



JÖNKÖPING INTERNATIONAL  
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# Accounting for Climate Change

Incorporating Externalities due to CO<sub>2</sub> Emissions into Financial Statements

Civilekonom Thesis in Business Administration

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Subject terms: Climate Change, Externalities, Full Cost Accounting, Sustainability Reporting

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## Abstract

The full cost of climate change is not accounted for in today's financial reporting. Today's sustainability reporting mainly consists of disclosures which do not affect any financial statement. If externalities were accounted for it would help stakeholders become aware of companies' true sustainability.

The purpose of this thesis is to identify and describe ways for companies to account for their climate impact, in general and by incorporating externalities into the financial statements. A qualitative method is used in the form of a descriptive case study with a Swedish perspective. The study is based on interviews with accountants and company representatives who work actively with sustainability reporting issues.

The main finding of the study is that the best way to account for negative externalities is to use full cost accounting. However, it is difficult to use in practice since monetising externalities is difficult. The currently most used frameworks (the GRI guidelines and the GHG Protocol) account for externalities to some extent, but have no connection to financial reporting. An evolving framework within integrated reporting has the potential to increase the connection between the current disclosures in sustainability reports and financial reporting. So far the best solution to account for externalities is to separately account for taxes, fees and cap-and-trade since externalities are internalised in these costs.

The effects of accounting for negative externalities will differ depending on the degree of climate impact the company has. It will also depend on how far down the value-chain emissions are accounted for. It will nevertheless be an incentive to reduce climate impact and act as a management tool.

# Civilekonomuppsats inom Företagsekonomi

Titel:	Att redovisa klimatförändringar – Redovisning av externaliteter orsakade av koldioxidutsläpp i de finansiella rapporterna
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Datum:	Maj 2012
Sökord:	Externaliteter, full cost accounting, hållbarhetsredovisning, klimatförändringar

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## Sammanfattning

Den fulla kostnaden av klimatförändringar redovisas inte i dagens finansiella redovisning. Dagens hållbarhetsredovisning består mestadels av upplysningar som inte påverkar några finansiella rapporter. Om externaliteter redovisades skulle det hjälpa intressenter att bli medvetna om företags verkliga hållbarhet.

Syftet med uppsatsen är att identifiera och beskriva sätt för företag att redovisa sin klimatpåverkan. Både generellt och i de finansiella rapporterna. En kvalitativ metod används i form av en beskrivande fallstudie med svenskt perspektiv. Studien är baserad på intervjuer med redovisningskonsulter och företagsrepresentanter som arbetar aktivt med frågor som rör hållbarhetsredovisning.

Den viktigaste slutsatsen av studien är att det bästa sättet att redovisa negativa externaliteter är att använda full cost accounting. Dock är det svårt att använda i praktiken eftersom det är svårt att monetarisera externaliteter. De för närvarande mest använda ramverken (GRIs riktlinjer och GHG Protocol) inkluderar till viss del externaliteter, men har ingen koppling till finansiella rapporter. Ett ramverk inom integrerad rapportering är under utveckling och det kan potentiellt öka kopplingen mellan upplysningarna i hållbarhetsredovisningar och finansiell rapportering. Den hittills bästa lösningen för att redovisa externaliteter är att separat redovisa miljöskatter, avgifter och handel med utsläppsrätter eftersom externaliteter internaliseras i dessa kostnader.

Effekterna av att redovisa negativa externaliteter kommer att bero på företagets grad av klimatpåverkan. Det kommer också att bero på hur långt ner i värdekedjan utsläpp redovisas. Det kommer oavsett att bli ett incitament för att minska klimatpåverkan och fungera som ett verktyg för förvaltning och styrning av företaget.

## **Abbreviations**

**AA1000** – AccountAbility1000

**CO<sub>2</sub>** – Carbon Dioxide

**EU ETS** – European Union Emissions Trading System

**GHG Protocol** – Greenhouse Gas Protocol Initiative

**GRI** – Global Reporting Initiative

**IASB** – International Accounting Standards Board

**IFRS** – International Financial Reporting Standards

**TBL** – Triple Bottom Line

## **Definitions**

**Cap-and-Trade** – Emission trading system where an emission limit (cap) is set and each company or country is assigned an emission permit by the government.

**Negative Externality** – A damage cost borne by someone other than the one responsible for the damage.

**Scope 3** – All indirect emissions connected to a company besides the ones from generated electricity that the company has purchased. The indirect emissions are connected to the company, however they occur from sources that are not owned nor controlled by the company.

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# I Introduction

## I.1 Background

Climate change is one of the main challenges currently facing the world's population. The problem is complex since it is not present but future generations that will experience the full effects of global warming. This prolongs the time before required action is taken (Weber, 2006). Drivers of climate change are emissions of greenhouse gases, the main greenhouse gas being carbon dioxide (CO<sub>2</sub>) (Van Kooten, 2004). Greenhouse gases are associated with economic activities including energy, industry, transport and land use (Stern, 2007).

Companies account for the main part of economic activity and hence they are the largest contributors to climate change. Examples of industries which are emission intensive and hence have the largest impact on the climate are energy, natural resources, transport, forestry, pulp and paper (KPMG, 2011). When companies calculate profits they only use private costs (Bebbington & Gray, 2001). Private costs of climate change include waste management, permit fees, legal costs and fines, and environmental training (IFAC, 1998). These costs are accounted for in companies' financial statements. However there are social and environmental costs excluded in the calculations, referred to as negative externalities (Bebbington & Gray, 2001). A negative externality is a damage cost borne by someone other than the one responsible for the damage. Global warming due to CO<sub>2</sub> emissions is an example of a negative externality which threatens the basic elements of life. If global temperature continues to rise it will have devastating consequences. It will lead to destruction of eco-systems, decreased diversity of species, disappearance of water availability, health related problems (such as malaria, diarrhoea, and malnutrition) and melting of the polar ice, which in turn will cause coastal flooding (Stern, 2007). Besides contribution to global warming, CO<sub>2</sub> emissions generate negative externalities such as depletion of natural resources and uncompensated health effects (such as asthma) and residual air and water emissions (IFAC, 1998).

The current market equilibrium, called the business as usual level, is the profit maximisation point for companies. If negative externalities are included in the calculations and if continuing at the business as usual level the equilibrium point will be inefficient (Chang, Chen, Shieh & Lai, 2009). Even though the business as usual level is the optimal level for



profit maximisation for companies it is not the social efficient level. At the business as usual level society bears a part of the cost of companies' inputs, e.g. the clean air that it pollutes (Stern, 2007). At the Copenhagen Summit of 2009 (COP15) it was concluded that a 2°C increase in global temperature is the limit for avoiding crucial levels of climate change (UNFCCC, 2009). In the middle of 2011, this meant that global temperature could increase an additional 1,2°C (Anderson, 2011). The United Nations (UN) Framework Convention on Climate Change present in their accord from 2009 that the objective is nearly impossible to achieve with the current rate at which the world's population emits greenhouse gases. To increase the possibility of not exceeding the 2°C limit industrialised countries are especially targeted to reduce their greenhouse gas emissions (UNFCCC, 2009).

The lack of focus on long-term sustainability has created a market that is good at stimulating innovation and meeting immediate customer needs. However, issues such as global warming have been left unsolved (IISD, 2007). One of the reasons why the issue of climate change has not yet been solved is that it is difficult to estimate how fast abatement of CO<sub>2</sub> emissions should progress. There are both costs and benefits associated with abatement which are unequally distributed among countries. The most serious impact of climate change will affect some of the world's poorest and developing countries. The cost of climate change is difficult to estimate. In an attempt to estimate the cost of climate change the economist Sir Nicholas Stern approximated the cost to be around one percent of global Gross Domestic Product (GDP), if strong actions are taken now. As the concentration of CO<sub>2</sub> grows larger the cost will increase rapidly. If actions are not taken now the cost of climate change will lead to an annual loss of between 5–20 percent of global GDP (Stern, 2007).

The full cost of emissions is not immediate or even likely to be borne by the emitter; it will be borne by future generations. This leads to low incentives for companies to compensate for climate change and the market will not “correct” itself. Government intervention has been the tool so far to combat climate change. Taxes, quotas and emission trading systems are the most common interventions. The impacts of climate change are beyond environmental; global warming interacts with market failures and other economic dynamics. Therefore it increases the difficulty in policy making (Stern, 2007).

Since the 1980's the market has developed at a high rate whilst the level of government intervention has not really been enough. In the late 1980's non-governmental organisations

started to put pressure on market participants and the non-financial reporting regarding sustainability; sustainability reporting, was developed (Kolk, 2003). Although there is no generally accepted definition of sustainability reporting (Ball, Broadbent & Jarvis, 2006; Maddocks, 2011), the Global Reporting Initiative (GRI) has provided a definition that explains the concept as “the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organizational performance” (GRI, 2011a, p. 3).

The increased environmental awareness has changed the view and role of companies in society; corporate citizenship and corporate social responsibility are at focus. Today sustainability is one of the public’s goals. One objective is to extend accountability of companies to present information beyond only financial (Owen, 2004). Companies are realising the importance of being a good corporate citizen. Companies are also recognising that corporate social responsibility goes beyond just being a good corporate citizen; it helps companies grow their business and increase organisational value. The number of companies that use sustainability reporting are increasing. Previously sustainability reporting was considered a “nice activity” which was optional, nowadays it is essential if a company wants to be seen as a good corporate citizen (KPMG, 2011).

Sustainability reporting is one of few possibilities for stakeholders to analyse companies to see whether they are sustainable or not. A company is dependent on its stakeholders and therefore stakeholders can use their power to influence companies to make sustainable decisions (Rhodes, 2010). Sustainability reporting is now being used as a tool by companies to communicate with and attract stakeholders, including investors. As the issue of climate change grows larger investors become more interested in socially responsible investments, which refer to the endeavour of investors to affect companies to act more sustainable (Kolk, 2008). Investors use both their financial influence and their influence gained through shareholder voting to affect companies. The increase in socially responsible investments leads to an increase in the information need concerning sustainability reporting (Sparkes & Cowton, 2004). Investors are aware of the potential financial risk associated with companies that are unable to indicate sustainability (Deegan & Rankin, 1997). To enable socially responsible investments, investors need to be supplied with the correct information regarding companies’ activities. They can decide to invest their capital in companies that convey sustainability and avoid companies that do not prove to be sustainable (Rhodes, 2010).

Investor relations is one corporate motivation for environmental disclosures, however more are needed to reach the desired level of disclosures (Owen, 2004). A company will try to use disclosure strategies that will make it look like a good corporate citizen. If there are no rules companies will try to portray themselves as in accordance with the community's expectations, even if it is not consistent with reality (Deegan & Rankin, 1997).

To aid comparison between companies when it comes to sustainability rules and regulations need to be set out. Incentives are needed to make companies reduce their environmental impact. International frameworks need to be developed to reduce global warming. There are many that argue that existing reporting standards such as the International Financial Reporting Standards (IFRS) and the United States Generally Accepted Accounting Principles (US GAAP) are not comprehensive enough since they do not fully include sustainability issues. One of these is the International Integrated Reporting Council, which works to develop a global framework for integrated reporting (IIRC, 2012a). Future frameworks should include emission trading systems, technological cooperation in research and development for eco-efficiency, actions to reduce deforestation and to help third world countries develop in an eco-friendly way (Stern, 2007).

When it comes to sustainability reporting, and thus the non-financial reporting, there is a variety of guidelines and recommendations available. One framework is the Triple Bottom Line (TBL) which argues that a company's success is dependent on three important factors; the economic, social and environmental factors (Norman & MacDonald, 2004). Most prominent of the frameworks for sustainability reporting are the GRI guidelines, which support companies in their sustainability reporting work (Isaksson & Steimle, 2009). However the report *Tomorrow's Global Company: Challenges and Choices* argues that for companies to be able to create shareholder wealth while at the same time tackling issues such as climate change, stronger frameworks are needed (IISD, 2007).

## **1.2 Problem**

Unlike financial reporting sustainability reporting is unregulated (KPMG, 2011); today only guidelines are available (Slaper & Hall, 2011). A standard set of principles is needed to aid comparison between companies and provide benchmarking techniques to measure progress (KPMG, 2011).

Although there has been an increase in information about environmental aspects, the shortcoming of today's sustainability reporting is that the focus lies on disclosing procedures rather than showing actual impact on the environment. The disclosures are often biased to give a more beneficial view of the company by minimising negative environmental disclosures (Deegan & Rankin, 1997; Gill, Dickinson & Scharl, 2008). Financial statements of companies are misstated since externalities caused by companies are excluded. Externalities should be accounted for to give a more "true and fair view" of the economic reality (Bebbington, Gray, Hibbitt & Kirk, 2001).

If externalities had to be accounted for it would give companies incentives to reduce their impact on the environment. Incentives to reduce emissions must be greater than they are today; actions need to be taken now and not later. Analyses of the costs and risks involved in reducing emissions have been made which show that the cost of reducing emissions will be less than the cost of not acting at all (Stern, 2007). The disclosures made in today's sustainability reporting do not affect the income statement, balance sheet or the cash flow statement. This causes information asymmetry between the company and its stakeholders (Rhodes, 2010). By accounting for negative externalities due to CO<sub>2</sub> emissions the financial statements of companies would reflect the full cost of companies' operations and thus provide information that is closer to reality (Bebbington et al., 2001).

### **1.3 Purpose**

The purpose of this thesis is to identify and describe ways to account for negative externalities due to CO<sub>2</sub> emissions; how companies can account for their impact on climate change in general and by incorporating externalities into financial statements. Although climate change is a global problem this thesis only contains a Swedish perspective. The delimitation is due to time-limit, geographics and to make it more comprehensible.

The research questions this thesis will try to answer are how negative externalities due to CO<sub>2</sub> emissions could be accounted for in financial statements and what effects it could have for companies.

### **1.4 Thesis Outline**

This thesis discusses issues regarding sustainability reporting with the focal point on environmental disclosures. The introduction to the thesis is quite lengthy in order to demonstrate that the problem and issues discussed are complex.

The second part of this thesis presents a descriptive study of how environmental impacts are disclosed today and ideas of how environmental impacts should be accounted for. The aim of this section is to see what has been done so far when it comes to the development of frameworks and ideas. It is also a way of discovering ways of how to develop current practices further.

Part three focuses on how sustainability reporting is applied in practice and possible developments within the field. This is done by presenting data from an empirical study consisting of interviews made with professionals working with sustainability reporting.

In the fourth and last part of the thesis the findings are analysed and discussed from the perspective of positive accounting theory; how accounting for climate impact should be done. Conclusions are then drawn from the analysis to conclude the work of the thesis. The thesis is ended with a discussion of future research opportunities within the field.

## **2 Frame of Reference**

The frame of reference chapter consists of three sections; sustainability reporting, government intervention regarding climate change and incorporating externalities (full cost accounting). The sustainability reporting section begins by presenting sustainability reporting and its prominent existing frameworks; the TBL and the GRI guidelines. The section continues by presenting information about what is believed to be the next development within sustainability reporting; integrated reporting. The final part of the section deals with accounting for emissions and carbon offsets.

