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From voluntary to mandatory sustainability reporting

THE STUDY SHOWS that by implementing the NFR Directive's provisions on sustainability reporting more widely than the prescribed minimum level, Sweden has included over half of the business sector in terms of added value and carbon dioxide emissions.

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Foreword

The issues surrounding growth policy are complex and demand examination from a myriad of perspectives in order to understand what the state can and should do. The Swedish Agency for Growth Policy Analysis therefore conducts what we refer to as *framework projects*. A framework project can last for up to two years and consists of several subprojects that contribute to illuminating a given issue. *Greening of the economy* is one of the Agency's six prioritised areas of study.

This study forms part of the framework project *Can the financial market's sustainability assessments contribute to the business sector's green conversion and if so is there a role for the state?* The final project report is due in June 2019.

In October 2014, an EU directive on the disclosure of non-financial information (Directive 2014/95/EU, NFR Directive) was adopted requiring large undertakings with over 500 employees to prepare an annual sustainability report. The new disclosure requirements entered into force in 2017 and are intended to make information regarding how businesses are working on sustainability issues more transparent and comparable.

In this report, we analyse the implications of Sweden's broader implementation of the NFR Directive in terms of what percentage of Swedish companies and their climate impact will be covered. We also conduct an early analysis of whether the NFR Directive's aims regarding transparency and comparability have been achieved, through an analysis of whether the quantity of sustainability data has increased and if companies' reporting has become more uniform.

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Summary

The Swedish implementation of the EU directive on disclosure of non-financial information covers two thirds of net turnover in the Swedish business sector and two thirds of the business sector's carbon dioxide emissions. While the sustainability reports prepared by Swedish listed companies appear to be somewhat more transparent and comparable than those in neighbouring Nordic countries, there is still room for improvement.

In October 2014, an EU directive on the disclosure of non-financial information (Directive 2014/95/EU, NFR Directive) was adopted that required large undertakings with over 500 employees to prepare an annual sustainability report. Reports should provide information on how companies address environmental issues, corporate social responsibility, labour matters, respect for human rights and anti-corruption. This reporting requirement entered into force in 2017 and is intended to make data regarding how companies address sustainability issues more transparent and comparable throughout the EU.

Sweden implemented this new regulatory framework on 1 December 2016 through amendments to existing legislation such as the Swedish Annual Accounts Act (SFS 1995:1554). Swedish reporting requirements apply to all undertakings:

- a) with an annual average of over 250 employees;
- b) with a net turnover of over SEK 350 million;
- c) with a balance sheet total of SEK 175 million or over; or
- d) that fulfil a least two of the above criteria regarding number of employees, turnover and balance sheet total.

The Swedish implementation is therefore broader than the minimum levels required by the NFR Directive, partly in that it covers all companies with over 250 employees – i.e. half of the total stipulated in the directive – and partly in that the reporting requirement applies to all companies and not just listed companies or certain financial institutions.

In this report, *From Voluntary to Mandatory Sustainability Reporting*, the Swedish Agency for Growth Policy Analysis analyses Sweden's implementation of the NFR directive on sustainability reporting. The report forms part of the framework project *Can the financial market's sustainability assessments contribute to the business sector's green conversion and if so is there a role for the state?*

Which companies are covered by sustainability reporting legislation?

Using firm-level data and data on production-based emissions at industry level for 2015, we investigate the share of Sweden's business sector, economy and greenhouse gas emissions covered by the more wide-ranging reporting requirements.

- The Swedish size criteria mean that some 1,500 independent companies are covered by the new sustainability reporting legislation, equivalent to approximately 3% of limited companies. Reporting requirements differ widely across various sectors, with approximately 1% of companies in the agricultural sector preparing sustainability reports compared to close to 100% of mining and quarrying companies.
- In total, 1.05 million people work in companies with a statutory sustainability reporting requirement, equivalent to 45% of the private-sector workforce.

- The net turnover of the companies covered by the reporting requirement was SEK 4,470 billion, equivalent to two thirds of the total net turnover of the business sector.
- In terms of added value, 62% of value is created by companies that are covered by EU sustainability reporting requirements. This share varies from sector to sector, ranging from almost 100% in the mining and quarrying sector to 21% in the other services sector.
- It is estimated that sustainability reporting requirements cover 58% of all fixed assets in the Swedish business sector.
- Between them, sustainability reporting companies account for 67% of the business sector's carbon dioxide emissions and 58% of other greenhouse gases.

Has Swedish sustainability reporting become more transparent and comparable over time?

The Swedish Agency for Growth Policy Analysis has also studied the level of transparency and comparability in Swedish companies' sustainability reporting over the past five years, the last year of which was subject to the statutory requirements of the NFR Directive. In our interpretation, the transparency of a sustainability report equates to the quantity of sustainability information that the company chooses to disclose, while comparable sustainability reporting is interpreted as the uniformity of the sustainability reports; i.e. whether companies choose to disclose the same sustainability information. The Swedish Agency for Growth Policy Analysis uses the Nordic Compass database, which contains information on ESG¹ indicators for around 400 companies that are traded in the NASDAQ OMX Nordic Large Cap and Mid Cap segment, approximately 40% of which have their head office in Sweden. Nordic Compass includes 80 ESG indicators divided into the categories Environmental (E), Social (S), and Governance (G), and covers the four years from 2014 to 2017.

- The analysis shows that on average the companies report about half of environmental and social indicators (E and S) and two thirds of governance indicators (G).
- Swedish companies generally report slightly more sustainability information than non-Swedish companies, especially information on governance.
- No obvious trends in the quantity of information reported can be observed over the period.
- Industry Classification Benchmark (ICB) sectors Basic Materials, Consumer Goods and Telecommunications report the most sustainability indicators in total, while companies in Healthcare, Technology and Finance report the fewest. While the number of sustainability indicators reported by Consumer Services and Technology companies appears to have decreased over the last four years, there seems to have been an increase in sustainability reporting by the Oil and Gas sector.

The comparability of sustainability reports has been investigated using statistical testing of the uniformity of the companies' reported sustainability criteria.

- The uniformity in Swedish sustainability reports maintains a level halfway between random and perfect agreement.
- This metric indicates that reporting by companies with head offices outside Sweden is less uniform than that by Swedish companies.

¹ The ESG indicators are: Environmental (E), Social (S) and Governance (G).

