Sustainability, 13 *Ethics & Governance*, DOI 10.1007/978-3-642-36540-9\_2, Springer-Verlag Berlin Heidelberg 2013

OTC 2017: OTC Distinguished Achievement Awards for Companies, Organizations, and Institutions.

<http://www.otcnet.org/Content/OTC-Distinguished-Achievement-Awards-for-Companies-Organizations-and-Institutions>

Paes. Henrique de Cerqueira, 2012: Investigation into Stakeholders' Influence on the Environmental Strategies of Oil Companies - A Case Study of Petrobras, in Online *Journal of Communication and Media Technologies* Volume: 2, Issue: 3, July, 2012

Petrobras Sustainability Report 2007: [Sustainability Report - Petrobras](#)

Petrobras Sustainability Report 2008: [Sustainability Report - Petrobras](#)

Petrobras Sustainability Report 2009: [Sustainability - Petrobras](#)

Petrobras Sustainability Report 2010: [Sustainability Report - Petrobras](#)

Petrobras Sustainability Report 2013: [Sustainability Report 2013 - Petrobras](#)

Petrobras Sustainability Report 2015: [Sustainability Report: Check out our Performance - Petrobras](#)

Petrobras (2017): Strategic Plan and Business and Management Plan 2017-2021: <http://www.petrobras.com.br/en/about-us/strategy/business-and-management-plan/>

Petrobras, (2015): *Petrobras receives highest award in global oil industry magazine.* Petrobras Magazine.

<http://www.petrobras.com/en/magazine/post/petrobras-receives-highest-award-in-global-oil-industry.htm>

Petrobras 2017 : <http://www.petrobras.com/en/about-us/>

Porter, M. E., & Kramer, M. R. (2011). Creating shared value. *Harvard Business Review*, 89(1/2), 62–77.

Preuss, L. (2011): *Innovative CSR: A Framework for Anchoring Corporate Social Responsibility in the Innovation Literature*. *Journal of Corporate Citizenship* 42 (Summer): 17–33

Rahim, Mia Mahmudur. 2013. *Corporate Social Responsibility, Corporate Governance and Corporate Regulation*, Cap. 2 in *Legal Regulation of Corporate Social Responsibility. A Meta-Regulation Approach of Law for Raising CSR in a Weak Economy*, page 13-46, Springer-Verlag Berlin Heidelberg

Russo, Angeloantonio. Tencati, Antonio. Quaglia, Victoria. 2008 Academic paper: Unintended consequences of CSR: Protectionism and collateral damage in global supply chains: The case of Vietnam. *Corporate Governance International Journal of Business in Society* 8(4) August 2008

Russo, Angeloantonio. Perrini, Francesco (2009): Investigating Stakeholder Theory and Social Capital: CSR in large firms and SMEs. in *Journal of Business Ethics*, January 2010, Volume 91, Issue 2, pp 207–221

SAI Global 2017: <https://www.saiglobal.com/Assurance/ohs/OHSAS18001.htm>

Scharf. R. (2008): Why Brazil Leads the Region in CSR. *Americas Quarterly* Winter 2008: <http://www.americasquarterly.org/node/288> From issue: Corporate Social Responsibility, Winter 2008

Silvestre, B. S., et al. (2016): A sustainability paradox? Sustainable operations in the offshore oil and gas industry: The case of Petrobras, in *Journal of Cleaner Production* (2016), <http://dx.doi.org/10.2016/j.jclepro.2016.07.215>

Schmidt, Glen M., Druehl, Cheryl T., 2008, When Is a Disruptive Innovation Disruptive?, in *The Journal Of Product Innovation Management*, Volume 25, Issue 4 July 2008, Pages 347–369

Schumpeter, Joseph A., 1939, *Business Cycles. A Theoretical, Historical and Statistical Analysis of the Capitalist Process*. New York Toronto London : McGraw-Hill Book Company, 1939, 461 pp. Abridged, with an introduction, by Rendigs Fels

Stigson, Björn. 1996, *Eco-efficiency as the Business Norm for the 21st Century: The Challenge to Industry and Government*, in *The Brown Journal of World Affairs*, Vol. 3, No. 2 (Summer / Fall 1996), pp. 289- 297

Stigson, B. (2002): Pillars of Change: Business Is Finally Learning That Taking Care of the Environment and Meeting Social Responsibilities Makes Good Business Sense, *Forum for Applied Research and Public Policy* 16 (4): 23

Telesur (2016): [Analysis](http://www.telesur.tv/english/analysis/What-You-Need-to-Know-About-Brazils-Petrobras-Scandal-20160313-0012.html). *What You Need to Know About Brazil's Petrobras Scandal*. March 2106.  
<http://www.telesur.tv/english/analysis/What-You-Need-to-Know-About-Brazils-Petrobras-Scandal-20160313-0012.html>

Tidd, J., and J. Bessant. (2013): *Managing Innovation. Integrating Technological, Market and Organizational Change*. West Sussex: Wiley

Vazquez-Brust. Diego A, Sarkis. Joseph, J. James, (2014): *Collaboration for Sustainability and Innovation: A Role For Sustainability Driven by the Global South? A Cross-Border, Multi-Stakeholder Perspective*, Springer Dordrecht Heidelberg New York London

Weber, Manuela, 2008: The business case for corporate social responsibility: A company-level measurement approach for CSR, *European Management Journal*, Volume 26, Issue 4, Pages 247-261