The chapter continues with the section regarding implemented government interventions which include different legislation to slow down the pace of climate change. The section ends with a presentation of how emission trading systems work and accounting methods used for it.

The chapter ends by presenting theories that are being developed of how to improve sustainability reporting and include externalities; full cost accounting.

## **2.1 The Development of Sustainability Reporting**

### **2.1.1 Triple Bottom Line**

The term TBL was coined by Elkington in 1994 and refers to fundamental aspects that contribute to the success of a company; social, environmental and economic (Elkington, 1998; Skoloudis, Evangelinos & Kourmoussis, 2009). To enable success companies need to focus on other factors besides solely economic (Norman & MacDonald, 2004).

One challenge with the TBL is that there is no single measurement technique that is applicable to all three aspects. The economic factors are measured in monetary terms, however the environmental and social factors are more difficult to measure. So far there are only different suggestions for measuring all three factors in a uniform way such as monetary terms and indexes. The next challenge is to decide what should be included in the TBL. It is fairly simple with the economic factors; rules and regulations already exist. What to include when it comes to the environmental and social aspects is more complex since it is currently not regulated (Slaper & Hall, 2011).

In the light of the challenges mentioned above, there has also been some criticism towards the TBL. Norman and MacDonald (2004) argue that the TBL is just for show and that it does not really make a difference for the sustainability of businesses. Even though they agree that it is not only the economic aspects that are important for the success of companies, they say that reporting based on the TBL is not enough. A framework for sustainability should include more than just words; a measurement technique is missing (Norman & MacDonald, 2004).

The TBL has been widely used as both a term and a framework for sustainability reporting since it was developed. Examples of organisations that use the TBL as a basis are the GRI, which is explained more in depth below, and AccountAbility (Norman & MacDonald, 2004). AccountAbility is a global organisation which helps companies improve their sustainability efforts and overall business performance (AccountAbility, 2011). It provides a framework for sustainability reporting called AccountAbility 1000 (AA1000), which focuses on stakeholder engagement and environmental management (AccountAbility, 2012).

## **2.1.2 Global Reporting Initiative**

The GRI was founded in 1997 by the Coalition for Environmentally Responsible Economies (CERES) and Tellus Institute (Sherman, 2009) and is a network-based non-profit organisation (GRI, 2012a). Participants of the organisation come from global business, civil society, labour, academic and professional institutions (KPMG, 2011). The GRI was created with the aim of increasing the level of sustainability reporting to that of financial reporting regarding strictness and comparability (Isaksson & Steimle, 2009).

The GRI produces an extensive sustainability reporting framework that is widely used around the world (KPMG, 2011). As mentioned earlier, the GRI guidelines are based on the TBL (Isaksson & Steimle, 2009). In addition to the economic, environmental and social aspects there is a fourth fundamental aspect of the guidelines; governance performance (GRI, 2012a).

The organisation launched its first guidelines (G1) in 2000 and the second edition (G2) in 2002 (Willis, 2003). Since then, even more comprehensive guidelines were published in 2006 (G3) (Isaksson & Steimle, 2009) and in 2011 the GRI published an update of the 2006 version; G3.1 (GRI, 2012a). The updated versions were the results of studies that showed that the guidelines did not have the effect desired by the GRI (Skoloudis et al., 2009). G4, which will be the latest version of the guidelines, is currently being developed to meet the changes in reporting trends and requests by different actors on the market (GRI, 2012b).

The current version of the guidelines, G3.1, is divided into two parts; one with a guide regarding how to report and one with guidelines on what should be reported on (GRI, 2012c). The guidelines build on key performance indicators. Regarding the environment alone, which is the main focus of this thesis, there are approximately ten aspects with numerous key performance indicators to analyse and report on (GRI, 2011b). The GRI recommend a five-step process for reporting according to their guidelines (GRI, 2012d). The process is presented in Table 2.1 below.

Table 2.1 – Process for Reporting according to the GRI guidelines

<b>Prepare</b>	Identify the organisation’s major impacts and declare an action-plan.
<b>Connect</b>	Identify key stakeholders and communicate with them to find out what their demands are regarding sustainability reporting. Hence, which key performance indicators to report on.
<b>Define</b>	Conduct an internal assessment with management to identify the most important topics both internally and externally for the sustainability report.
<b>Monitor</b>	Check systems and processes to make sure that they are in line with the declared action-plan. Set objectives and follow up.
<b>Report</b>	The completion of the previous four steps will assist in the writing of the sustainability report. When the report is finished, communicate it to stakeholders.

(GRI, 2012d)

The GRI guidelines are based on the “comply or explain” principle, which means that a company can deviate from the guidelines if they provide an explanation for the deviation. This enables the guidelines to be applicable and relevant to all companies, regardless of size or industry (GOS, 2007a). The five step process presented in Table 2.1 indicates that organisations should not report on key performance indicators just because they are included in the GRI guidelines. It is important to perform analyses of what is significant to the specific organisation and its industry (GRI, 2012d). To indicate to what extent the GRI guidelines are being followed by a company, the GRI has established three application levels; A, B and C. A is the highest and C is the lowest level. In addition, if the sustainability report has been externally assured, the level is followed by a plus (+) (GRI, 2012e).

The GRI provides sector guidance to make the reporting according to the GRI guidelines more relevant and user-friendly for different industries. This since different industry sectors are faced with different sustainability issues that should be included in the sustainability reports (GRI, 2012f).

Although the GRI guidelines is the most used framework within sustainability reporting in the world (Sherman, 2009), the framework has not been without criticism (Milne, Ball & Gray, 2008; KPMG, 2011). Milne et al. (2008) argue that the GRI guidelines are not enough to cause a change within sustainability. The focus of the TBL and the GRI guidelines is slightly off; it needs to be more in line with the world’s climatic targets. It is insufficient to make parts of production more efficient when the entire industry is unsustainable (Milne, et al., 2008). KPMG (2011) concludes that while the GRI guidelines will continue to be the most used framework for sustainability reporting, there is still a need for further global standards that enable benchmarking of the quality of corporate social responsibility activities.



### 2.1.3 Integrated Reporting

The GRI is one of the initiators of the International Integrated Reporting Council (IIRC) and believes integrated reporting to be the next step in sustainability reporting (KPMG, 2011). Integrated reporting is an approach to companies' reporting that says that non-financial information should be presented and analysed in the same way as financial information (Eccles & Krzus, 2010). According to the International Integrated Reporting Council, integrated reporting expresses "the linkages between an organization's strategy, governance and financial performance and the social, environmental and economic context within which it operates" (IIRC, 2012a). Integrated reporting is a step in the right direction for companies that want to be successful (IIRC, 2012b). There are six core elements of integrated reporting, which are presented in Table 2.2.

Table 2.2 – Core Elements of Integrated Reporting

<b>Leadership</b>	People in leading positions need to take a stand. If Chief Executive Officers take responsibility for the information provided in their reporting, they can expect recognition and rewards in the coming years.
<b>Benchmarking</b>	The best benchmarks for companies that want to start their sustainability reporting process are companies in the same industry that have been reporting for some time. Every industry has representative companies that are producing sustainability reports.
<b>Execution</b>	If sustainability reporting is used in its best form, it can result in both shared responsibility and shared benefits. Production, marketing, environment, research and development, financial and other functions all have much to contribute and much to gain. Sustainability reporting can generate conversations that otherwise would not occur and innovations that would not otherwise happen.
<b>Engagement</b>	There needs to be an engagement and a dialogue with stakeholders regarding sustainability reporting. Without such a dialogue major issues will be missed and sustainability reports will be seen as incomplete or even misleading.
<b>Monitoring</b>	There are examples of international initiatives taken by organisations where non-financial reporting is at focus such as the GRI, UN Global Compact and the U.S. Securities and Exchange Commission. These and other initiatives represent an emerging body of practice that is gradually laying the foundation for the next generation of generally accepted disclosure practices.
<b>Assurance</b>	Compared to financial reporting, the assurance of sustainability reporting is not nearly as regulated. However it is developing. There should be regulation regarding assurance of sustainability reports at the same level of that of financial reporting.

(White, 2005)

Proponents of integrated reporting argue that companies' reporting must be modernised in this way in order to stay relevant. For the business world integrated reporting is also very important because it will lead to sustainable business behaviour. In addition, it will also

make information regarding all of a company's activities available, not only the financial (Tilley, 2012).

#### **2.1.4 Greenhouse Gas Accounting & Carbon Offsetting**

There is increased pressure on companies (especially large international companies) to become more aware of environmental impacts of their entire supply chain. There is also public pressure on companies to “detox” their production facilities. Companies are trying to find ways to reduce their climate impact and emissions. There have previously not been adequate tools to make informed decisions about greenhouse gas emissions (Business-Green, 2010). To understand, quantify and manage greenhouse gas emissions a widely used international accounting tool is the Greenhouse Gas Protocol Initiative (GHG Protocol). The GHG Protocol is a partnership between the World Resources Initiative (WRI) and the World Business Council for Sustainable Development (WBCSD) (GHG Protocol, 2011a).

The GHG Protocol defines three scopes of emissions;

- **Scope 1** deals with direct greenhouse gas emissions. The direct emissions come from sources that are owned or controlled by the company.
- **Scope 2** accounts for greenhouse gas emissions from generated electricity that the company has purchased.
- **Scope 3** deals with all indirect emissions (besides the ones included in scope 2). The indirect emissions are connected to the company, however they occur from sources that are not owned nor controlled by the company. This includes both upstream and downstream emissions (GHG Protocol, 2011b).

When the GHG Protocol was developed it consisted of only two separate standards; the GHG Corporate Accounting and Reporting Standard and the GHG Protocol for Project Accounting (GHG Protocol, 2005; Kolmuss, Zink & Polycarp, 2008). The GHG Corporate Accounting and Reporting Standard covers accounting for corporate greenhouse gas emissions inventories (Kolmuss, Zink & Polycarp, 2008) and the GHG Protocol for Project Accounting provides principles, methods and concepts for quantifying and reporting on GHG reductions (GHG Protocol, 2005).

In 2011 the GHG Protocol published two new standards that assist companies in their mission to adapt to new demands; the Corporate Value Chain Standard and the Product

Life Cycle Standard. The Corporate Value Chain Standard focuses on helping companies utilise their limited resources regarding sustainability initiatives to create the highest possible effect on a corporate level. The Product Life Cycle Standard deals with emissions connected to individual products by looking at materials, manufacturing, use and disposal (Clancy, 2011). In a statement the World Resources Initiative said that the new standards will assist companies in the measuring and managing of emissions in their entire value-chain (Environmental Leader, 2011). Companies that tested the standards before they were published considered the standards to provide them with key information to develop their business strategies regarding greenhouse gas reductions (King, 2011).

According to Venkat (2011), the release of the new standards is important for two reasons. The first and main reason is that it creates new opportunities for cost reductions and efficiency as well as emission reductions. The second reason is that the standards are crucial components in the data collection process of greenhouse gas-related information. The standards deal with scope 3 of a company's operations and hence will be tools for companies since the larger part of greenhouse gas emissions from a company's operations normally belong in scope 3. The Corporate Value Chain Standard and the Product Life Cycle Standard are both helpful in the process of making material use more efficient (Venkat, 2011).

Another system that can be used for measuring, disclosing, managing and communicating environmental information is the Carbon Disclosure Project (CDP, 2012a). The project offers guidance for e.g. water management and carbon management (CDP, 2012b). For gathering relevant information, the Carbon Disclosure Project has programmes that investors and customers can invite companies to participate in; Investor CDP, CDP Supply Chain, CDP Water Disclosure, and CDP Cities (CDP, 2012c).

Besides measuring and disclosing environmental information companies can use carbon offsets. Due to its economic and environmental efficiency carbon offset markets are seen as being part of the solution to tackle climate change. It is a way of compensating for emissions by paying someone else to decrease their emissions or use sequestration (e.g. planting trees). Companies will try to neutralise their carbon footprint by buying carbon offsets to achieve climate neutrality of their products. Carbon offset markets are growing rapidly and consist of both compliance schemes such as the European Union Emissions Trading Sys-

tem (EU ETS) and voluntary programs (Kollmuss et al., 2008). Important voluntary standards for carbon offsetting can be found in Table 2.3 below.

Table 2.3 – Voluntary Standards for Carbon Offsetting

<b>Clean Development Mechanism</b>	A part of the Kyoto Protocol which aims at creating economic efficiency while delivering development co-benefits for developing countries.
<b>Gold Standard</b>	Further development of the Clean Development Mechanism which aims to enhance the quality of carbon offsets and increase co-benefits. Unlike the Clean Development Mechanism, the Gold Standard can also be applied for small-scale projects.
<b>Voluntary Offset Standard</b>	Has the same requirements as the Clean Development Mechanism and aims to decrease the risks for offset buyers in the voluntary market.
<b>Plan Vivo System</b>	Aims to provide sustainable rural livelihoods through carbon finance. It verifies and sells ex-ante credits only. Third party verification is not required although recommended.
<b>ISO 14064–2</b>	An offset protocol which is an independent, voluntary greenhouse gas project accounting standard and it is deliberately policy neutral.
<b>GHG Protocol for Project Accounting</b>	An offset accounting protocol which is used as a tool for quantifying and reporting greenhouse gas emission reductions from greenhouse gas mitigation projects. It does not focus on verification, enforcement or co-benefits.

(Kollmuss et al., 2008)

Both compliance schemes and voluntary programs have the potential to strengthen climate policies and at the same time deal with equity inequalities among countries by helping developing countries grow. Thus, the cost of reductions is decreased, thereby accelerating the pace of abatement. The voluntary offset market has many advantages. It makes it possible for countries that have not ratified the Kyoto protocol to offset their emissions. It is more flexible than compliance schemes which make it possible to include small or too disaggregated projects. It also generates corporate goodwill in the form of positive public relations related to carbon offsets (Kollmuss et al., 2008).

Reductions of emissions so far have been too low to have a significant impact. The quality of offset projects (both voluntary and compliance based) has also been criticised on the basis that most of the reductions would have been made anyway. The proposed effect on equality and fairness rarely works out to be more than a form of carbon colonialism. The ways of accounting for carbon offsets have been blamed to be too inaccurate to justify the claimed reduction of emissions. The voluntary offset market lacks transparency and assurance. This has led to the development of many new voluntary standards during the last

years. The standards have different focus points and so far none has been established as the business standard (Kollmuss et al., 2008).

## **2.2 Government Interventions Regarding Climate Change**

To prevent exceeding the 2°C limit for crucial levels of climate change referred to in the background section, government interventions need to be put in place. At the International Scientific Congress on Climate Change in 2009 it was concluded by the attending scientists that there is no excuse for inaction. There is still time to slow down the rate of climate change (Doppelt, 2010).

There are 55 companies administered by the Swedish government, of which 40 are fully owned and 15 are partly owned. The Government Offices of Sweden conclude that this gives reason for setting a good example, show responsibility and report on sustainability issues. Therefore, the Swedish government has decided that all state-owned companies should construct a sustainability report in accordance with the GRI guidelines (GOS, 2007a).