- Swedish sustainability reports seem to become slightly more uniform over time, while non-Swedish reports remain constant or display a slightly negative trend. We see no apparent change in reporting trends in conjunction with the implementation of the new regulatory framework.
- Divided into ESG categories, it is readily apparent that governance (G) indicators are most uniformly reported, something that is true of both among Swedish and non-Swedish companies.

Conclusion

By implementing the NFR Directive's provisions on sustainability reporting more widely than the prescribed minimum level, Sweden has included over half of the business sector in terms of added value and carbon dioxide emissions. Even if, on average, Swedish companies appear to be reporting more sustainability information in a more uniform manner than neighbouring countries, there remains room for increased transparency and comparability. It will be a few years before it is possible to ascertain whether the reporting requirements have had the desired effect.

1 Introduction

As the effects of climate change have become increasingly visible and globalisation has increased the environmental and social impact of multinational corporations in developing countries, so society's expectations of individual and corporate social responsibility beyond the limits of national legislation have increased. (Bénabou and Tirole, 2009).² As a consequence, politicians, researchers and companies have become increasingly interested in the concept of corporate social responsibility (CSR). Many countries have incorporated sustainability principles in policy and legislation on both a voluntary and mandatory basis. A considerable body of scientific literature has grown up around CSR in a wide range of fields (Kitzmueller, 2008). These days, sustainability management is seen as a vital element of a company's business strategy and the number of companies that share their work in an annual sustainability report has continuously increased over many years (Kitzmueller, 2008; KPMG, 2017).

According to the KPMG Survey of Corporate Responsibility Reporting 2017, the average percentage of the largest 100 companies in a wide selection of countries that report on sustainability increased from 12% in 1993 to 64% in 2011 and is now at 75% globally. Over recent years, the EU, which likes to consider itself top of the class when it comes to sustainability, has lost out to both Asian and American corporations, this despite the fact that the percentage of European companies reporting sustainability increased from 71% in 2011 to 77% in 2017. One reason highlighted is the statutory reporting requirements introduced in certain countries, Mexico among them.

Despite the EU and its predecessor the European Economic Community (EEC) boasting a long history of statutory mandatory reporting of financial information, the union has dragged its feet in introducing legal requirements to adopt sustainability principles or to report on them (Szabó and Sørensen, 2015).³ Pre-2011, the EU relied completely on the voluntary implementation of codes of conduct communicated through resolutions, notifications and recommendations.

In both the Single Market Act and the communication *A renewed EU strategy 2011-14 for Corporate Social Responsibility*, the European Commission underlined the need for increased transparency around the CSR and environment-related information provided by companies. The European Parliament has also highlighted the need for a CSR platform, adopting two resolutions in 2013 affirming the importance of sustainability reporting to achieving a sustainable global economy.

With the implementation of the EU Accounting Directive (2013/34/EU), a requirement was introduced for certain companies to report on their sustainability management in financial statements. When it quickly became apparent that this directive was ineffective, lacking clear requirements and therefore inconsistently applied by Member States, a new directive (2014/95/EU) was introduced amending the Accounting Directive with regard to the disclosure of non-financial and diversity policy. This directive required all large undertakings of public interest with an annual average of 500 employees to report the company's environmental and health impact as well as policies on gender equality and labour rights, human rights and corruption in their financial statements. The stated purpose

² This contrasts with the view that it is the state, rather than the individual or corporation, that should rectify market failures and handle income or welfare gaps.

³ Mandatory reporting requirements in Fourth Council Directive 78/660/EEC of 25 July 1978 based on Article 54 (3) (g) of the Treaty on the annual accounts of certain types of companies.

was to increase transparency so that the CSR and environmental information disclosed by companies in all sectors and all Member States achieves the same level. With a common regulatory framework, it should be easier to compare sustainability reports from companies in different Member States and conduct risk analyses of various sustainability aspects, presumably leading to increased confidence among investors and consumers. It was also expected that costs for adapting to different regulatory frameworks would be reduced, something that would be particularly useful for companies operating in several Member States.

Sweden chose to allow the new regulations to cover considerably more companies than the minimum requirements in the NFR Directive, by including all undertakings with over 250 employees and applying the reporting requirement to all of those companies rather than just those defined as public-interest entities; i.e. listed companies and certain financial institutions. Prior to implementation, the number of companies covered by the statutory requirement was estimated at 1,600, compared to approximately 100 with implementation at the NFR Directive minimum level (Swedish Government Bill 2015/16:193).

The purpose of this report is to analyse Sweden's implementation of the NFR directive on sustainability reporting. It is of interest to know what percentages of the Swedish economy and carbon dioxide emissions are covered by Sweden's more ambitious implementation of the directive compared to the minimum level. The reporting requirement is intended to make information regarding how businesses are working on sustainability issues more transparent and comparable, thereby facilitating risk analyses of various sustainability aspects and increasing trust among investors and consumers. One year of sustainability reports have been published since the implementation of the directive. It is important to find out whether the statutory requirement has resulted in greater transparency and more comparable sustainability reports. In the study, transparent sustainability reporting is translated to the amount of information companies choose to report. Comparable sustainability reporting is interpreted as the uniformity of the information contained in sustainability reports from one company to the next.

This report forms part of the framework project *Can the financial market's sustainability assessments contribute to the business sector's green conversion and if so is there a role for the state?*

The remainder of the report is structured as follows: Section 2 is a presentation of the EU NFR Directive, its anticipated effects and its Swedish application, including a brief summary of the scientific literature concerning sustainability reporting; Section 3 describes the business data and reports the results of the study of the NFR directive's coverage of Swedish companies; Section 4 contains a discussion of the method and data and reports the results of the study of Swedish companies sustainability reporting over time; Section 5 concludes the report with a discussion of key results and offers conclusions and recommendations for further analysis.

2 The EU's Directive on the Disclosure of Non-financial Information

Recent decades have seen a rapid increase in the number of European companies publishing annual sustainability reports (KPMG, 2017). Even if some countries have introduced statutory reporting requirements for CSR and environment-related information, or more flexible measures, the content and scope of the reports has primarily developed through the voluntary engagement of the companies themselves. There is no European or international standard specifying the content or format of these reports although there are various frameworks and guidelines. Consequently, sustainability reports differ vastly in size, complexity, scope and accessibility.

According to the European Commission, rather than achieving its aims, the Accounting Directive – the first EU regulatory attempt to increase the number and uniformity of sustainability reports – led to fragmented legislation as the various Member States applied the directive differently. Some countries introduced statutory requirements exceeding those contained in the directive, while others chose a model in which companies were free to prepare a sustainability report or not, as long as they justified their decision to refrain from doing so. Certain Member States applied the regulations to large corporations, while others included some public listed or state-owned companies. Furthermore, Member States referred to various international reporting guidelines or simply developed their own national guidelines. The European Commission estimated that only 2,500 companies, a mere 6% of all European companies, prepared sustainability reports and that over half of the reports published came from companies with head offices in only four countries: the United Kingdom, Germany, Spain and France.

According to the Commission, this fragmentary legislation created tremendous difficulties for analysts and investors seeking to compare and assess companies operating on the internal market. The Commission pointed out that the lack of transparency regarding companies' environmental management could impact on a number of stakeholders – especially businesses and certain other investors, interest groups and public authorities – and emphasised that this type of information forms the basis for companies' risk assessments and the integration of non-financial risks and opportunities into organisations and strategies. The information would also make it easier for investors to observe sustainability aspects so that risks can be priced and capital markets function efficiently. Even civil society and lobby groups were deemed to be in need of the information in order to assess whether companies are acting responsibly.

In addition to the abovementioned regulatory failure, the Commission also pointed to a failure on the part of the market as a cause of the dearth and lack of quality of sustainability reports from European companies. The cause lay with the insufficient and asymmetrical motivations the market offered companies to publish sustainability reports; on the one hand, transparency had definite, measurable, short-term costs, while on the other it seemed to offer unquantifiable, long-term or external returns. This lack of symmetry between short-term costs and long-term benefits offers companies little incentive to provide non-financial information.

Against this background, according to the Commission's proposal, the new Directive 2014/95/EU would ensure a level playing field for all European companies and limit the costs for companies operating in more than one Member State.⁴

2.1 The value of sustainability reporting

In their proposal for the directive, the Commission emphasises the apparent correlation between companies' sustainability management and competitiveness and profitability. Companies at the forefront in terms of sustainability seem to perform better financially than their competitors, especially in the medium to long term. The commission refers to research results indicating that a company that places greater value on sustainability seems to encounter lower capital costs and generally appears to be associated with lower risk than other companies. It is also suggested that a high sustainability profile provides competitive advantages in recruiting, motivating and retaining skilled employees, as well as benefiting customer loyalty. Conversely, a low sustainability profile incurs extra costs and leads to deteriorating relationships with the state and the local community, as well as the risk of negative rumours.

There is a large and growing body of literature in economics, business management and financial research that takes a broad approach to answering a number of questions related to corporate sustainability management. One comprehensive element of this literature has studied the relationship between the company's externally perceived sustainability value, in the form of ESG indicators, and its financial result. Even if there is increasing support for a positive relationship between sustainability and financial result, empirical research has not demonstrated any consensus; rather, it provides contradictory evidence both in terms of investor outcomes and operational returns.⁵

As with the relationship to financial result, scientific debate has not led to any consensus regarding how the quality of sustainability reporting is affected by being a voluntary measure or a statutory requirement respectively. An argument can be made that a statutory requirement paves the way for more standardised reporting, while a voluntary model may result in incomplete and slipshod reporting that lacks objectivity and comparability. That said, standardisation risks increasing quantity at the expense of quality, given that the use of a standard framework for sustainability reporting might replace the use of company and sector-specific data. There are some empirical studies that support the idea that sustainability reporting maintains a higher standard in countries with a statutory requirement, France for example, than in countries without. Other empirical studies demonstrate the opposite or provide conflicting results.⁶

2.2 Implementation of the NFR Directive in Member States

EU Directive 2014/95/EU, which entered into force at the beginning of 2017, requires all large public-interest undertakings with an annual average of 500 employees to report the company's environmental and health impact as well as policies on gender equality and labour rights, human rights and corruption in their financial statements.

The EU Accounting Directive (2013/34/EU) defines large undertakings as undertakings which on their balance sheet dates exceed at least two of the three following criteria:

⁴ Learn more about the Commission's reasoning in COM(2013) 207 final and SWD(2013) 128 final

⁵ For a summary of scientific literature, see inter alia Gibson and Krueger, P. (2018).

⁶ For a summary of scientific literature, see inter alia Venturelli et al (2017).

- a) Balance sheet total: EUR 20,000,000
- b) Net turnover: EUR 40,000,000
- c) Average number of employees during the financial year: 250

Public-interest entities are defined as companies that are:

- a) governed by the law of a Member State and whose transferable securities are admitted to trading on a regulated market of any Member State;
- b) credit institutions as defined in point (1) of Article 4 of Directive 2006/48/EC;
- c) insurance undertakings within the meaning of Article 2(1) of Council Directive 91/674/EEC; or
- d) designated by Member States as public-interest entities, for instance undertakings that are of significant public relevance because of the nature of their business, their size or the number of their employees.

The directive does however limit this to companies with an average of 500 or more employees during the financial year.

How information is reported is a matter for the parties in question; however, it is recommended that companies rely on national or international guidelines such as the United Nations Global Compact initiative, OECD Guidelines for Multinational Enterprises, the International Organization for Standardization's ISO 26000 Social Responsibility standard or the ILO's Tripartite declaration of principles concerning multinational enterprises and social policy. Certain reporting requirements are based on the principle of *comply or explain*, which means that the company need not have a specific policy as long as they can explain the reasons for their noncompliance.

Member States were urged to implement the directive's provisions in national legislation no later than 6 December 2016, with companies reporting according to the new requirements beginning with the financial year beginning 1 January 2017; however, over half of Member States missed this deadline (KPMG 2018).

Although the directive states a minimum level for sustainability reporting, it provides for Member States to introduce specific national requirements regarding which companies are included, how reports are to be published, which reporting guidelines to follow and the content of reports. Member States are free to decide whether to require external auditing and on any sanctions. Member States have chosen to implement the directive in a variety of ways.⁷ Of the 28 Member States, plus EEA members Norway and Island, 11 have chosen to define *large undertakings* differently than in the Accounting Directive, including Sweden. All countries with the exception of six have redefined *public-interest entities*, while the majority have chosen to retain the directive's regulations in terms of focus areas, content and auditing framework. The majority of countries, 23 in total, have their own provisions regarding the format of sustainability reports; i.e. whether reporting should be incorporated in financial statements, included in a separate report or published in some other way. In most countries, a penalty is payable if the company fails to publish its sustainability report on time.