### **2.2.1 The Swedish Environmental Code**

Adopted in 1998, the Swedish Environmental Code contains the fundamental environmental legislation from 15 Swedish acts. The regulation can be applied on all human activities with an impact on the environment (GOS, 2007b). Therefore, the code has to be followed by everyone in Sweden; both private individuals and anyone who operates any form of business. The code also contains some special provisions that are only directed to specific business practitioners (SFS 1998:808). The Swedish Environmental Code is a frame law which means that most rules are not precise and it is not defined in detail how the legislation should be interpreted (GOS, 2012a).

The Swedish Environmental Code has the objective of promoting sustainability to guarantee that future generations will be able to enjoy a healthy environment (GOS, 2007b). To ensure that the purpose of the code is achieved operative authorities such as the Swedish Environmental Protection Agency and the Swedish Agency for Marine and Water Management perform the needed supervision (GOS, 2012a). Areas that the Swedish Environmental Code aims to protect are the environment, land and water, biodiversity and human health. In addition, recycling and reuse are encouraged and the code also aims at preserving

valuable natural and cultural environments (GOS, 2009b). There are five core elements of the code that are especially important for the achievement of the environmental objectives set by the Swedish government. The core elements are:

- Human health and the environment should be protected from interference,
- Natural and cultural areas should be protected and cared for,
- Biodiversity should be preserved,
- Effective management of land and water should be secured, and
- Reuse and recycling should be promoted (GOS, 2012b).

The Swedish Environmental Code is built on the principle that the polluter pays which says that any actor that has caused damage through their activities should bear the liability for that damage and thus pay the cost of restoring (GOS, 2009a). There are several examples of when the principle has been used as a basis for convictions in the Swedish Environmental Court. One example is that a landowner is not responsible for restoring environmental damage caused by a company (Wikstrand, 2010).

## **2.2.2 Environmental Taxes**

The most common type of tax when it comes to greenhouse gas emissions is a per unit tax. The tax internalises externalities associated with production and hence includes the environmental and social costs of inputs (Carlton & Loury, 1980; GOS, 2009a). Taxes increase the cost of production which makes the emitter (the company) weigh the cost of emission control against the cost of emitting. Therefore taxes provide incentives for companies to switch to greener production alternatives or introduce pollution control techniques (IPCC, 2007). Companies could also increase their selling price of goods. This would contribute to a lower number of goods sold which places the new market equilibrium at the social efficient level. Hence, taxes assist the market in stabilising at the social efficient level either by reducing emissions or by producing less of the goods which makes it easier to achieve emission targets (Markandya, Harou, Bellù & Vito, 2002; Van Kooten, 2004).

An additional benefit associated with environmental taxes is the revenue recycling effect. Taxes collected can be used to invest in green infrastructure, used for research and development for greener production techniques and/or subsidising greener alternatives for companies. It can even reduce other tax distortions in the economy (Parry, 1995). Taxes

are tools that are easy to implement, however the problem lies in estimating the appropriate taxation level to reach the desired outcome (IPCC, 2007). The high level of uncertainty affects the degree and pace of abatement (Stern, 2007).

The Swedish law contains legislation of environmental taxes on energy and emissions. The Government Offices of Sweden consider environmental taxes to be effective instruments in order to achieve environmental objectives. An example is that the Government Offices of Sweden want to use environmental taxes to reduce greenhouse gas emissions by two million tons by the year 2020 (GOS, 2009b). Even though the Government Offices of Sweden view environmental taxes as a tool to combat climate change, they also recognise that the levels of the taxes are sensitive issues. The tax levels should reflect the amount of energy that is used. The levels also have to be adjusted as the economy develops and the benefits have to be compared to the costs the taxes cause companies and households (GOS, 2009a).

The Act on Energy Tax was put in place in 1994 and includes several environmental taxes. The Act on Energy Tax includes a tax on energy which is an excise tax. It is levied on electric power, on fuels used for motor operation and for certain fuels used for heating. The Act on Energy Tax also includes an excise tax on CO<sub>2</sub> which is levied on fuels for motor operation and certain other fuels. The fuels covered in the Act on Energy Tax are petrol, oil, liquefied petroleum gas, natural gas, coal and coke. In addition household waste burned for heating purposes is liable to tax (SFS 1994:1776).

The Swedish legislation does not only regard operations that are subject to taxes, it also contains tax reliefs (GOS, 2009a) and some tax-free exceptions from the Act on Energy Tax (SFS 1994:1776). One example is electric power which is produced through wind power (SFS 1994:1776).

### **2.2.3 Emission Trading Systems**

To help reduce emissions governments can impose carbon quotas. A carbon quota restricts the volume of CO<sub>2</sub> emissions by setting a maximum emission level (Bebbington et al., 2001). It can be seen as emission permits (or emission allowances) distributed to companies (Parry & Williams, 1999). Quotas give incentives for companies to be more efficient in their production process. Emission permits are tradable in emission trading systems built on the cap-and-trade principle where each company or country is assigned an emission permit. The permits are traded on a market where companies with low emission demand

can sell the permits to companies with high emission demand (Field & Field, 2002). This since the benefit from selling the emission permit is greater than the cost of reducing emissions (for companies with low emission demand) (EC, 2012).

The cap ensures that the emission permit has a value (EC, 2012). If a quota is auctioned out by the government, it would have the same effect as a carbon tax (Parry & Williams, 1999). If emission permits were auctioned out by the Swedish government the potential revenue from Swedish emissions could be about 2–6 billion SEK (Statistics Sweden, 2010). Trade between countries is a cost-effective way of reducing emissions which favour both developed and developing countries. Low emission targets in developed countries bring cash flows to developing countries which enables a low-carbon development path (Markandya et al., 2002; Stern, 2007).

Cap-and-trade is a cost-effective policy for governments to deal with climate change. Sweden applies the EU ETS. In the Law of Emission Trading it is regulated how the EU ETS should be applied (SFS 2004:1199). In Sweden, emission permits are usually classified as intangible assets in financial reporting. On the 31<sup>st</sup> of March each year companies within the EU ETS have to report its emissions during the last year. The report needs to be verified by an independent, accredited controller. On the 30<sup>th</sup> of April companies have to provide holdings of emissions permits equivalent to the emissions reported on the 31<sup>st</sup> of March (Bäckström, 2007). If a company does not present permits for all emissions it is heavily fined (EC, 2012).

The Swedish Environmental Protection Agency is in charge of the allocation and reporting of emission permits of Swedish companies (SEA & SEPA, 2012). The emission permits are usually given out for free and can be sold on or additional emissions can be bought through special markets or brokers. Anyone can be a part of the emissions trading. In Sweden both individuals and companies can buy emission permits through the Swedish Society for Nature Conservation (Bäckström, 2007).

During the first period of emission trading the cap has been too high, resulting in a supply that is higher than the demand. Criticism of the current cap-and-trade system is that the price on emission permits has been too low and that companies have been able to make money on selling permits (Bäckström, 2007). The EU is progressively moving towards a system where permits are auctioned out. Auctioning out permits instead of giving them out for free will help solve the current problems with price levels and money making (EC,



2012). In Sweden the goal is to use auctioning as the main method of distributing emission permits as of 2013 (Statistics Sweden, 2010). The EU ETS cap will also decrease over time; in 2020 the emission cap is estimated to be 21 percent less than in 2005 (EC, 2012).

All Swedish listed companies have to report according to the IFRS, which have been published by the International Accounting Standards Board (IASB) (EU, 2011; IFRS Foundation, 2012a). The IASB is currently working on guidance on how to report on emission permits. In 2004, the International Financial Reporting Interpretation Committee (IFRIC), which is the interpretative body of the IASB (IFRS Foundation, 2012b), declared that it would develop an amendment to International Accounting Standards (IAS) 38 (Intangible Assets) which was later proposed in 2005; it issued IFRIC 3 (Emission Rights) (IASB, 2010). IFRIC 3 specified that emission permits are seen as intangible assets. If a permit is free of charge (issued by the government) it is also seen as a government grant. When accounting for emission permits the permit is initially recognised as an intangible asset at fair value and its corresponding entry as a governmental grant (deferred credit). As the company emits CO<sub>2</sub> during the year a liability is recognised for the obligation to deliver permits at the end of the year that cover those emissions. At the end of the reporting period the liability is measured at the current market value for permits. The governmental grant is amortised during the year in the income statement. If a company sells its permits (into the market) or use them (to cover emissions) the permits are derecognised in the balance sheet. The permits are not amortised if they are traded in an active market (IASB, 2010).

At the same time as IFRIC 3 was developed the staff of the European Financial Reporting Advisory Group (EFRAG) also developed a model for accounting for the EU ETS. The difference between the models was that the European Financial Reporting Advisory Group proposed the use of a cash flow hedging model; that gains and losses on permits held to meet highly probable emission obligations should be accounted for as deferred in equity and recognised when emissions occur. Although the markets for EU emission permits are developing rapidly they are thin. As a result the IASB reasoned that the need for interpretation of IAS 38 (IFRIC 3) was not as urgent as the board initially thought. The IASB therefore decided to withdraw IFRIC 3 (IASB, 2010).

### **2.3 Incorporating Externalities – Full Cost Accounting**

It is established that current accounting practices with conventional accounting numbers and economic measures capture the consequences of economic activity. However, there is

a need to develop tools for sustainability oriented decision making. There are many ways in which externalities can be incorporated in economic decisions. The UN Conference on Trade and Development suggests for example:

- Effective regulatory systems,
- Civil liability systems,
- Accounting systems that include the “real” cost,
- Eco-labelling systems,
- Tax systems based on natural resources, and
- Requiring manufacturers to take responsibility for products’ full life-cycle (Bebbington et al., 2001).

There is a need to implement concepts and methodologies for internalising environmental costs into accounting practices. Market prices of goods and services need to reflect the true environmental and social costs (UNCTAD, 2003). Full cost accounting is a system based on prices and costs that incorporates all potential costs and benefits of companies’ decisions. Full cost accounting is based on two assumptions; the belief that current prices are underestimated (they do not reflect externalities) and the belief that if externalities were incorporated in the market price consumers would be encouraged to switch their consumption towards less damaging products due to the financial incentive. A change in consumption would also act as an incentive for companies to decrease their environmental impact to obtain a competitive advantage. Full cost accounting is all about internalising externalities; finding ways to account for the full cost of companies’ operations. Externalities need to be accounted for to enable companies to operate in an environmentally sensitive manner (Bebbington et al., 2001). Full cost accounting consists of a four step approach, which is presented in Table 2.4.

Table 2.4 – The Four Step Approach of Full Cost Accounting

<b>Define the cost objective</b>	e.g. a product
<b>Specify the scope or limit of the analysis</b>	e.g. from raw material to finished good
<b>Identify and measure external impact</b>	e.g. externalities associated with emissions from making raw material into products, packaging and deliveries to the company
<b>Cost allocation of external impact</b>	e.g. allocate costs associated with identified emissions within the scope

(Bebbington et al., 2001)

The first step is to determine what cost objective to use for calculating the full cost. The objective can be e.g. a product, a production process, the whole or a part of a company's business operations (Bebbington et al., 2001).

Once the cost objective is determined the second step is applied; the scope of the full cost analysis needs to be determined. This means choosing which externalities associated with the cost objectives to measure. In order to identify related externalities a link between the cost objective and the environmental impact needs to be determined. The two most used techniques are eco-balance and life-cycle analysis. Eco-balance tracks energy and material inputs and outputs of the chosen object (including energy and environmental inputs and outputs). When eco-balance exists there should be a perfect balance between the input flow and the output flow. The second technique, life-cycle analysis, evaluates the environmental impact of the chosen object during its life-cycle. Life-cycle analysis is similar to eco-balance. The difference is that it is focused on a single product or process rather than all of the company's activities as in the case of eco-balance (Bebbington et al., 2001).

The third step of the full cost accounting approach involves generating data within the scope that is appropriate to the chosen cost objective. The data is gathered to identify the cost objective's external impact. There are two types of data required; data on the cost objective and data on externalities associated with the cost objective (Bebbington et al., 2001).

The fourth and final step is to attempt to put the measures into monetary terms. This is the most difficult part of full cost accounting. It is not only a matter of applying costing figures to the identified impacts. Detailed assessments need to be made concerning which external costs to use. There are two main methods for estimating the value of environmental damage; cost of abatement and damage cost (Bebbington et al., 2001).

The cost of abatement is the cost of avoiding environmental impact. It is a three-step approach where the first step is to specify the level of environmental performance, e.g. the level of emissions. Secondly, technical solutions that could be used to reduce the level of emissions are identified. The last step is to estimate the costs of using the technical solutions to abate the emissions. The costs estimated in the last step are then used as the cost of the externalities. Damage costs can be estimated in different ways. One way is to estimate the economic value of the damage. This is attempted by using existing prices, measuring opportunity costs, willingness-to-pay, hedonic pricing method or contingent valuation. The method used for determining the externalities will yield different cost figures. It is

therefore important that the full cost accounting process is transparent. Measuring externalities in monetary terms is required in full cost accounting (Bebbington et al., 2001).

Full cost accounting is a step towards sustainable business practices since it articulates sustainability in a way that is intelligible for companies (UNCTAD, 2003). What the “full cost price” actually looks like is unknown, further research is needed. A move towards increasingly accounting for the full cost is needed. The accounting profession needs to support the principles and practices of full cost accounting. What is important is that the direction of the economy is away from unsustainability; and thus towards sustainability (Bebbington et al., 2001). If valuations of externalities are done correctly it will help preserve ecosystems and maintain diversity of species (UNCTAD, 2003).

### **3 Methods**

The objective of this thesis is to identify and describe current and new ways to account for negative externalities due to CO<sub>2</sub> emissions; how companies can account for their impact on climate change in general and by incorporating them into financial statements. Therefore, the study conducted in this thesis is mostly of positive accounting research. Positive accounting theory deals with how accounting should be done rather than how it is done in practice. The aim of positive accounting theory is to explain and predict rather than prescribe as normative accounting theory does (Ryan, Scaperns & Theobald, 2002).

There are two main types of research methods to collect data that can be used to answer research questions; quantitative and qualitative. The quantitative methods focus on testing of various facts, as opposed to qualitative methods where the emphasis is on understanding and interpretation (Ghauri & Grønhaug, 2005). The focus of this thesis is to identify and describe ways that a company can account for its impact on climate change. Therefore, a qualitative method is the most appropriate approach.

To find key motivating literature and theories the research work starts by a literature review (Smith, 2011). To avoid having too many gaps in the literature search, relevant references from previous course literature and references from articles read are also used (Smith, 2011). The literature review is most at focus in the beginning of the thesis work. It is however added throughout the process.

To answer our research questions (how negative externalities due to CO<sub>2</sub> emissions could be accounted for in financial statements and what effects it could have for companies) and

achieve our purpose, we perform interviews with professionals working with sustainability reporting. Due to time-limit and geographics the scope of the study performed in this thesis is narrowed down to cover only Sweden. A global focus would be preferred since climate change is a global problem. However, the thesis topic is complex and therefore a more narrow perspective makes it more tangible and easy to comprehend.

Since the topic of this thesis is complex, a case study approach is used. Case studies are useful when it comes to developing new theories rather than testing existing ones (Yin, 2009). The main advantage of using a case study is the level of control of who is interviewed and how. Although case studies have been criticised since they often comprise a low number of observations it is useful in areas where theory is not well developed, as in the case of this study. The case study of this thesis is of a descriptive nature where the implementation and outcome of new and possible innovative practices are investigated (Ryan et al., 2002; Smith, 2011). A case study is usually limited to a single unit such as a company or a country (Smith, 2011) and the unit used in this thesis is Sweden.

We perform interviews with two interview groups consisting of professionals working with sustainability reporting; accountants with expertise within sustainability reporting and representatives of companies who are leading within sustainability. Interviews allow a deeper understanding about a wider range of issues connected to our research topic, compared to a survey where we would not be able to ask follow-up questions or explain misunderstandings (Smith, 2003). Even though a random sample selection is usually most desirable for interviews, it may not produce a sample that is representative of even useful for the topic of this thesis. Since the population is unknown for this case study a systematic approach can not be used. Therefore a purposive sampling approach is used. Purposive sampling (or judgemental sampling) is an improvement of convenience sampling. Convenience sampling is a way of sampling that is convenient in the way that the sampling is easily available to the researcher. The problem with convenience sampling is that the sample is usually not representative of the wider population and hence, generalisations cannot be made. In purposive sampling the researchers apply their own experiences to select cases that can be seen as representative or typical. When using purposive sampling it is important that the researchers explain how the sampling is completed. This is necessary to make it possible for readers to form their own opinions (Coleman, 2007).

It is important that the ones interviewed have the desired expertise within the research field and therefore careful selection is needed (Smith, 2011). For interviews with accountants we selected those focusing on sustainability reporting at “the big four” audit firms; Deloitte, Ernst & Young, KPMG and PwC. We found the most suitable persons (the ones most familiar with sustainability reporting issues) by searching the big four’s websites for the ones in leading positions within sustainability reporting. All of the big four audit firms were able to assist us with an interview. One person was interviewed at each firm, all in leading positions within sustainability services at their Swedish head offices in Stockholm.

For selecting companies we used the Global100 Most Sustainable Corporations in the World (Global100). The Global100 is a global index produced on a yearly basis and the index year used in this thesis is 2012. On the Global100 index we selected the Swedish companies. The Swedish companies on the index are Atlas Copco, H&M Hennes & Mauritz, Scania and TeliaSonera (Global100, 2012a). The Global100 index is constructed with 11 key performance indicators, which are carefully explained and motivated by the Global100 (Global100, 2012b). The methodology used in the Global100 assist us in the selection of interview candidates. This since the Global100 has a clear focus on the world’s most sustainable companies that work actively with sustainability issues. The ranking of the four Swedish companies listed on the Global100 and the key performance indicators are presented and explained in Appendix 1.

Unfortunately only two of the four Swedish companies listed on the Global100 (Atlas Copco and TeliaSonera) were able to assist us with an interview. To increase the number of companies interviewed we added companies from the Dow Jones Sustainability Nordic Index<sup>SM</sup> (DJSNI). The DJSNI is produced on a monthly basis and the index month used in this thesis is March 2012. As with the Global100 we selected the Swedish companies. The ranking of the Swedish companies listed on the DJSNI along with the methodology used behind it is presented in Appendix 2. The Swedish companies listed are Atlas Copco, H&M Hennes & Mauritz, L.M. Ericsson Telephone Co. (Ericsson), Sandvik, TeliaSonera, and Volvo (DJSI, 2012). Atlas Copco, H&M Hennes & Mauritz and TeliaSonera are cross-listed and therefore included in the interviews from the Global100. Thus, the added companies are Ericsson, Sandvik and Volvo. Out of those three Sandvik and Volvo were able to assist us with an interview. The representatives from the interviewed companies (both from Global100 and DJNSI) all have leading positions within the sustainability reporting process of each company.

In total we have interviewed eight people; four accountants and four company representatives. To ensure that the persons interviewed have the desired expertise and that integrity preferences are considered the interviews started with personal questions. The interviews then consisted of both a part with general questions that is the same for all interviews and a part consisting of specific questions modified to the different interview groups. The reason why this interview method is selected is to provide confirmatory evidence and obtain different views (Smith, 2011). The specific interview questions are very similar since both interview groups work actively with sustainability reporting. However, as previously stated they have been modified to fit the specific interview group. This to enable the questions to be answered in a way that is more connected to the practises of the auditing firm or the company. Although the interviews were conducted with accountants and company representatives, the answers provided are primarily of personal opinions since some questions are not connected to current practices.

The interview questions, which can be found in Appendix 3, are based on the literature review and can be seen as additional research questions (Smith, 2011). Since most interviews were conducted in Swedish, Appendix 4 contains the interview questions in Swedish. To avoid leading questions follow-up questions were used to a yes-or-no question. The interview questions were handed out before the interviews to make it possible for the persons interviewed to think through the questions and prepare answers. The potential negative effects of handing out questions beforehand could be that the answers become restrained. Especially companies might want to conceal negative and delicate information. Explanations of negative externalities and full cost accounting are included in the handout since the definitions cannot be considered general knowledge. We are aware of the difficulty of answering some of the questions. They are included since we would like to know if the issues are considered or discussed.

The interviews were conducted by telephone. This to avoid non-response problems and to enable interactions between the interviewers and the ones interviewed compared to questionnaires (Smith, 2011). The problem with interviews conducted by telephone can be that only changes in the tone of voice can be interpreted; not any body language. Face-to-face interviews are preferred, however due to the distance between the interviewers and the persons interviewed it was not possible to achieve. This due to time-limit and travel expenses.

To be able to present and analyse the empirical findings verbal protocols and transcribed recordings from the interviews are used (Smith, 2011). Most interviews were recorded and notes were taken during all interviews. The recordings were used to make sure that no information was left out and the notes were used to make it easier to process the information. Most of the interviews were conducted in Swedish and thereafter translated into English. This means that direct quoting is not possible since the direct wording is translated. All “quotes” used in the empirical findings comprise one sentence unless otherwise stated and are approved by the person who made the statement. Since some of the persons interviewed prefer to be anonymous, the empirical findings are assembled. This to reduce the transparency of who the opinion belongs to without missing out on any information. The structure of the results from the interviews; the empirical findings from the interviews, follow the same structure as the questionnaire used during the interviews found in Appendix 3. Thus, the first section contains the answers given from all the people interviewed on the general questions. The two other sections contain the findings from the specific questions and are divided according to interview groups (accountants and company representatives).

The interviews conducted lasted around one hour. Some interviews lasted longer than others depending on the profoundness of the answers provided. Although some of the answers we received were consistent with what we were anticipating, many new ideas and much new information was enlightening and very interesting. Some questions like those concerning how environmental taxes and fees are accounted for seemed to be difficult to answer. One explanation of why this occurred could be that the persons interviewed are not focused on financial reporting.

Two questions are excluded from the empirical findings. The first question excluded is “In your opinion, what are the reasons why the company is seen as one of the most sustainable companies worldwide?” This question was asked due to curiosity and not for the purpose of the thesis. The second question excluded is “What negative externalities regarding CO<sub>2</sub> emissions should be accounted for in the financial statements?” This since the persons interviewed interpreted it as a question of if externalities should be accounted for. The answers to the interpreted question are instead included in the empirical findings.

The analysis is the most difficult and undeveloped part of case studies. Since the sample size is small and not randomly sampled it is difficult to draw general or “scientific” conclusions. The topic makes it difficult to come about these problems in any other way. The



findings of the case study should therefore be seen as an explanatory tool that can be used in more scientific studies in the future (Ryan et al., 2002). There are four general strategies that can be used to pursue an analysis; relying on theoretical proposition, developing a case description, using both qualitative and quantitative data and examining rival explanations (Yin, 2009). The first strategy is used for the analysis of the empirical findings in this thesis. This since relying on theoretical proposition is the most preferred strategy (Yin, 2009) and suits the purpose of this thesis. Since the theoretical proposition of this thesis is of an identifying and descriptive nature the basis of the analysis is different ideas presented in the empirical findings from the interviews. The basis and guidance for the analysis consists of the interview questions. The questions make a good tool to use in the analysis since they reflect the research questions, the literature review and the theoretical proposition (Yin, 2009). The structure of the analysis is based on three subheadings: today's sustainability reporting, developments and trends within sustainability reporting and accounting for climate impact.

Throughout the research process scepticism towards our own findings and those of other researchers is applied. Questioning material read until sufficient evidence is provided to ensure sufficient quality of the outcomes of the research is crucial (Smith, 2011). Although we have tried to maintain objectivity, it is difficult since the topic is emotionally charged.

## **4 Empirical Findings from the Interviews**

### **4.1 General Interview Questions**

#### **4.1.1 Today's Sustainability Reporting Frameworks**

The GRI guidelines is the most used framework regarding sustainability reporting on a global basis. In Sweden the GRI guidelines is the predominant framework due to the Swedish government's policy regarding state-owned companies. Companies are also looking at the UN Global Compact and International Organization for Standardization (ISO) 26000, which is a standard of guidance regarding corporate social responsibility. Inge Horkeby at Volvo says that since 2001, Volvo has supported the UN Global Compact, which has been the base for the company's own code of conduct. There is one framework called AA1000 which some use. It is more about what to work with and thus management oriented.

The GRI guidelines is the most detailed framework compared to all other frameworks such as the ones mentioned. There is really no other framework to compete with the GRI guidelines. It is a guidance of how to make a sustainability report, how to think and what to include. Even if a company uses a different framework for its sustainability reporting it often uses cross-referencing to the GRI guidelines, this to make it possible to evaluate the company from a GRI perspective. It is good that companies are really only following one framework since the purpose is to standardise and harmonise sustainability reporting. If all companies follow the same framework it is easier to compare companies. Another reason for why the GRI guidelines is the preferred framework to use is the way it was developed; by a network of stakeholders and tested in different settings.

When the GRI guidelines were first published they were not revolutionary since the questions had already been on the agenda for some years. Before the GRI it was the TBL and its way of thinking. During the 1990's some companies developed checklists for sustainability reporting. With the GRI guidelines the need for their checklists decreased. Even though the guidelines are quite extensive they are the de facto standard. It is better than having nothing at all; it is good to have something to relate to and to know that the most material information is compiled in a structured context. At least it gives a generally accepted framework for how information should be structured and balanced.

The GRI guidelines need to be adjusted to fit the company; companies should not report on indicators just because they are included in the guidelines. Companies should use the guidelines as an aid. There are a lot of indicators in the guidelines and not all of them are material for every company. Fredrik Ljungdahl at PwC argues that it is a misunderstanding that the GRI guidelines are just a checklist of what to include in the sustainability reporting; the guidelines also contain accounting principles to assess the content and quality of the sustainability report. That is the challenge when it comes to reporting in accordance with the GRI: to know what to include and what indicators to report on.

There are different views on how to report according to the GRI guidelines. As an example, accountants might have one perception of how to use it and their clients might not be thought through regarding what to report on and what the stakeholders want. The guidelines need to be adjusted to different industries, nationalities and trade styles. The GRI could take an even more sectoral approach to be able to capture industry specific sustainability qualities and issues. However, such an adjustment would make it difficult to continue to apply the guidelines and frameworks on a general level. The way to handle the

problem is to keep materiality at focus. It is important that the sustainability reporting reflects reality.

Some people believe the application levels of the GRI guidelines to be a quality marking, which does not always the case. A company can have a great sustainability report on a C-level but not on an A-level; increasing the application level does not always indicate better reporting. Since state-owned Swedish companies are required to follow the GRI guidelines some companies report on indicators that have no material background; issues that the companies are not working with. Karin Sivertsson at KPMG believes that companies should not report on every indicator just to follow the guidelines; they should report on the ones that are material for the company. She continues by arguing that there is a risk if companies report on indicators that are not relevant or material to them, the reader might be misled to believe that the company is actually managing all these issues. Andreas Drugge at Deloitte says that as long as the materiality analysis is solid and well performed you will get a good sustainability report without ticking off a lot of indicators.

The GRI guidelines can sometimes be static and misleading; it is difficult to determine if the company is sustainable or not. Just because the GRI guidelines are used does not imply that it results in a high-quality sustainability report. The dream scenario would be to read a sustainability report based on the GRI guidelines and be able to say that it is perfectly clear what the company's sustainability vision is. This is impossible so far when reading a GRI report; you need education and experience to be able to assess and process the information given in such a report.

A shortcoming of the GRI guidelines is that they are vague and therefore give room for a lot of interpretation. It is e.g. possible to measure energy in kilowatts or joule or any other unit that the company wants to use. This does not enable comparison or benchmarking. It would be better with a framework that looks similar to the financial frameworks; where companies are required by law to report in a certain way. If an external party wants to compare companies' sustainability reporting based on the GRI guidelines it might not be possible. The GRI guidelines are not sufficient enough since it is not explained enough how to follow them; companies can still report in many different ways using the same guidelines. However, the GRI guidelines still give an indication of companies' sustainability.

When it comes to assurances of sustainability reports, the method and structure is not the same as for financial reporting and it is not as developed. Although a sustainability report

that is not externally assured can still be complete and transparent, external assurance increases the probability that it is. Even though a report is externally assured it does not mean that the report is 100 percent accurate and without misstatements which, in a sense, is also the case for financial reporting.

#### **4.1.2 Trends within Sustainability Reporting**

A few years ago environmental issues were considered a difficult area. It was very difficult to quantify the issues. Nowadays environmental issues are not seen as such a difficult area. Even though the connection to numbers is not always there, there are still measures to use and ways to follow-up. Now the difficult area is the social issues such as corruption. The focus has shifted and that is interesting.

Trends within sustainability reporting are driven by the readers of the information in the sustainability reports. The more people that are reading the reports, the more developments are needed. Previously companies who used sustainability reporting were mostly companies within the manufacturing industry with an obvious impact on the climate. Nowadays more and more service-oriented companies and financial institutes are producing sustainability reports. Service-oriented companies might not have a direct impact on the climate. However, there is an increased need for all companies to communicate these kinds of issues to stakeholders since they are demanding increased transparency.

Companies who already report on sustainability issues have made re-evaluations of their sustainability work. These are companies who have reported on sustainability issues for some time; they know the issues, have started to report and know what sustainability reporting is all about. The re-evaluation of the sustainability reporting consists of analysing what is important to the company; a re-prioritisation from solely external demands to more focus on internal demands. Companies feel more secure and know what their standpoint is regarding their responsibilities.

It is also becoming more popular to use different information channels and to adjust the information to target audiences. More companies are publishing information online and refer to the GRI through web links. It is popular to have some parts integrated into the annual report and a separate comprehensive sustainability report.