⁷ For a summary, see Member State Implementation of Directive 2014/95/EU. A comprehensive overview of how Member States are implementing the EU Directive on Non-financial and Diversity Information. GRI & CSR Europe, 2017.

2.2.1 Implementation of the NFR Directive in Sweden

Sweden implemented this new regulatory framework on 1 December 2016 through amendments to existing legislation such as the Swedish Annual Accounts Act (SFS 1995:1554). Swedish reporting requirements apply to all companies:

- a) with an annual average exceeding 250 employees;
- b) with a net turnover of over SEK 350 million;
- c) with a balance sheet total of SEK 175 million or over; or
- d) that fulfil a least two of the above criteria regarding number of employees, turnover and balance sheet total.

The Swedish application is therefore broader than the minimum levels required in the NFR Directive, partly in that it covers all companies with over 250 employees – i.e. half of the total stated in the directive – and partly in that the reporting requirement applies to all companies and not just listed companies or certain financial institutions. Among other things, the Swedish Government’s legislative proposal (Government Bill 2015/16:193) justified this ambitious level of implementation as having a positive impact on the competitiveness of Swedish businesses. In a Ministry of Justice memorandum on companies’ reporting of sustainability and diversity policy (Ds 2014:45), the Swedish approach was discussed based on balancing the societal benefits of reporting by large and public-interest companies with the reporting costs accruing to these companies. The memorandum notes that the importance of sustainability reporting for investors, customers, consumers and environmental organisations is not limited by the size of a company or whether or not it is listed. In their bill, the Government underlines that companies have a great deal to gain by addressing sustainability issues, in the form of increased consumer and investor confidence. For many companies, addressing sustainability issues would therefore strengthen their competitiveness and increase profitability. As the bill says, “Sustainability reporting strengthens the overall position of Swedish companies”. In the opinion of the Council on Legislation, another consideration was that, should Swedish implementation be based on the directive’s minimum reporting requirements, in all likelihood it would only affect companies that already published some form of sustainability report, either voluntarily or due to other requirements.

3 What Do We Know About the Companies with a Sustainability Reporting Requirement?

When analysing Sweden's implementation of the EU's directive on the disclosure of non-financial information, one crucial question is how many companies and what percentage of the Swedish economy the statutory requirement covers. It is also a matter of interest to study how many more companies are covered as a direct result of Sweden's expanded statutory requirement than would have been the case using the directive's minimum level.

3.1 Methodology

In order to describe how well the statutory sustainability reporting requirement represents the Swedish economy we have used information on corporate financial reporting obtained from Statistics Sweden and the commercial database Serrano. Mapping is based on data regarding limited companies' balance sheets and profit and loss statements, their industry affiliation, age and geographical location and whether they belong to a group of companies. In its basic form, this data relates to limited companies. As the regulatory framework applies at group level, consolidated accounts are used for companies that belong to a group. Hereafter, we therefore refer to both corporate groups and freestanding companies as 'independent companies'.

By using the two aforementioned data sources, a detailed image of the percentage of the Swedish economy covered by the statutory sustainability reporting requirement – in the form of companies, organisations and jobs – can be obtained. By linking emissions data at an industrial level to reporting data at corporate level, it is possible to calculate the percentage of emissions from companies covered by the reporting requirement.

Based on the business data, the analysis aggregates results to sector and national levels. The report focuses on sector level based on Statistics Sweden's Swedish Standard Industrial Classification (SNI) sorted by sector (letter) and primary activity (SNI 2007, two digits).

Greenhouse gas emissions are mapped based on data from Statistics Sweden at industry level. The report is based on production-based emissions with the emphasis on carbon dioxide (expressed as tons of CO₂) and other greenhouse gases, primarily consisting of nitrous oxide, methane and ozone. These emissions are recalculated to carbon dioxide equivalents (CO₂e).

Greenhouse gas emissions can either be measured based on strictly national activities or from a broader global perspective. Our analysis complies with the Swedish Environmental Protection Agency's definition and covers emissions from Swedish companies and individuals both within and outside the borders of Sweden. This follows the same demarcation as national economic statistics, i.e. the National Accounts.

Due to flawed data regarding listings on foreign stock exchanges, at this point in time it is difficult to provide an answer to the question of what percentage of the Swedish business sector would have been covered had Sweden chosen to apply the NFR directive's minimum requirements. This question could be answered by comparing the percentage of the Swedish business sector subject to the statutory sustainability reporting requirement with the percentage in neighbouring countries that have not applied a similar broader implication.

3.2 Business data

The report uses revised business data for the year 2015 as business data lags behind by around two years. In order to ensure the comparability of companies we have excluded those in the financial sector (banks, insurance companies and other financial services, SNI 64-66). If one looks at the total number of limited companies, rather than independent companies, data from the Swedish Companies Registration Office shows that 503,000 registered companies in Sweden. If instead one accounts for consolidated group companies, which we do in this report, then there are 296,000 independent companies (excluding the financial sector). These companies have a total of 2.3 million employees.

Table 1 shows a summary of independent companies categorised by sector (17 sectors). The three sectors with the largest number of companies are i) Professional, scientific and technical activities (M), 70,000 companies, ii) Wholesale and retail trade; repair of motor vehicles and motorcycles (G), 52,000 companies, and iii) Construction (F), with 38,000 companies. The three sectors with the largest number of employees are i) Manufacturing (C), 467,000 employees, ii) Wholesale and retail trade; repair of motor vehicles and motorcycles (G), 451,000 employees, and iii) Construction (F), with 271,000 employees. The three sectors with the largest turnover are i) Wholesale and retail trade; repair of motor vehicles and motorcycles (G), SEK 2,210 billion, ii) Manufacturing (C), SEK 1,870 billion, and iii) Legal and accounting activities (M69), SEK 612 billion.

Tabell 1 Overview of total independent companies, total employees and net turnover 2015, own calculation.