Another trend is that companies are reporting outside of their own operations e.g. on the environmental impact of suppliers. Companies tend to focus more on life-cycle analyses of

products to understand what impact the life-cycles of products have. This includes both backwards analysis towards suppliers and forwards analysis towards customers.

Although the concept has not been fully developed, one of the latest trends within sustainability reporting is integrated reporting; how to integrate sustainability issues and sustainability reporting into the company's business. There are some companies that are attempting to integrate their reporting. Thus, although the integration of sustainability issues is starting to emerge, we are not there yet. People are curious as to how sustainability reporting can be made more useable and how to integrate sustainability issues. There is now an international project regarding integrated reporting and the GRI is soon delivering a new generation of guidelines; G4, which will be more about integrated reporting to make it more mainstream. Sustainability issues will not only be integrated in the annual report. It will also be about how to work with sustainability issues and report on them. This does not only concern external reporting. Sustainability issues are not only something that should be visible through reports; it should pervade the entire company.

Sustainability reporting is also moving from a voluntary-based reporting towards mandatory. In Sweden sustainability reporting is basically semi-mandatory since the GRI guidelines are mandatory for state-owned companies.

Internal controllers are used as an extra pair of eyes to control that the numbers and units in the sustainability report are correct. More and more companies want their sustainability report externally assured. It is important however to make sure external assurance adds value if it is used.

#### **4.1.3 Accounting for Climate Impact**

Sustainability reporting is still young compared to financial reporting where there is double-entry book keeping with balance sheets and income statements. Financial reporting has a longer history and a common network which makes it easier to structure the reporting. It is also easy to double check. In sustainability reporting it is not the same, which makes it more complicated.

There is no universal way of reporting on sustainability and include externalities; it is too difficult. However, we are living in a world where we will experience major problems if we do not take the environment into consideration, both in internal and external accounting. The degree of environmental damage is extensive. If accounting for externalities was done,

the climate impacts of companies would become more evident. The more climate impact is connected to financial results the better. If there is a way to measure externalities and convert them into monetary values, actions will probably be taken to reduce the costs. This is something that actors are struggling with within the area; how externalities can be quantified. Even though it is challenging in terms of boundaries and methodology, externalities need to be addressed. Accounting for climate impact is possible and the more we account for, the better. However, everything cannot be done at once; we need to start with something that is not too overwhelming. It will take time to account for the full climate impact. It is important to be transparent and to account for as much as possible. Although it might seem impossible sometimes, the change is near and there are standards aiming at it.

It is important that academics are studying the topic since companies operate in a fast paced world and make things happen only if it is easy to adjust to. Quite often companies only keep going in anticipation of legislation. Negative externalities will probably not be accounted for in the financial statements unless it becomes regulated by law. If there are no laws in place, companies will not want to be the first one out since it could lead to large unexpected consequences. If companies had to account for externalities competitiveness regarding sustainability would increase between companies. It could be a reputation risk if a company is presented as bad in media. Companies could be ranked and everyone wants to be better than their competitors. It could create competition problems if the accounting is not mandatory for all countries. Andreas Drugge at Deloitte says that another challenge with accounting for negative externalities is to not affect competition which will be a global problem.

Accounting for externalities could also increase the demand for transparency even further. There is a need for incentives for companies to account for externalities. If companies had to account for externalities it would imply that companies that are good at handling externalities and companies in exposed industries can reflect what the reality looks like. Whatever the effects it would be eye opening for the surroundings the company deals with. The accounting would have financial effects since the information would be included in financial models. An example of a company which has made an attempt to measure externalities due to CO<sub>2</sub> emissions is PUMA. It analysed where its greatest impact and externalities are. An example is the cow skin bought from a breeder, who stands for the largest emissions in the value-chain. That is where the real environmental costs are and should therefore be at focus instead of for example energy savings. Some companies, especially manufacturing

companies, at least try to account for and measure emissions. It is still on a monitoring level, and it should not be. There should be instruments in place regarding emission permits and taxes and so on. In that way companies would pay for their impact with tax on emissions. One step in the right direction is that it is regulative mandatory to use the EU ETS. Hopefully more countries will move towards mandatory reporting.

Accounting for externalities solely, and not incorporating them such as in taxes, may not be the right way to go. Maybe it is good to reach an agreement on a way to report without using the income statement or other financial numbers. Thus, it could be reported in another way. The best way of accounting for externalities could be by incorporating the externalities through financial policy instruments such as the polluter pays principle of which the Swedish Environmental Code is built on. This erases the externalities by incorporating them into the financial statements. In a way climate impact is already included in the annual reports, however another measuring unit is used. It is difficult to find a way to translate the units into financial measures. In a perfect world there would be faultless values in place that could make it possible. The business world is not there yet. Wrong estimates could have unexpected consequences and it is difficult to predict what would happen if a translating model is randomly chosen. Externalities should probably be accounted for in a different way and not in monthly statements. Maybe on a three-year basis to see what has happened during that period. The difficult part is to know when to stop; how much the company is responsible for.

There are policy instruments in place to include some of the externalities. There are environmental debts (contingent liabilities), according to the Swedish Environmental Code, when it is clear that the company has caused damage on the environment and has the responsibility of restoring it. It could also be that a company has bought another company that has caused damage on the environment. Then the buying company is responsible for decontaminating the environment. This could be reported in the financial statements as a deposition and then explained in notes what the responsibility is and what the likelihood it has of occurring. As long as the company is clearly responsible for the caused damage, it can report the damage in the financial statements even if it does not know the amount it will cost to restore it. There are also environmental liabilities according to the Swedish Environmental Code, where companies can be responsible for destruction of biodiversity, water damages e.g. and then they have to pay the cost of restoring. If a company is found responsible for environmental damages it has to report it in the financial statements.

If externalities were accounted for society would hopefully get more fully aware of the impact of the entire value-chain. It will take time, nevertheless it is worth time taken. It would catch the attention of investors, stakeholders and voluntary organisations. It would create clarity and it would be an improvement that everyone would benefit from. Accounting for externalities would create a demand for more transparency; those not reporting would need a change of practice. A common saying according to one of the persons interviewed is “if you don’t measure you don’t manage; what gets measured gets done”. Accounting for externalities will hopefully create the awareness, interest and demand needed for a change to occur. Hopefully the increased transparency will be eye opening both internally and externally. This can create true sustainable innovations.

If environmental issues were included in the financial reporting and it was imposed with statutory audit it would lead to high demands on audit firms. This would also increase the need for auditors’ competence in environmental issues.

## **4.2 Interviews with Accountants**

### **4.2.1 Today’s Sustainability Reporting**

The GRI guidelines are used by most companies to different extent mostly due to the fact that the state-owned companies in Sweden have to use those guidelines. Nevertheless companies might have their own versions and measures of sustainability reporting; their own models (e.g. ways of calculating and numbers). Earlier many used the AA1000 from AccountAbility. Although all the steps of the GRI guidelines have not been used before the GRI was developed, the main concepts have been the basis for many years; it was not invented by the GRI. Previously there was more focus on environmental aspects and now there is more focus on social aspects. The GRI guidelines contribute to the sustainability work of company in many ways. It helps companies to actively manage and affect its climate impact. This is the greatest gain of using the GRI guidelines.

Companies demand consulting on how to report. Some companies want help with the structure of the sustainability report, either as a first time reporter or for development of current reporting. It could be anything from questions regarding the GRI guidelines to support during the entire process; from idea to reporting. Accountants receive a lot of questions regarding how to report on sustainability issues; what is substantial, how to calculate CO<sub>2</sub> emissions, how to collect information, how to form sustainability efforts, informa-



tion quality, what is to be reported in the financial statements and what indicators are important. Thus, the consulting includes anything from collecting data to producing the actual sustainability report.

The greatest difficulty with today's sustainability reporting frameworks is to provide a true and fair view. Today's sustainability reporting can give a true and fair view of companies' sustainability. It depends on how companies have used the sustainability reporting framework (the GRI guidelines) and if they have done a materiality analysis. Companies have to tell their own story and if the framework is used correctly it does provide a true and fair view. The GRI guidelines can provide comparability between companies and industries. It is a challenge since every company has different preconditions. Which indicators to report on in the GRI guidelines for example depend on the company. There are no rules that say that all companies have to use guidelines or how to use the guidelines. There is a lot of room for interpretation compared to financial reporting. One opinion from the interviews is that the GRI guidelines do not reflect a true view of companies' sustainability. However, there is no better alternative framework currently available; it is a work in progress.

Another demand of companies when it comes to sustainability reporting is that most companies seek third party assurance for their sustainability report. Companies want assurance of their sustainability report to be able to show the world that it is quality-assured. Audits of sustainability reports use the same methodology as an audit of financial statements. The person that assures the sustainability report describes what they have reviewed. However the assurance of sustainability reports is not as deep and thorough as an audit of financial statements. It is a more synoptic review with random samples. Financial audit procedures are much more controlled through legislation. If the review of sustainability reports would be as comprehensive as financial auditing, it would probably take more time since the process is not as controlled. There is a lot of work finding the data behind the numbers and information in the sustainability reports.

In an assurance engagement of a sustainability report auditors verify that companies follow applicable criteria e.g. the GRI's guidelines in a reasonable way. Thus, they verify that they do not find anything that indicates that the company has not followed the GRI guidelines. Auditors do not say anything about a true and fair view since it is difficult to assure. Indirectly auditors state that since the company follows the GRI guidelines which implies that it

should give a true and fair view. Thus, it is a lower form of assurance compared to financial audit; it is more general.

#### **4.2.2 Accounting for Climate Impact**

Whether to measure CO<sub>2</sub> emissions or not is an important question within sustainability reporting. Although it is not statutory to measure CO<sub>2</sub> emissions, more and more companies are starting to measure their CO<sub>2</sub> emissions. One reason for measuring might be that companies set objectives to reduce their emissions and are therefore measuring to be able monitor progress of reduction. They collect information regarding their emissions, recalculate energy into CO<sub>2</sub> equivalents and report on it. Emissions are reported in the (separate) sustainability report or in the management report. Emissions can be direct or indirect which is also specified in the GRI guidelines. The reporting goes more and more outside the company's own operations. There are standards on how to measure and calculate. There are three scopes; 1, 2 and 3. Scope 3 deals with emissions outside the company's own operations, e.g. from suppliers. Generally companies follow the GHG Protocol which gives guidance of how to measure. Another framework used is the Carbon Disclosure Project. The structure of the GHG Protocol is divided into energy that is used, created and released. The reporting on the third part varies depending on how far in the supply chain data is collected. To what extent emissions are measured depends on the type of company. For small service oriented companies it is not as important as for large manufacturing companies. A reason for not measuring emissions is if the company believes it has no material impact on the environment or if the company cannot affect its climate impact.

If companies had to account for climate impact, they would probably only be affected if there is somebody that reacts to the information. As long as stakeholders do not use the information the company can report on as much or as little as it wants. The disadvantage is that it is time consuming to report and there is a risk that someone will react and hold the company responsible; no one wants to be forced to take responsibility. Accounting for climate impact would mean that companies would have to measure inventory and retrieve all necessary data. This process would provide information that help companies manage their environmental impact. However, accounting for climate impact can have negative effects for companies with high emissions.

Karin Sivertsson at KPMG believes accounting for climate impact could potentially show the true value of the company and their products. A global agreement has to be in place to

make it work. There are high costs involved and it would be very labour intensive. Fredrik Ljungdahl at PwC believes that advantages of reporting will only arise if there is an external interest in using the reported information; if no one is using the information, the reporting is unnecessary.

It is unusual that environmental taxes are stated separately in the financial statements. Depositions can be specified for environmental debts. Otherwise it depends on how the tax or fee is structured. Some are straightforward and easy to define and some are included or related to other taxes and fees. When they are related to other taxes and fees it is more complicated since you have to count backwards which can be difficult, especially for fees. It is not common to report on environmental taxes and fees in the sustainability report. It could definitely be improved and there are guidelines being developed for it. It is sometimes possible to find ways to trace emission permits in the income statement. There are different ways to account for emission permits depending on the origin; it is up to the politicians if the permits should be assigned or auctioned out. If the permit is assigned it is seen as a state aid. It could be accounted for as a tangible asset, an intangible asset, a deposition, accrued expense and a contingent liability.

Companies which have made carbon offsets (some better than others), do this to take their sustainability efforts one step further. They want to be climate neutral and report it in the sustainability report. Besides planting trees, one of the carbon offsets is to buy into projects where compensations have already been made. In the sustainability report they report on their CO<sub>2</sub> emissions and how much they have compensated for, and in what way. It is important that offsets are credible and that it does not only seem like the company is trying to buy its way out of its responsibilities. Karin Sivertsson at KPMG finds an important question to be whether the chosen compensation method is the most suitable for the company; reduce the impact where you can and compensate where you cannot. As a reader of reports transparency is important and it is important that stakeholders can understand the reasons behind the compensations. It is important to show how the offsetting has been performed and to use a certified process for compensations such as emission permits. Fredrik Ljungdahl at PwC argues that if companies had to account for climate impact they should also be allowed to account for compensations. Companies have to be able to take credit for something positive. Thus, they could create some kind of climate balance sheet.

Full cost accounting has not been heard of. It is seen as being too difficult. A company that has tried to use similar methods to full cost accounting in their sustainability reporting is PUMA. The only difference is that it has not used monetary terms.

## **4.3 Interviews with Company Representatives**

### **4.3.1 Developments of Sustainability Reporting**

A decade ago companies presented separate environmental reports and then this has evolved into separate sustainability reports. The first sustainability reports were quite thin, and now the reports can be extensive. Some companies have included their sustainability reports in the annual reports for quite some time. When the GRI 3.0 came in 2006 the sustainability reporting started to change. There were, and are still, many different interpretations of the GRI guidelines. Some companies made the interpretation that the guidelines wanted companies to identify and report on the basis of their main issues. An example is that some companies have a separate report for society and the environment, one for investors and one for employees.

The GRI guidelines contain both guidance for disclosures and for numerical values. Previously companies have reported more on disclosures than numerical values. Lately this has started to change; companies are reporting more on numerical values. Each year companies aim for better quality on numerical information. It is a work in progress and the more you think you know, the more you realise how much you don't know in a way.

In recent years companies' application of the GRI guidelines has evolved. Companies use more information channels; all the information in the sustainability report and additional information is usually published on the website. Developments include that additional issues and documents have been included and that the scope has expanded. The scope has changed regarding what countries and operations to include in the sustainability reporting. To develop within sustainability reporting is an ongoing objective. Improving methods and software on how to collect information and to have a good tool in place for reporting is important.

It is very important to be open and transparent towards stakeholders. The objective is balanced and transparent information. Companies are anxious to make a good impression, and show that they work with sustainability issues. Companies generally try to be transparent as far as possible, without it leading to negative feedback. Karin Holmquist at Atlas

Copco says that the company has gone from reporting on A-level to reporting on B-level because it has new objectives and needs to keep the information in the sustainability report relevant and material.

Today's sustainability reporting can give a true and fair view of companies' sustainability because of the comply or explain principle. The principle allows companies to report on what is important from the company's point of view. The negative aspect with the principle is that companies can choose to not disclose information that is considered negative. It can also make it difficult to compare companies. Currently the GRI guidelines contain more than 120 questions and sub questions. If a company fully complies with the guidelines the sustainability report would be extensive and not many would read them. As a reader of a sustainability report it is difficult to understand the information which makes it difficult to obtain a fair view of the company's sustainability efforts.

#### **4.3.2 Accounting for Climate Impact**

Companies do not report on environmental taxes and fees in a clear way. Some companies disclose information when there have been substantial fees connected to the Swedish Environmental Code. The GRI states that significant fees should be reported on. In general a company which takes responsibility for its actions and climate impact restores the environment if it has been damaged by the company's operations.

Two out of the four companies interviewed hold emission permits. However, they all measure their CO<sub>2</sub> emissions and the information is included in the sustainability report each year. Companies generally use the GHG Protocol's scope 1,2, and 3 to measure and account for their emissions.

If carbon offsets are used it is important to understand why and how they are used. It is also important that the offsets actually contribute to reductions in climate impact. It must be trustworthy, not just for show. Companies that use carbon offsets or have emission permits publish that information in the sustainability report and not in the annual report. Some of the companies interviewed have used carbon offsets on a pilot basis. It is not believed to be the best way of reducing climate impact. Instead of compensating for climate impact reductions should be made. As an example every travel should be motivated. Investments in video equipment can be made to avoid unnecessary travels. It saves both money and the environment. Money spent on carbon offsets can be invested in sustainable

product development instead. That is where the greatest climate impact is. An investment in renewable energy and becoming energy efficient is also important. It is important to manage how the company is operating and the operations' environmental impact. Inge Horkeby at Volvo says that the company has a clear policy to not use carbon offsets but instead prioritises own internal actions to reduce climate impact. He continues by saying that if Volvo would compensate for its climate impact, which is very rare, it has decided to use either the Clean Development Mechanism or the Gold Standard.

The concept of full cost accounting is used when it comes to Green Public Procurement, which is an instrument that makes public authorities choose environmentally friendly goods. Green Public Procurement uses the same definition of full cost accounting, however it only covers the procurement itself. Otherwise, full cost accounting is not a used concept. However, estimates for known costs are made for internal use. The effects of accounting for climate impact would depend on how it would be accounted for; if it is only the company's climate impact or if it is the entire value-chain. If it would be the latter it would mean that much more work is needed to collect data. If companies accounted for their climate impact it would be positive in the long run since it would increase transparency. Then there would be a connection between products and climate impact. If a company becomes aware that they are not performing well they can do something about it. It could also lead to sustainable innovations.

## **5 Analysis**

### **5.1 Today's Sustainability Reporting**

As Sherman (2009) and Isaksson and Steimle (2009) state, the GRI guidelines is the predominant framework for sustainability reporting; it is globally accepted. It is preferred due to the way it was developed; by a network of stakeholders and tested in different settings. The Swedish government's policy for state-owned companies probably contributes as well to the use of the GRI guidelines among non state-owned Swedish companies. Although some companies use different versions and measures regarding sustainability reporting, they usually use the GRI guidelines to some extent. If a company uses another framework for sustainability reporting or has its own methods, the sustainability report is generally cross-referenced to the GRI guidelines. This indicates that the aim of the GRI to increase

the level of sustainability reporting to that of financial reporting regarding strictness and comparability (Isaksson & Steimle, 2009) is in line with the demand of the business world.

Both first time users of sustainability reporting and companies that have previously published sustainability reports seek consulting on the structure of the report; what to include (what is material) and how to report on it. Companies want consulting on everything from how to collect data to the actual producing of the sustainability report. Thus, companies want help on either all or some of the different steps of the five-step process of reporting stated by the GRI; prepare, connect, define, monitor and report (GRI, 2012d). The fact that companies seek consulting regarding their sustainability reporting implies that sustainability issues are difficult to manage. It also indicates that companies are working actively with sustainability and believe that it is an important issue. This is in line with KPMG's finding that companies are recognising that corporate social responsibility goes beyond just being a good corporate citizen. It helps companies grow their business and increase organisational value. Nowadays sustainability reporting is essential if a company wants to be seen as a good corporate citizen (KPMG, 2011).

One challenge mentioned with the sustainability reporting process is the use of key performance indicators. The general nature of the GRI guidelines, which contain an extensive amount of key performance indicators (GRI, 2012b), implies that it is difficult for companies to look at the framework and instantly know what to include in their sustainability reports. Not all key performance indicators are relevant to each industry or company. The GRI (2012d) states that organisations should not report on key performance indicators just because they are included in the GRI guidelines. It is important to perform analyses of what is significant to the specific organisation and its industry. A materiality analysis needs to be performed to identify the company's key issues and make sure that the sustainability reporting is in line with the company's objectives. This is in line with the views of the people interviewed that the guidelines need to be adjusted to fit the individual company. Thus, companies need to tell their own story based on their individual preconditions. A materiality analysis is also important to avoid misleading the readers of the sustainability report. This implies that sustainability reporting is a time consuming process since it takes a lot of effort to collect relevant data and to report according to the GRI. It is especially time consuming in the beginning of the sustainability reporting process since the deepest materiality analysis needs to be performed during that stage. Even though sustainability reporting is costly, the fact that there are still increasingly more companies publishing sustainability re-

ports indicate that there must be incentives in place. There is a demand for the report from stakeholders and hence, the benefits of reporting must be greater than the costs.

The GRI guidelines are built on the comply or explain principle. This means that a company can deviate from the guidelines if they provide an explanation for the deviation. This enables the guidelines to be applicable and relevant to all companies, regardless of size or industry (GOS, 2007a). The principle has both positive and negative aspects. The positive aspect is that companies can report on what is important from the company's perspective, which is also in line with the view that a materiality analysis is important. The negative aspect is that companies can choose to report only on positive information and not disclose information that is considered negative. This could thus mislead the reader of the sustainability report since it would not contain the whole truth. If all companies were forced to report on all key performance indicators, it could be seen as increasing comparability. However, it could instead lead to that not many would read the sustainability report since it would contain too much information to process. It could increase the difficulty to understand the information in the sustainability report and hence compare companies. Thus, such a rule could have the opposite effect.

The fact that practically all companies report on sustainability issues according to the GRI guidelines implies that it should be rather easy to compare companies. However, the variances of what is included in a sustainability report make it difficult. The comply or explain principle and the key performance indicators can lead to reports that contain very different information. There are no rules (besides for Swedish state-owned companies (GOS, 2007a)) that say that companies have to use the GRI guidelines or any other framework for sustainability reporting. Nor are there any rules (for any companies) that tell companies exactly how to use sustainability reporting frameworks and thus the GRI guidelines. Hence, there is room for interpretation of the GRI guidelines. This implies that comparability can be reduced. Since comparability is one of the objectives of sustainability reporting frameworks (Stern, 2007; Isaksson & Steimle, 2009) this needs to be improved. An even more sectoral approach could be used regarding sustainability reporting frameworks, though it is uncertain how it would affect comparability. It might become easier to compare companies within each industry since they have approximately the same preconditions. The development of the sector guidance of the GRI (GRI, 2012f) indicates that the different preconditions are being considered. The challenge with adjusting the guidelines to different indus-



tries is that it could make it even more difficult to compare companies from different industries.

Another issue regarding the GRI guidelines is the use of the application levels. The different levels should indicate the quality of the sustainability report. However, since the application levels mostly indicate to what extent the guidelines are being followed; how many key performance indicators the company reports on (GRI, 2012e), it does not really say anything about the quality of the content in the report. If companies perform materiality analyses and make use of the comply or explain principle, the quality of a report on C-level can be higher, and contain more relevant information, than a report on A-level.

A difficulty with sustainability reporting is to show a true and fair view. Sustainability reporting can give a true and fair view of companies' sustainability. It depends on how the GRI guidelines are used and how accurate the materiality analysis is. This is again in line with the GRI's view that the analysis of what is significant to the organisation and its industry is important (GRI, 2012d).

All the challenges brought up regarding sustainability reporting and the GRI guidelines imply that it is difficult for a reader of a sustainability report to know if a company is sustainable or not, solely based on the report. The reader would be required to have a high level of experience and knowledge about the company's operations. This is in line with the statement of Rhodes (2010) who says that it is difficult for stakeholders to assess the state of sustainability of companies. This implies that there is another challenge regarding sustainability reporting frameworks: to aid readability. The company representatives that we interviewed talked about the challenges for readers of the sustainability report and the need for developments in that area. The fact that companies want to keep their stakeholders satisfied and thus informed (Norman & MacDonald, 2004) implies that there should be a demand from companies for making the sustainability reports easier to understand.

## **5.2 Developments & Trends within Sustainability Reporting**

The sustainability reporting has gone from being an environmental report to becoming a sustainability report. Thus, the focus has extended regarding sustainability reporting. Now companies do not only focus on environmental aspects and to be sustainable is not only to be environmentally friendly. Although sustainability reporting is quite young compared to financial reporting, it has been around long enough for companies to make re-evaluations

of their sustainability efforts and reporting. Companies are identifying key issues regarding their businesses and putting them on their agendas. This means that companies are including the identified key issues in their management strategies, which is also recommended by both the GRI guidelines (GRI, 2012d) and the International Integrated Reporting Council (IIRC, 2012a).

Previously sustainability reporting contained mostly disclosures. Now there is a move towards including more numerical values. Companies aim at better quality in their reporting as well as increased quality in the numerical information. The scope of the report has also expanded; there are new documents and issues included. Companies' objectives control what is seen as important to report on and what application level to use as indicated by Karin Holmquist at Atlas Copco AB. All these developments indicate that sustainability reporting is an inherent and evolving part of companies' agendas.

The fact that both accountants and companies are experiencing increased demand for transparency within sustainability reporting implies that society is becoming more aware of the importance of sustainability issues and of the connection between companies and climate change. This is in line with KPMG's study, which concluded that sustainability reporting is now a critical business issue (KPMG, 2011). Sustainability reporting is becoming more adjusted to fit demands of stakeholders. Companies are using different information channels to communicate with their stakeholders. Companies also adjust the sustainability information to different stakeholder groups. To increase transparency companies are extending their sustainability reporting by including more information from outside of their own operations. This indicates that the awareness of scope 3, as identified by the GHG Protocol (GHG Protocol, 2011b), is increasing. The example of PUMA shows that even though the business world has not yet reached a global agreement regarding the reporting on scope 3, and thus the use of full cost accounting, there are still attempts being made of including such information. Scope 3 has similarities with full cost accounting's eco-balance since it evaluates the environmental impact of companies' activities (Bebbington et al., 2001).

The sustainability reports are now becoming included in the annual reports which is in line with the statement by KPMG that integrated reporting is the next step in sustainability reporting (KPMG, 2011). According to the International Integrated Reporting Council, integrated reporting expresses "the linkages between an organization's strategy, governance

and financial performance and the social, environmental and economic context within which it operates” (IIRC, 2012a). Thus, non-financial information should be presented and analysed in the same way as financial information (Eccles & Krzus, 2010). The people interviewed also talked about integrated reporting as being the latest trend within sustainability reporting. Integrated reporting is an additional step in the evolvement of sustainability reporting. As argued by Tilley (2012), integrated reporting is crucial for the business world. The global framework in the process of developing by the International Integrated Reporting Council (IIRC, 2012a) could potentially be a revolutionary framework for sustainability reporting. The upcoming G4 by the GRI could also be a useful tool regarding integrated reporting. The fact that there are companies that have tried to integrate their reporting indicates that there is a need for further guidelines on how to report. It also implies that there is a demand for integrated reporting from stakeholders. The fact that both interview groups (company representatives and accountants) talked about integrated reporting as a development within sustainability reporting implies that the upcoming frameworks for integrated reporting will be of high interest for the business world.

Both accountants and companies seem to believe that there is currently no better alternative to the GRI guidelines available. The fact that there is no framework that really competes with the GRI guidelines could imply that the business world and the GRI are satisfied with the current state of sustainability reporting. However, all persons interviewed emphasised that although the GRI guidelines currently is the best and most used framework for sustainability reporting, there is a need for further developments. This is interesting since it indicates that both the ones reporting on sustainability (the companies) and the ones consulting on sustainability reporting (accountants) have an interest in even more developments in the area. Hence, there must be demand for developments within the area. The latest version of the GRI guidelines, G4, and the new framework for integrated reporting are both being developed to meet the developments in reporting demands. This is in line with KPMG’s view that while the GRI guidelines will continue to be the most used framework for sustainability reporting, there is still a need for further global standards that enable benchmarking of the quality of the information in corporate social responsibility activities (KPMG, 2011).

### **5.3 Accounting for Climate Impact**

Although there is no generally accepted way of including externalities, it is established that actions need to be taken to avoid crucial levels of climate change (Stern, 2007; UNFCCC, 2009; Anderson, 2011). The reporting frameworks within sustainability reporting are perceived as being a good starting point, however there is a need for legislation for many reasons. One of the reasons is in line with the theory that rules are needed to aid comparison (Deegan & Rankin, 1997). There is a need for incentives for companies to account for their full climate impact. The view that companies probably will not take actions unless there is legislation in place implies that government interventions are needed. The decision by the Swedish government to make the use of the GRI guidelines regarding sustainability reporting mandatory (GOS, 2007a), is an indicator that policy makers are taking actions towards legislative interventions. This implies that government interventions can be tools to affect the use of sustainability reporting as stated by Doppelt (2010).

If legislation was in place, it could create competitiveness regarding climate impact. It could be a reputational risk for companies if they did not reduce their climate impact. Companies could then also be ranked more easily according to their environmental performance. Although there are sustainability indexes available today, legislation would make it possible to rank all companies on the same basis. Since global warming is a worldwide problem and companies are extending their operations to more and more countries, a global agreement is necessary to make the accounting effective. Otherwise it could distort competition between companies. This since the process would be labor intensive and have high costs. If all companies had to account for climate impact the effects would, to some extent, be equally distributed between companies. If not, there would be a competitive advantage not to account for climate impact. This since the costs for the companies not accounting would be lower than for the accounting companies.

It is still very difficult to find a way to account for externalities due to CO<sub>2</sub> emissions. There are currently no rules for what to include when measuring or quantifying externalities (Slaper & Hall, 2011). One opinion from the interviews was that it would be very time consuming and costly to begin accounting for all externalities at once. It should be a process where externalities are added continuously. As it has been suggested by the UN Conference on Trade and Development, externalities could be included in many different ways (Bebbington et al., 2001). However, so far there are only suggestions. Even though there

are companies that are reporting on and in some way measuring externalities, there are only guidelines available (Slaper & Hall, 2011). This indicates that the subject is being discussed and that there is truly a demand and need for guidelines regarding externalities. If there was no interest in the information reported accounting for externalities would not have any effect for companies. The observed demand for guidelines implies that there is an interest in the information accounting for climate impact could provide. Thus, accounting for externalities could have large effects.