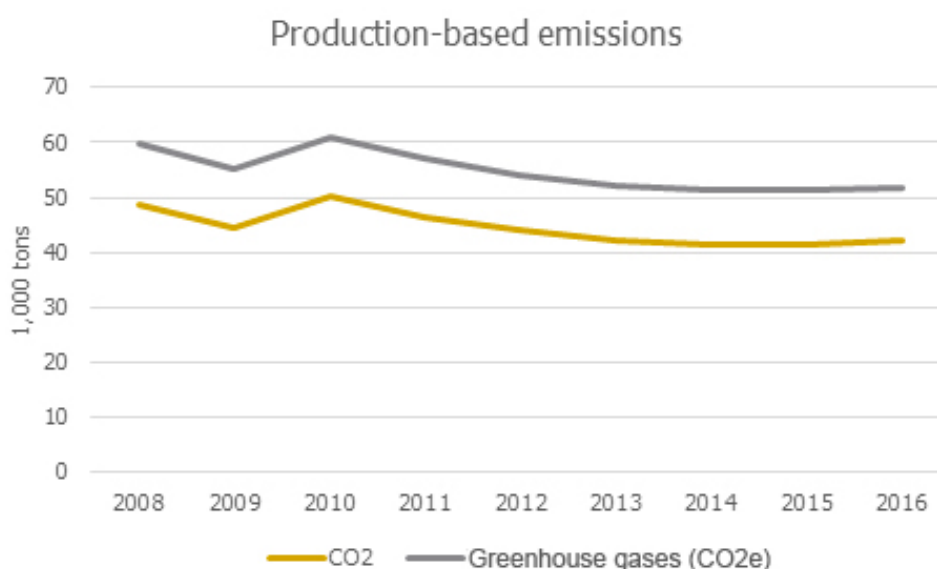
Sector	Total companies	Total employees	Net turnover (MSEK)
Agriculture, forestry and fishing (A)	7,515	28,447	83,000
Mining and quarrying (B)	359	2,563	7,750
Manufacturing (C)	20,628	466,885	1,870,000
Electricity, gas, steam and air conditioning supply (D)	869	7,418	107,000
Water supply; sewerage, waste management and remediation activities (E)	576	12,755	47,200
Construction (F)	37,684	270,979	584,000
Wholesale and retail trade; repair of motor vehicles and motorcycles (G)	51,916	451,322	2,210,000
Transportation and storage (H)	12,674	144,717	296,000
Accommodation and food service activities (I)	11,480	102,438	113,000
Information and communication (J)	21,984	140,013	355,000
Real estate activities	17,712	31,875	140,000
Professional, scientific and technical activities (M)	70,181	254,391	612,000
Administrative and support service activities (N)	11,585	170,455	223,000
Education (P)	5,517	42,574	41,000
Human health and social work activities (Q)	12,321	141,881	113,000
Arts, entertainment and recreation (R)	7,218	21,116	35,600

Sector	Total companies	Total employees	Net turnover (MSEK)
Other service activities (S)	5,825	22,558	23,900
Total	296,044	2,312,387	6,861,450

3.3 Emissions of carbon dioxide and other greenhouse gases

The years between 2008 and 2016 saw a slight decreasing trend in the business sector’s production-based emissions of carbon dioxide (CO₂) and carbon dioxide equivalents (CO₂e) in other greenhouse gases. Figure 1 shows greenhouse gas emissions were 9 million tons CO₂e lower in 2016 than in 2010. The equivalent figure for carbon dioxide was 8 million tons. Figure 1 also shows that emission levels tend to covary with economic cycles.

Figure 1 Emissions 2008-16



A division of the Swedish economy into 46 principal activities shows that Water transport (H50) is responsible for the highest carbon dioxide emissions (6.3 million tons CO₂). After this comes Electricity, gas, steam and air conditioning supply (D35, 6.3 million tons CO₂), Manufacture of basic metals (C24, 4.8 million tons CO₂) and Manufacture of other non-metallic mineral products (C23, 3.2 million tons CO₂). When it comes to emissions of other greenhouse gases, Crop and animal production, hunting and related service activities (A01) is responsible for the highest emissions (8.1 million CO₂e). After this comes Electricity, gas, steam and air conditioning supply (D35, 6.6 million tons CO₂e), Water transport (H50, 6.4 million tons CO₂e) and Manufacture of basic metals (C24, 4.9 million tons CO₂e). Table 2 shows a summary of emissions from 46 primary activities based on data from Statistics Sweden.

Table 2 Emissions from primary activities, 2015, Source: Statistics Sweden

SNI code	Description of primary activity	CO ₂ thousand tons	CO ₂ e thousand tons
A01	Crop and animal production, hunting and related service activities	1,254	8,051
A02	Forestry and logging	912	932

SNI code	Description of primary activity	CO₂ thousand tons	CO₂e thousand tons
A03	Fishing and aquaculture	139	141
B05-B09	Mining and quarrying	1,555	1,580
C10-C12	Manufacture of food products	436	606
C13-C15	Manufacture of textiles; apparel; and leather products	29	30
C16	Manufacture of wood and of products of wood and cork, except furniture	166	198
C17-18	Manufacture of paper and paper products; printing and reproduction of recorded media	748	942
C19	Manufacture of coke and refined petroleum products	2,488	2,502
C20-C21	Manufacture of chemicals and chemical products; manufacture of basic pharmaceutical products and pharmaceutical preparations	1,270	1,317
C22	Manufacture of rubber and plastic products	58	68
C23	Manufacture of other non-metallic mineral products	3,197	3,209
C24	Manufacture of basic metals	4,802	4,860
C25	Manufacture of fabricated metal products, except machinery and equipment	186	193
C26	Manufacture of computer, electronic and optical products	11	12
C27	Manufacture of electrical equipment	26	33
C28	Manufacture of machinery and equipment n.e.c.	134	144
C29	Manufacture of motor vehicles, trailers and semi-trailers	177	180
C30	Manufacture of other transport equipment	16	17
C31-C32	Manufacture of furniture; other manufacturing	48	51
C33	Repair and installation of machinery and equipment	70	72
D35	Electricity, gas, steam and air conditioning supply	6,247	6,602
E36-E39	Water collection, treatment and supply; sewerage; waste collection, treatment and disposal activities, materials recovery; remediation activities and other waste management services	239	1,690
F41-F43	Construction of buildings; civil engineering; specialised construction activities	1,878	1,920
G45-G47	Wholesale and retail trade and repair of motor vehicles and motorcycles	1,353	1,570
H49	Land transport and transport via pipelines	2,927	3,003
H50	Water transport	6,341	6,447
H51	Air transport	2,670	2,709
H52-H53	Warehousing and support activities for transportation; postal and courier activities	463	473
I55-I56	Accommodation; food and beverage service activities	76	78
J58	Publishing activities	11	12
J59-J60	Motion picture, video and television programme production, sound recording and music publishing activities; programming and broadcasting activities	17	17
J61	Telecommunications	21	21
J62-J63	Computer programming, consultancy and related activities; information service activities	66	69