It is quite clear that small service-oriented companies would not be as affected by legislation regarding externalities as large manufacturing companies. The extent of the effects for any company is still unknown and that prevents companies from being the first ones to account for externalities. This is in line with the views of Doppelt (2010) and KPMG (2011), which have both concluded that government interventions are crucial for the development of sustainability reporting. Thus, financial policy instruments can and should be used to incorporate externalities in the financial statements.

There are many advantages of accounting for externalities recognised by the persons interviewed. If externalities were accounted for, the full climate impact of companies could be evident. Accounting for climate impact could potentially show the true value of the company and its products. The fact that the entire value-chain would be accounted for implies that the information in the financial statements would be closer to reflecting reality than the current financial accounting does (Bebbington, et al., 2001). Since it would be connected to financial results, it could be an incentive for companies to take actions to reduce their climate impact. It would also make it easier for companies to actively affect its climate impact. Being aware of what the company's impact is makes it possible to do something about it and reduce the impact. It could thus be a management tool. This is the aim of frameworks like the GHG Protocol, which can assist companies in the management process of making informed decisions about greenhouse gas emissions (BusinessGreen, 2010; GHG Protocol, 2011a).

Accounting for climate impact could have negative effects for companies with high emissions. For those companies the accounting could increase their costs and significantly reduce their financial results. This implies that companies with high emissions might not be as interested in starting the process of accounting for climate impact. Therefore, incentives are needed for those companies as well. If there are no incentives, legislation is even more

needed since all companies would then be forced to account for their climate impact. As KPMG (2011) concluded in its study, there is a need for mandatory standards.

Another opinion stated in the interviews was that it is difficult to determine the extent of companies' responsibilities. The effects of accounting for climate impact will probably depend on how far in the value-chain emissions are accounted for. If it is only companies' direct emissions that are accounted for the total climate impact reported will of course be less than if the entire value-chain is included. If companies are found to be responsible for their entire value-chain's emissions and if the accounting from all companies were put together, it could show very misleading information. Thus, it could lead to a problem of double counting. This implies that the constructing of potential legislation has to be very precise and accurate regarding structure and measures. This to make sure that all climate impact is accounted for and to avoid having two companies accounting for the same impact. If the measurement methods are not correct, it could possibly lead to unexpected and unwanted consequences. What is important is that the accounting reflects reality. This is true both from society's perspective and from companies' perspective. Stakeholders need to know that the information provided is correct to enable informed decisions and companies do not want the accounting to show more negative numbers than necessary.

One step in the right direction is that more and more companies are starting to measure CO<sub>2</sub> emissions connected to their business. To what extent emissions are measured depends on the company and its objectives. The companies interviewed all measure their CO<sub>2</sub> emissions. A stated reason why companies do not measure emissions is if they do not believe that they have a material impact on the climate. However, if companies do not measure, they will not know. If they start measuring, they might find that there are ways to reduce their climate impact even though it was perceived as small to begin with.

Emissions are usually reported in the (separate) sustainability report or in the management report. The GHG Protocol is generally used for accounting for emissions. Emissions can be direct or indirect and companies are increasingly reporting on indirect emissions. The IASB is in the process of developing guidance on how to report emission permits. In 2004, the International Financial Reporting Interpretations Committee issued its IFRIC 3 (Emission Rights), which was later withdrawn (IASB, 2010). The contingency in reporting guidelines makes it difficult to know how to report on emissions. Frameworks for reporting indirect emissions (scope 3) have been further developed through the Corporate Value Chain Standard and the Product Life Cycle Standard by the GHG Protocol (Clancy, 2011). This

indicates that the awareness of the connection between emissions and climate impact is increasing. Thus, the statement by the World Resources Initiative and Clancy (2011) that the new standards from the GHG Protocol will assist companies in the measuring and managing of emissions in their entire value-chain (Clancy, 2011; Environmental Leader, 2011), seems to be true. The Product Life Cycle Standard can for example work as an aid since it deals with the emissions connected to individual products by looking at materials, manufacturing, use and disposal (Clancy, 2011). That also indicates that the GHG Protocol can help customers make purchasing decisions as stated in an article in the Environmental Leader (2011).

It is not statutory to measure or report on CO<sub>2</sub> emissions. There are sometimes ways to trace emissions permits in the income statement. At the moment there are different ways to account for emission permits depending on the origin (state aid or auctioned out) of the emission permit. Guidelines are needed and currently being developed on the subject. Companies are starting to report on all three scopes identified by the GHG protocol. The further the sustainability reporting goes in the value-chain, the more work is needed to collect all necessary data. In the long run the data collection will be positive since increased reporting means increased transparency. It will also increase the awareness of the connection between climate impact and the company's products. Reporting on emissions could lead to more sustainable innovations. As a result of the increased pressure to reduce emissions and climate impact (BusinessGreen, 2010), companies will try to lower their emissions by producing less of emission intensive products or using production alternatives with lower emissions. Companies will probably become more aware of their environmental impact if they report on emissions. This means that companies will become aware of when they are underperforming and can do something about it. As King (2011) stated, accounting provides companies with key information to develop their business strategies regarding greenhouse gas reductions. There is increased pressure for companies to become more aware of their environmental impact of both its own operations and of its entire supply chain (BusinessGreen, 2010) and the increased reporting is a result of that pressure.

Only one out of four companies interviewed hold emission permits. This is in line with the IASB (2010) statement that although the markets for EU permits are developing rapidly, there are not many users. All companies need to be included in the markets for the cap-and-trade system to work efficiently. Otherwise it will be difficult for governments to set a cap since they do not know how many excess emissions are made apart from those in the

trade system. If not all companies are included, the cap on the emission trading system might have to be much lower to be able to reduce emissions to the “initial” cap (the cap if all companies were included in the system). The criticism of the current cap-and-trade system is that the price on emission permits has been too low and that companies have been able to make money on selling permits (Bäckström, 2007). If the cap is decreased the supply will be less and thus lead to a higher price and a better fit between supply and demand. Auctioning out permits instead of giving them out for free will also help solve the current problems with price levels and money making (EC, 2012). According to the empirical findings there are companies making attempts at carbon offsetting, although some better than others. Carbon offsetting could be a way of taking the sustainability efforts one step further. The strive of many companies that use carbon offsets is to become climate neutral. They report on how much they have emitted and how much they compensate for. If offsets are made it is preferred to use certified systems such as the EU ETS. It is important that the offsets are credible and that they are not only a way to get out of responsibilities. Thus, transparency should be at focus. According to the companies interviewed, it is important to show why and how carbon offsets are made. Carbon offsets could be just for show or a last way out.

The statement by Kollmuss et al. (2008) that carbon offsetting is becoming increasingly popular seems not to be the case for the companies interviewed. Companies do not seem to be too interested in carbon offsetting. Companies who are seen as sustainable (as the companies interviewed) might not have the need for carbon offsets. This since environmental impact can be managed in different ways. Whether carbon offsetting is the most suitable way of adapting to climate change is questionable. It is perhaps more important that companies reduce their impact when possible and compensate for the part of their impact that they can not reduce. This is in line with what the companies we interviewed do. Instead of using carbon offsets, they reduce their emissions by buying renewable energy and investing in sustainable product development and in video equipment (to avoid unnecessary travels). The reasoning by the companies is in line with the critique given by Kollmuss et al. (2008) that the current offset projects are of poor quality (both the voluntary and the compliance based); they argue that most of the reductions would have been made anyway. In Sweden there are also additional benefits implemented for companies who switch to a more sustainable energy source. The Swedish legislation offers tax reliefs (GOS, 2009a) and some tax-free exceptions from the Act on Tax on Energy (SFS



1994:1776). One example is electric power which is produced through wind power (SFS 1994:1776). Thus, companies can gain much more by reducing their impact than by compensating for it.

It is unsure if anyone does separate environmental taxes and fees from other taxes and fees in the financial statements, since none of the persons interviewed had knowledge about how taxes and fees are accounted for. It seems possible to account for environmental taxes and fees separately. It depends on how they are structured; if they are included or related to other taxes and fees or not. The majority of the people interviewed discussed that environmental taxes and fees should be stated separately. It was stated in the interviews that taxes and fees are only disclosed if they are significant.

In general, companies support the polluter pays principle and restore the environment if it has been damaged by their operations. This is in line with the Swedish Environmental Code's objective (which is built on the polluter pays principle) that any actor that has caused damage through their activities should bear the liability for that damage and thus pay the cost of restoring (GOS, 2009a). Both the GRI and the Swedish Environmental Code state that significant environmental fees should be accounted for. There seems to be little or no guidance on how to report or divide taxes and fees in general. This could be due to the fact that the Swedish Environmental Code is a frame law which means that most rules are not precise and it is not defined in detail how the Swedish Environmental Code legislation should be interpreted (GOS, 2012a).

Increased awareness of companies' real climate impact is needed in the process of developing guidelines and legislation. If companies are to use full cost accounting and account for their full costs, externalities need to be monetised. This is also in line with the main objective of full cost accounting (Bebbington, et al., 2001). The only known attempt close to full cost accounting mentioned in one of the interviews is made by PUMA, and it did not use monetary terms. This implies that even though full cost accounting is not really used in practice, there are discussions about it. The fact that one company has made an attempt could mean that more companies will follow their example.

Although full cost accounting is not used in practice, estimates are nevertheless made whenever possible. The estimates are so far only used for internal purposes. There is a need to implement concepts and methodologies for internalising externalities into accounting practices. Market prices of goods and services need to reflect the true environmental and

social costs (UNCTAD, 2003). The shortcoming of full cost accounting is that it is difficult to monetise negative externalities. Although it is unknown what the full cost price actually looks like, further research is needed and a move towards accounting for the full cost is needed. It is important that the direction of the economy is away from unsustainability (Bebbington et al., 2001). If the valuation of externalities is done correctly it will help preserve ecosystems and maintain diversity of species (UNCTAD, 2003).

One difference between the accountants and the company representatives was their views on how externalities could be accounted for. The accountants argued that accounting for externalities should maybe not be performed in the traditional way with monetary terms. One of the accountants interviewed argued that externalities are already included in a sense, through the sustainability report, and that full cost accounting might not be the correct way to go. There could instead be an alternative method similar to full cost accounting with or without using monetary values. A possible way of accounting for climate change could be the use of a climate balance sheet, where positive and negative sustainability information is balanced. The company representatives instead talked about estimates connected to monetary terms and financial results. An interpretation of the difference could be that companies are already using their own measures that they use for management, and thus internal, purposes. Accountants are more focused on external reporting where there is a need for harmonisation and a more precise estimation if monetary terms are used. Thus, even though both companies and accountants might see the difficulties of using monetary terms companies have the need for such measurements.

## **6 Conclusions**

This thesis has identified and described ways to account for negative externalities due to CO<sub>2</sub> emissions and thus how companies can account for their impact on climate change; in general and by incorporating negative externalities into financial statements. The research questions this thesis has answered are how negative externalities due to CO<sub>2</sub> emissions could be accounted for in financial statements and what effects it could have for companies. By accounting for negative externalities due to CO<sub>2</sub> emissions, the financial statements of companies would reflect the full cost of companies' operations. This would help stakeholders become aware of the "true" state of companies' sustainability.

The GRI guidelines and the GHG Protocol both account for negative externalities to some degree, however there is a need for further developments since they have no connection to

financial reporting. As a result, the GHG Protocol has issued additional guidelines and the GRI is issuing its next generation of guidelines. There is also a new global framework regarding integrated reporting which has the potential to increase the connection between sustainability reporting and financial reporting.

The results of this thesis indicate that it is possible to account for climate change. The best way to account for negative externalities due to CO<sub>2</sub> emissions would be to use full cost accounting. If full cost accounting is used it will reflect the full cost of companies' operations. However the problem with monetising externalities makes it difficult to use in practice. One currently available solution to the problem with monetising externalities is to incorporate the externalities. This is done by using government interventions such as taxes, fees and cap-and-trade (if permits are auctioned out). For stakeholders to become aware of the incorporated externalities a solution would be to state environmental taxes and fees as well as emission permits separately in the financial statements. It could be done either in footnotes or by separating them from other financial items. An alternative idea for how negative externalities (and offsets) could be accounted for is the use of an environmental balance sheet.

Regardless of what accounting method is used for accounting for negative externalities, legislation needs to be in place. Legislation is a prerequisite to decrease global warming. Unless companies are required to account for their environmental impact, not all companies will. Although it is believed that accounting can be used to reduce climate change, it is agreed that both legislation and guidelines need to be developed further to aid comparison and benchmarking.

The effects of accounting for negative externalities due to CO<sub>2</sub> emissions will differ depending on the company and how large its emissions are. Accounting for negative externalities will not have a large effect if the emissions are low. The effects will also depend on how far back in the value-chain the accounting is performed. The more emissions that are accounted for, the greater effect it will have for the company. It is important with guidelines that determine who should account for which emissions, to avoid unwanted effects. Accounting for externalities would give incentives for companies to reduce their climate impact since it increases sustainable competitiveness. It will also increase the demand for transparency even further; pressure to report for those not reporting and to improve for those already reporting. Accounting for negative externalities would provide companies

with management tools to adapt and manage their climate impact; to tackle climate change. Awareness of companies' climate impact is one of the most important tools in the battle against climate change. Thus, companies could experience both positive and negative effects depending on the size and type of company.

## **7 Further Research Opportunities**

The problem of climate change has been known for many years. Although the developments of sustainability reporting are moving forward, there are still no statutory solutions in place to tackle climate change. The need for developed guidelines is recognised. It will be interesting to see what will happen with G4 and integrated reporting; if it will be revolutionary or only lead to minor changes in practice. Following its progress will be of interest since the topic needs further development.

If externalities were accounted for in companies' financial statements, an inevitable effect would be that the information regarding sustainability would have to be externally assured along with the other financial information. For auditors to be able to assure sustainability information there is a need for further competence and experience. This implies that it would not only be costly for the companies reporting. It would also lead to high costs for auditing firms in the process of educating auditors to enable sustainability audits.

Since climate change is a complex problem there are many future research opportunities within the field. Future studies of accounting for climate change could be carried out in different ways. It would be interesting to study the topic of accounting for climate change from the view of investors, sustainability analysts and government representatives to receive a broader perspective. An interesting research would also be to include opinions from accountants working with financial reporting. This to see if they agree with the opinions found in the interviews we conducted.

This thesis only contains a case study of Sweden. Since climate change is a global problem it would be interesting with studies that compare the level of sustainability awareness, and reporting, between countries and what is done to harmonise the work of battling climate change. In this thesis we have focused on externalities due to CO<sub>2</sub> emissions. However there are many more environmental impacts besides the ones from CO<sub>2</sub>, which future research could focus on. It is important to find ways to decrease externalities and adapt to climate change. Therefore, further research is needed.