SNI code	Description of primary activity	CO₂ thousand tons	CO₂e thousand tons
K64	Financial service activities, except insurance and pension funding	63	65
K65	Insurance, reinsurance and pension funding, except compulsory social security	9	9
K66	Activities auxiliary to financial services and insurance activities	8	9
L68	Real estate activities	198	208
M69–M70	Legal and accounting activities; Activities of head offices, management consultancy activities	217	225
M71-M72	Architectural and engineering activities, technical testing and analysis; scientific research and development	129	133
M73-M75	Advertising and market research; other professional, scientific and technical activities; veterinary activities	71	73
N77	Rental and leasing activities	229	237
N78-N82	Employment activities; travel agency, tour operator and other reservation service and related activities; security and investigation activities; services to buildings and landscape activities; office administrative, office support and other business support activities	225	231
P85	Education	64	66
Q86	Human health activities	46	135
Q87-Q88	Residential care activities; social work activities without accommodation	32	33
R90-R93	Creative, arts and entertainment activities; libraries, archives, museums and other cultural activities; gambling and betting activities; sports activities and amusement and recreation activities	99	101
S94–U99	Other service activities; activities of households as employers; activities of extraterritorial organisations and bodies	110	113
Total		41,460	51,313

3.4 Which companies are covered by a statutory sustainability reporting requirement?

The new legislation requires all companies above a certain size to prepare an annual sustainability report. The Swedish size criteria for the business sector for 2015 mean that some 1,500 independent companies are covered by the new sustainability reporting legislation, equivalent to approximately 3% of limited companies. In total, 1.05 million people work in companies with a sustainability reporting obligation, equivalent to 45% of the private-sector workforce. The total turnover of the business sector in 2015 was SEK 6,860 billion, which can be compared to Sweden's GDP for that same year of approximately SEK 4,200 billion.

The net turnover of the companies covered by the reporting requirement was SEK 4,470 billion, which equates to 66% of the total net turnover of the business sector. In terms of added value, 62% of value created in the business sector is created by companies that are covered by the Swedish sustainability reporting requirement. Between them, these companies account for 67% of the business sector's emissions of carbon dioxide and 58% of other greenhouse gases.

3.4.1 Analysis at sector level: total companies and employees

Table 3 shows the division by sector (2015 statistics) of the 1,514 companies that meet the criteria for statutory sustainability reporting. The greatest number can be found in Wholesale and retail trade and repair of motor vehicles and motorcycles (G), with 480 companies, and Manufacturing (C), with 400 companies. The percentage of all employees working in companies with a statutory sustainability reporting requirement is 45%. At sector level, this percentage varies from 16% in Other service activities (S) to 85% in Electricity, gas, steam and air conditioning supply (D). In the three largest sectors, 65% of employees in Manufacturing (C) work in a company with a statutory sustainability reporting requirement, while the equivalent figures for Wholesale and retail trade and repair of motor vehicles and motorcycles (G) and Construction (F) are 48 and 29% respectively.

Table 3 Number of companies with a statutory sustainability reporting requirement and number of employees in those companies.

Sector	Total companies			Total employees		
	N	SR: no	SR: yes	Total	SR: no	SR: yes
Agriculture, forestry and fishing (A)	7,515	~ 7,500	< 10	28,447	22,345	6,102
Mining and quarrying (B)	359	~ 305	< 10	2,563	1,528	1,035
Manufacturing (C)	20,628	20,226	402	466,885	163,556	303,329
Electricity, gas, steam and air conditioning supply (D)	869	849	20	7,418	1,128	6,290
Water supply; sewerage, waste management and remediation activities (E)	576	559	17	12,755	5,067	7,688
Construction (F)	37,684	37,574	110	270,979	191,655	79,324
Wholesale and retail trade; repair of motor vehicles and motorcycles (G)	51,916	51,439	477	451,322	236,163	215,159
Transportation and storage (H)	12,674	12,602	72	144,717	84,837	59,880
Accommodation and food service activities (I)	11,480	11,453	27	102,438	79,351	23,087
Information and communication (J)	21,984	21,891	93	140,013	75,136	64,877
Real estate activities	17,712	17,671	41	31,875	25,411	6,464
Professional, scientific and technical activities (M)	70,181	70,058	123	254,391	146,426	107,965
Administrative and support service activities (N)	11,585	11,521	64	170,455	88,915	81,540
Education (P)	5,517	5,505	12	42,574	31,042	11,532
Human health and social work activities (Q)	12,321	12,294	27	141,881	75,577	66,304
Arts, entertainment and recreation (R)	7,218	7,206	12	21,116	15,955	5,161
Other service activities (S)	5,825	~ 5,815	< 10	22,558	18,962	3,596
Total	296,044	294,530	1,514	2,312,387	1,263,054	1,049,333

Note: Categories SR: yes/SR: no refer to companies who, due to their size, are/are not expected to be required to prepare a sustainability report.

3.4.2 Analysis at sector level: net turnover and value creation

The statutory sustainability reporting requirement covers two thirds of the total turnover of the Swedish business sector. At sector level, this percentage varies from 91% in Construction/water, sewerage and waste (F) to 17% in Other service activities (S). In the three sectors with the largest turnover, the requirement applies to companies that account for 83% of turnover in Manufacturing (C) and 64% in the sectors Wholesale and retail trade and repair of motor vehicles and motorcycles (G) and Professional, scientific and technical activities (M).

In terms of added value, 62% of value is created by companies that are covered by sustainability reporting requirements. This share varies from sector to sector, ranging from almost 100% in Mining and quarrying (B) to 21% in Other service activities (S). In the three largest sectors, the percentages are 81% in Manufacturing (C), 63% in Wholesale and retail trade and repair of motor vehicles and motorcycles (G) and 53% in Professional, scientific and technical activities (M).

Table 4 shows net turnover and value creation in Swedish limited companies, comparing companies with a statutory reporting requirement from the beginning of the 2017 financial year and limited companies exempted from reporting on how they address sustainability issues.