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## Appendix I – Global100 Ranking & Methodology

The Global100 is a yearly presented index of the 100 most sustainable companies in the world. The Swedish companies listed on the index are the following:

	Atlas Copco AB	TeliaSonera AB	Scania AB	H&M Hennes & Mauritz AB
<b>Rank on the Index List (out of 100)</b>	11	14	36	67
<b>Overall Score</b>	54,19%	53,26%	42,43%	31,04%
<b>Energy Productivity</b>	\$ 6 490	\$ 3 175	\$ 4 881	\$ 2 689
<b>GHG Productivity</b>	\$ 83 790	\$ 67 706	\$ 143 212	\$ 53 532
<b>Water Productivity</b>	\$ 18 549	\$ 49 746	\$ 22 033	-
<b>Waste Productivity</b>	\$ 277 703	-	-	-
<b>Innovation Capacity</b>	2,12%	0,94%	4,48%	-
<b>% Taxes Paid</b>	100,00%	61,30%	100,00%	97,36%
<b>CEO to Average Employee Pay</b>	38:1	26:1	57:1	27:1
<b>Safety Productivity</b>	-	\$ 630 875	-	-
<b>Employee Turnover</b>	7,00%	8,80%	-	-
<b>Leadership Diversity</b>	36,00%	27,00%	7,00%	58,00%
<b>Clean Capitalism Paylink</b>	0,00%	0,00%	0,00%	0,00%

(Global100, 2012c)

### Key Performance Indicators

The 11 key performance indicators are presented and explained below. The information is directly obtained from the Global100's website:

**Energy Productivity** – "...calculated by dividing an entity's total revenue in USD for a particular fiscal period by total direct and indirect energy consumed in GJ for the same period. An entity's energy productivity score is a function of two sub-scores: i) a group percentile score\*; and ii) an improvement factor score\*\*."

**Greenhouse Gas Productivity** – "...calculated by dividing an entity's total revenue in USD for a particular fiscal period by total greenhouse gas emissions in metric tonnes of CO<sub>2</sub> for the same period. [...] An entity's greenhouse gas productivity score is a function of two sub-scores: i) a group percentile score\*; and ii) an improvement factor score\*\*."

**Water Productivity** – "...calculated by dividing an entity's total revenue in USD for a particular fiscal period by total water withdrawn in cubic metres for the same period. An entity's water productivity score is a function of two sub-scores: i) a group percentile score\*; and ii) an improvement factor score\*\*."



**Waste Productivity** – “...calculated by dividing an entity’s total revenue in USD for a particular fiscal period by total waste generated in metric tonnes for the same period. An entity’s waste productivity score is a function of two sub-scores: i) a group percentile score\*; and ii) an improvement factor score\*\*.”

**Innovation Capacity** – “...represents the ratio of 3-year average R&D expenditures to 3-year average total revenue.”

**% Taxes Paid** – “...is the percentage of taxes paid in cash (trailing four year average) to the amount of taxes owed at statutory rates (trailing four year average) in USD. Companies score a 0% in the event that their statutory tax amount (trailing four year average) or taxes paid in cash (four year average) is zero or lower. Companies score a 100% in cases where the amount of taxes paid in cash is greater than the amount of tax owed at statutory rates.”

**CEO to Average Employee Pay** – “...is the ratio of CEO compensation for a particular year in USD divided by the average employee compensation in USD over the same time period. Average employee compensation is calculated by dividing the company’s total wage bill for a particular year divided by the total number of employees over the same period. The CEO to Average Employee Pay score is obtained by percentile ranking a company’s ratio against that of every company in the equity index under consideration irrespective of industry group. The higher the ratio, the lower the pay equity score.”

**Safety Productivity** – “...calculated by dividing an entity’s total revenue in USD for a particular fiscal period by the total number of fatalities (multiplied by \$1,000,000 USD) and by the total number of lost time injuries (multiplied by \$1,000 USD) for the same period. An entity’s safety productivity score is a function of two sub-scores: i) a group percentile score\*; and ii) an improvement factor score\*\*.”

**Employee Turnover** – “...obtained by percentile ranking its retention rate (defined as 1 – employee turnover rate) against that of all companies, irrespective of industry group, that trade in the entity’s equity index.”

**Leadership Diversity** – “...calculated as the percentage of women on the entity’s board of directors multiplied by two, up to a maximum of 100%.”

**Clean Capitalism Paylink** – “...designed to award companies that have set up mechanisms to link the remuneration of senior executives with the achievement of clean capitalism goals or targets. A score of 100% is given to companies that describe such a mechanism in detail. [...] A score of 50% is given to companies that provide a high level description of such a mechanism. [...] A score of 0% is given to companies that do not report any linking mechanisms.”

\*”The *group percentile score* is obtained by percentile ranking the entity’s score against that of industry group peers in the same equity index as the entity in question.”

\*\*”The *improvement factor score* is determined by measuring the trailing two year improvement in the entity’s group percentile score.” (Global100, 2012b).

## Appendix 2 – Dow Jones Sustainability Index Ranking & Methodology

The Dow Jones Sustainability Indexes are updated every month and divided into 18 different fact sheets. The Swedish companies are listed on the DJSNI and are the following:

	Rank on the Index List (out of 10)	Float Factor	Adjusted Weight
H&M Hennes & Mauritz AB	1	0,67	10,18%
L.M. Ericsson Telephone Co.	3	1,00	9,11%
Volvo AB	6	0,94	5,85%
Sandvik AB	7	0,89	4,72%
Atlas Copco AB	8	0,77	4,59%
TeliaSonera AB	9	0,49	4,36%

(DJSI, 2012)

### Methodology

The DJSNI uses the Corporate Assessment methodology by SAM. To create competition among companies, the indexes take a best-in-class approach where companies can only be included on the list if they fulfil certain criteria better than their peers (DJSI, 2011a). The index analysts use four different information sources as a basis for analyses:

**SAM Questionnaires** – The most important information source. The questionnaires are specific to each sector and are handed out to the CEOs and heads of investor relations of all companies in the index investible stocks universe. To aid comparison, the questionnaire is designed with multiple-choice questions.

**Company Documentation** – This information source include the following: sustainability reports, environmental reports, health and safety reports, social reports, annual financial reports and special reports such as corporate governance. In addition, the analysts look at all other sources of company information such as websites and brochures.

**Publicly Available Information** – This includes information from e.g. articles, press releases and analysts review media.

**Personal Contact with Companies** – Each analyst personally communicates with companies to fill in any information gaps and add more information to analyse (DJSI, 2010).

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Using these information sources, the analysts look at the following criteria:

<b>Economic</b>	Codes of Conduct / Compliance / Corruption and Bribery Corporate Governance Risk and Crisis Management Industry Specific Criteria
<b>Environment</b>	Environmental Reporting Industry Specific Criteria
<b>Social</b>	Corporate Citizenship / Philanthropy Labor Practice Indicators Human Capital Development Social Reporting Talent Attraction and Retention Industry Specific Criteria (DJSI, 2011b)

## Appendix 3 – Interview Questions

### Information

The interview is divided into three parts; personal questions, general questions and specific questions. The personal questions are about your preferences regarding the interview and your professional role. With the general questions we want your personal view on sustainability issues. In the third and last part the questions are more focused on your professional experience.

### Definitions

Here are two definitions to help you understand what we refer to in some questions:

*Negative Externality* – The damage cost borne by someone other than the one responsible for the damage.

*Full Cost Accounting* – Method to account to for the full cost of the company's activities (including externalities).

### Personal Questions

1. Would you mind being quoted or do you prefer to be interviewed anonymously?
2. May we record the interview for transcription?
3. What is your position and responsibilities within the company?
4. How long have you been working with sustainability reporting?

### General Questions

1. What trends are you experiencing within sustainability reporting?
2. Which framework (developed so far) is preferred to use for sustainability reporting?
  - Why is it preferred?
3. Are today's sustainability reporting frameworks sufficient enough?
  - (If yes) In what way are they sufficient?
  - (If no) What shortcomings does today's sustainability reporting have?
4. What negative externalities regarding CO<sub>2</sub> emissions should be accounted for in the financial statements?

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5. What possible effects could negative externalities due to CO<sub>2</sub> emissions have on financial statements of companies if they were to be included?
6. Is it possible to account for climate impact?
  - (If yes) In what way could accounting for climate change be accomplished?
  - (If no) Why is it impossible?
7. What would be the possible effects on stakeholders' view of companies if climate impact were accounted for in the financial statements?

### **Specific Questions Accountants**

1. What is the demand of clients when it comes to sustainability reporting?
2. What frameworks do your clients use for their sustainability reporting?
3. Do today's sustainability reporting frameworks/guidelines provide a true and fair view of companies' sustainability?
  - (If yes) In what way do today's sustainability reporting frameworks/guidelines provide a true and fair view of companies' sustainability?
  - (If no) Why do today's sustainability reporting frameworks not provide a true and fair view of companies' sustainability?
4. How are environmental taxes and fees accounted for today?
  - How should they be accounted for?
5. How are emission permits accounted for?
6. Do your clients measure their CO<sub>2</sub> emissions?
  - (If yes) How are they accounted for?
  - (If no) Why are they not measuring their CO<sub>2</sub> emissions?
7. Have any of your clients considered using full cost accounting?
  - (If yes) Has it been successful?
  - (If no) Why not?
8. What would be the possible effects (advantages/disadvantages) for your clients if they had to account for climate impact?
9. Should it be possible for companies to account for carbon offsets?

### **Specific Questions Companies**

1. How has the company's sustainability reporting developed over the years?
2. What are the company's demands when it comes to sustainability reporting?

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3. What frameworks/guidelines does the company use for your sustainability reporting?
4. Do today's sustainability reporting frameworks/guidelines provide a true and fair view of the company's sustainability?
  - (If yes) In what way do today's sustainability reporting frameworks/guidelines provide a true and fair view of company's sustainability?
  - (If no) Why do today's sustainability reporting frameworks not provide a true and fair view of company's sustainability?
5. In your opinion, what are the reasons why the company is seen as one of the most sustainable companies worldwide?
6. How are the company's environmental taxes and fees accounted for?
7. Does the company have emission permits?
  - (If yes) How are they accounted for?
8. Does the company measure its CO<sub>2</sub> emissions?
  - (If yes) How are they accounted for?
  - (If no) Why not?
9. Has the company considered using full cost accounting?
  - (If yes) Why?
  - (If no) Why not?
10. What would be the possible effects (advantages/disadvantages) for the company if you had to account for climate impact?
11. What actions is the company taking to offset climate impact?
12. Should it be possible for companies to account for carbon offsets?

## Appendix 4 – Intervjufrågor

### Information

Intervjun är uppdelad i tre delar; personliga frågor, generella frågor och riktade frågor. De personliga frågorna rör dina preferenser kring intervjun och din yrkesroll. Genom de generella frågorna vill vi ha din personliga syn på hållbarhetsfrågor. I den tredje och sista delen fokuseras frågorna mer kring dina yrkeserfarenheter.

### Definitioner

Nedan följer två definitioner till hjälp för att förstå vad vi syftar på i vissa frågor:

*Negativ Externalitet* – Kostnader som företag orsakar men som betalas av till exempel samhället.

*Full Cost Accounting* – Metod för att redovisa den fulla kostnaden för företagets verksamhet (inklusive externaliteter).

### Personliga Frågor

1. Har du något emot att bli citerad eller föredrar du att bli intervjuad anonymt?
2. Får vi spela in intervjun för att använda som underlag för anteckningar?
3. Vad har du för position och ansvarsområden inom företaget?
4. Hur länge har du arbetat med frågor som rör hållbarhetsredovisning?

### Generella Frågor

5. Vilka trender ser du inom hållbarhetsredovisning?
6. Vilken modell (som hittills är utvecklad) är att föredra gällande hållbarhetsredovisning?
  - Varför är den att föredra?
7. Är dagens modeller för hållbarhetsredovisning tillräckliga?
  - (Om ja) På vilket sätt är de tillräckliga?
  - (Om nej) Vilka brister tycker finns det i dagens hållbarhetsredovisning?
8. Vilka negativa externaliteter kopplade till koldioxidutsläpp borde redovisas i de finansiella rapporterna?
9. Vilka möjliga effekter skulle negativa externaliteter kopplade till koldioxidutsläpp ha på företags finansiella rapporter om de var inkluderade?



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10. Är det möjligt att inkludera miljöpåverkan i redovisningen?
  - (Om ja) På vilket sätt skulle man kunna redovisa miljöpåverkan?
  - (Om nej) Varför är det inte möjligt?
11. Hur skulle intressenters syn på företag påverkas om klimatpåverkan vore inkluderad i de finansiella rapporterna?

### **Frågor Riktade till Redovisningskonsult/Revisor**

1. Vad efterfrågar era kunder när det gäller hållbarhetsredovisning?
2. Vilken modell använder era kunder sig av inom hållbarhetsredovisning?
3. Ger dagens modeller för hållbarhetsredovisning en rättvisande bild av företags hållbarhet?
  - (Om ja) På vilket sätt ger dagens modeller för hållbarhetsredovisning en rättvisande bild av företags hållbarhet?
  - (Om nej) Varför ger inte dagens modeller för hållbarhetsredovisning en rättvisande bild av företags hållbarhet?
4. Hur redovisas miljöskatter och avgifter idag?
  - Hur borde de redovisas?
5. Hur redovisas utsläppsrätter?
6. Mäter era kunder sina koldioxidutsläpp?
  - (Om ja) Hur redovisas de?
  - (Om nej) Varför mäter de inte sina koldioxidutsläpp?
7. Har någon av era kunder använt sig av full cost accounting?
  - (Om ja) Har det varit framgångsrikt?
  - (Om nej) Varför inte?
8. Vad skulle effekterna (fördelar/nackdelar) bli för era kunder om de vore tvungna att redovisa klimatpåverkan?
9. Ska företag ha möjlighet att redovisa kompensationer för klimatpåverkan?

### **Frågor Riktade till Företagsrepresentant**

1. Hur har företagets hållbarhetsredovisning utvecklats genom åren?
2. Vad efterfrågar företaget när det gäller hållbarhetsredovisning?
3. Vilken modell för hållbarhetsredovisning använder ni er av?

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4. Ger dagens modeller för hållbarhetsredovisning en rättvisande bild av företagets hållbarhet?
  - (Om ja) På vilket sätt ger dagens modeller för hållbarhetsredovisning en rättvisande bild av företagets hållbarhet?
  - (Om nej) Varför ger inte dagens modeller för hållbarhetsredovisning en rättvisande bild av företagets hållbarhet?
5. Varför tror du att företaget anses vara ett av världens mest hållbara?
6. Hur redovisar företaget miljöskatter och avgifter?
7. Innehar företaget utsläppsrätter?
  - (Om ja) Hur redovisas de?
8. Mäter företaget sina koldioxidutsläpp?
  - (Om ja) Redovisas de på något sätt?
  - (Om nej) Varför inte?
9. Har ni övervägt att använda er av full cost accounting?
  - (Om ja) Varför?
  - (Om nej) Varför inte?
10. Vad skulle effekterna (fördelar/nackdelar) bli för ert företag om ni vore tvungna att redovisa klimatpåverkan?
11. Vad gör ert företag för att kompensera för klimatpåverkan?
12. Ska företag ska ha möjlighet att redovisa kompensationer för klimatpåverkan?