Table 4 Net turnover and value creation in companies with/without a statutory sustainability reporting requirement (SEK billion)

Sector	Net turnover			Value creation		
	Total	SR: no	SR: yes	Total	SR: no	SR: yes
Agriculture, forestry and fishing (A)	83	40	43	30	11	19
Mining and quarrying (B)	8	4	4	1	~0	1
Manufacturing (C)	1,870	310	1,560	545	101	444
Electricity, gas, steam and air conditioning supply (D)	107	10	97	135	~0	136
Water supply; sewerage, waste management and remediation activities (E)	47	10	37	9	3	5
Construction (F)	584	330	254	200	118	82
Wholesale and retail trade; repair of motor vehicles and motorcycles (G)	2,210	800	1,410	397	148	249
Transportation and storage (H)	296	145	151	92	46	46
Accommodation and food service activities (I)	113	82	31	52	36	16
Information and communication (J)	355	127	228	146	66	80
Real estate activities	140	89	51	91	55	35
Professional, scientific and technical activities (M)	612	221	391	264	123	141
Administrative and support service activities (N)	223	97	126	97	46	51
Education (P)	41	28	13	25	18	7

Sector	Net turnover			Value creation		
Human health and social work activities (Q)	113	60	53	81	44	37
Arts, entertainment and recreation (R)	35	22	14	13	9	4
Other service activities (S)	23	20	4	12	10	3
Total	6,861	2,395	4,467	2,189	833	1,356

Note: Categories SR: yes/SR: no refer to companies who, due to their size, are/are not expected to be required to prepare a sustainability report.

It is calculated that sustainability reporting requirements cover 58% of all fixed assets in the Swedish business sector. In the three sectors with most fixed assets, there is a reporting requirement on 41% of companies in Real estate activities (L), 82% in Manufacturing (C) and 82% in Electricity, gas, steam and air conditioning supply (D). Table 5 shows fixed assets at Swedish limited companies divided between reporting and non-reporting companies.

Table 5 Fixed assets in companies with/without a statutory sustainability reporting requirement (SEK million)

Sector	Total	SR: no	SR: yes
Agriculture, forestry and fishing (A)	81,400	32,700	48,700
Mining and quarrying (B)	4,910	2,130	2,780
Manufacturing (C)	358,000	66,000	292,000
Electricity, gas, steam and air conditioning supply (D)	212,000	38,000	174,000
Water supply; sewerage, waste management and remediation activities (E)	15,800	5,860	9,940
Construction (F)	132,000	65,700	66,300
Wholesale and retail trade; repair of motor vehicles and motorcycles (G)	183,000	64,000	119,000
Transportation and storage (H)	94,700	47,100	47,600
Accommodation and food service activities (I)	48,200	34,200	14,000
Information and communication (J)	44,000	10,800	33,200
Real estate activities	770,000	458,000	312,000
Professional, scientific and technical activities (M)	135,000	32,000	103,000
Administrative and support service activities (N)	35,300	17,400	17,900
Education (P)	7,430	3,740	3,690
Human health and social work activities (Q)	12,300	7,940	4,360
Arts, entertainment and recreation (R)	15,800	11,720	4,080
Other service activities (S)	3,610	2,723	887
Total	2,153,450	900,013	1,253,437

Note: Categories SR: yes/SR: no refer to companies who, due to their size, are/are not expected to be required to prepare a sustainability report.

3.4.3 Analysis at primary activity level: greenhouse gas emissions

In our analysis, we divide emissions of carbon dioxide and other greenhouse gases at primary activity (46 primary activities) level between companies with a statutory sustainability reporting requirement and those without. Division by sector is estimated

based on the number of employees in the companies. This implies that if 47% of employees in a sector (e.g. Wholesale and retail trade etc. (G)) work for a company covered by with a statutory reporting requirement, we will assume that 47% of emissions are caused by companies with a statutory reporting requirement.

3.4.4 Emissions of carbon dioxide

If we aggregate our business data for the business sector as a whole, 67% of carbon dioxide emissions are caused by companies with a statutory reporting requirement. Looking at the three sectors with the highest carbon dioxide emissions, the following picture emerges: a total of 86% of carbon dioxide emissions from Water transport (H50) comes from companies with a statutory reporting requirement. The equivalent figure for the sector Electricity, gas, steam and air conditioning supply (D) is 85% and for the primary activity Manufacture of basic metals (C24) 87%. Table 6 shows emissions from the various primary activities.

Table 6 CO₂ emissions from companies with/without a statutory reporting requirement, source: Statistics Sweden and own calculations.

Sector		Emissions	SR: no	SR: yes
		(thousand tons CO₂)		
A01	Crop and animal production, hunting and related service activities	1,254	1,238	16
A02	Forestry and logging	912	544	369
A03	Fishing and aquaculture	139	139	0
B05-B09	Mining and quarrying	1,555	927	628
C10-C12	Manufacture of food products	436	149	287
C13-C15	Manufacture of textiles; apparel; and leather products	29	22	7
C16	Manufacture of wood and of products of wood and cork, except furniture	166	95	71
C17-18	Manufacture of paper and paper products; printing and reproduction of recorded media	748	239	509
C19	Manufacture of coke and refined petroleum products	2,488	162	2,326
C20-C21	Manufacture of chemicals and chemical products; manufacture of basic pharmaceutical products and pharmaceutical preparations	1,270	245	1,025
C22	Manufacture of rubber and plastic products	58	30	28
C23	Manufacture of other non-metallic mineral products	3,197	1,297	1,900
C24	Manufacture of basic metals	4,802	646	4,156
C25	Manufacture of fabricated metal products, except machinery and equipment	186	147	39
C26	Manufacture of computer, electronic and optical products	11	2	9
C27	Manufacture of electrical equipment	26	7	19
C28	Manufacture of machinery and equipment n.e.c.	134	47	86
C29	Manufacture of motor vehicles, trailers and semi-trailers	177	16	161
C30	Manufacture of other transport equipment	16	2	14
C31-C32	Manufacture of furniture; other manufacturing	48	30	18
C33	Repair and installation of machinery and equipment	70	45	25

	Sector	Emissions	SR: no	SR: yes
D35	Electricity, gas, steam and air conditioning supply	6,247	950	5,297
E36-E39	Water collection, treatment and supply; sewerage; waste collection, treatment and disposal activities, materials recovery; remediation activities and other waste management services	239	95	144
F41-F43	Construction of buildings; civil engineering; specialised construction activities	1,878	1,328	550
G45-G47	Wholesale and retail trade and repair of motor vehicles and motorcycles	1,353	708	645
H49	Land transport and transport via pipelines	2,927	2,211	716
H50	Water transport	6,341	866	5,475
H51	Air transport	2,670	338	2,332
H52-H53	Warehousing and support activities for transportation; postal and courier activities	463	170	293
I55-I56	Accommodation; food and beverage service activities	76	59	17
J58	Publishing activities	11	6	5
J59-J60	Motion picture, video and television programme production, sound recording and music publishing activities; programming and broadcasting activities	17	5	12
J61	Telecommunications	21	4	17
J62-J63	Computer programming, consultancy and related activities; information service activities	66	42	24
K64	Financial service activities, except insurance and pension funding	63	63	0
L68	Real estate activities	198	158	40
M69-M70	Legal and accounting activities; Activities of head offices, management consultancy activities	217	107	111
M71-M72	Architectural and engineering activities, technical testing and analysis; scientific research and development	129	77	52
M73-M75	Advertising and market research; other professional, scientific and technical activities; veterinary activities	71	59	12
N77	Rental and leasing activities	229	163	67
N78-N82	Employment activities; travel agency, tour operator and other reservation service and related activities; security and investigation activities; services to buildings and landscape activities; office administrative, office support and other business support activities	225	115	110
P85	Education	64	47	17
Q86	Human health activities	46	25	21
Q87-Q88	Residential care activities; social work activities without accommodation	32	17	15
R90-R93	Creative, arts and entertainment activities; libraries, archives, museums and other cultural activities; gambling and betting activities; sports activities and amusement and recreation activities	99	75	24
	Total	41,404	13,714	27,690

Note: The table is based on emissions data at sector level from Statistics Sweden. The percentage of emissions caused by companies with/without a statutory sustainability reporting requirement is estimated based on the percentage of employees in these companies.

3.4.5 Emissions of other greenhouse gases

Companies that now have a statutory sustainability reporting requirement are responsible for 58% of the business sector's total emissions of greenhouse gases other than carbon dioxide. Results vary in the three primary activities with the highest emissions excluding carbon dioxide. In the primary activity with the largest emissions of other greenhouse gases, Crop and animal production, hunting and related service activities (A01), only 1% of companies have a statutory sustainability reporting requirement. This is because the majority of agricultural companies in Sweden are relatively small in size, both in terms of turnover and employees. This is in stark contrast to the other two leading primary activities in terms of emissions, Electricity, gas, steam and air conditioning supply (D35) and Water transport (H50), where the figures are 85 and 86% respectively. Table 7 shows emissions excluding carbon dioxide with our calculated division between companies engaged in different primary activities.

Table 7 CO₂e emissions from companies with/without a statutory reporting requirement, own calculation.

SNI code	Description of primary activity	Emissions 2015	SR: No	SR: yes
		(thousand tons CO₂e)		
A01	Crop and animal production, hunting and related service activities	8,051	7,948	103
A02	Forestry and logging	932	555	376
A03	Fishing and aquaculture	141	141	0
B05-B09	Mining and quarrying	1,580	942	638
C10-C12	Manufacture of food products	606	207	400
C13-C15	Manufacture of textiles; apparel; and leather products	30	22	7
C16	Manufacture of wood and of products of wood and cork, except furniture	198	114	84
C17-18	Manufacture of paper and paper products; printing and reproduction of recorded media	942	301	642
C19	Manufacture of coke and refined petroleum products	2,502	163	2,340
C20-C21	Manufacture of chemicals and chemical products; manufacture of basic pharmaceutical products and pharmaceutical preparations	1,317	254	1,063
C22	Manufacture of rubber and plastic products	68	35	33
C23	Manufacture of other non-metallic mineral products	3,209	1,302	1,907
C24	Manufacture of basic metals	4,860	654	4,206
C25	Manufacture of fabricated metal products, except machinery and equipment	193	152	41
C26	Manufacture of computer, electronic and optical products	12	2	10
C27	Manufacture of electrical equipment	33	9	24
C28	Manufacture of machinery and equipment n.e.c.	144	51	93
C29	Manufacture of motor vehicles, trailers and semi-trailers	180	16	164
C30	Manufacture of other transport equipment	17	2	15
C31-C32	Manufacture of furniture; other manufacturing	51	32	19
C33	Repair and installation of machinery and equipment	72	47	26

SNI code	Description of primary activity	Emissions 2015	SR: No	SR: yes
D35	Electricity, gas, steam and air conditioning supply	6,602	1,004	5,598
E36-E39	Water collection, treatment and supply; sewerage; waste collection, treatment and disposal activities, materials recovery; remediation activities and other waste management services	1,690	671	1,019
F41-F43	Construction of buildings; civil engineering; specialised construction activities	1,920	1,358	562
G45-G47	Wholesale and retail trade and repair of motor vehicles and motorcycles	1,570	821	748
H49	Land transport and transport via pipelines	3,003	2,268	734
H50	Water transport	6,447	880	5,567
H51	Air transport	2,709	343	2,366
H52-H53	Warehousing and support activities for transportation; postal and courier activities	473	173	299
I55-I56	Accommodation; food and beverage service activities	78	60	18
J58	Publishing activities	12	7	5
J59-J60	Motion picture, video and television programme production, sound recording and music publishing activities; programming and broadcasting activities	17	6	12
J61	Telecommunications	21	4	17
J62-J63	Computer programming, consultancy and related activities; information service activities	69	43	25
K66	Activities auxiliary to financial services and insurance activities	9	5	3
L68	Real estate activities	208	166	42
M69-M70	Legal and accounting activities; Activities of head offices, management consultancy activities	225	110	114
M71-M72	Architectural and engineering activities, technical testing and analysis; scientific research and development	133	79	54
M73-M75	Advertising and market research; other professional, scientific and technical activities; veterinary activities	73	61	12
N77	Rental and leasing activities	237	168	69
N78-N82	Employment activities; travel agency, tour operator and other reservation service and related activities; security and investigation activities; services to buildings and landscape activities; office administrative, office support and other business support activities	231	118	113
P85	Education	66	48	18
Q86	Human health activities	135	73	63
Q87-Q88	Residential care activities; social work activities without accommodation	33	18	16
R90-R93	Creative, arts and entertainment activities; libraries, archives, museums and other cultural activities; gambling and betting activities; sports activities and amusement and recreation activities	101	77	25
Total		51,200	21,538	29,736

Note: The table is based on emissions data at sector level from Statistics Sweden. The percentage of emissions caused by companies with/without a statutory sustainability reporting requirement is estimated based on the percentage of employees in these companies. Estimated with the aid of data for 2015.

3.5 Conclusions

This section demonstrates the percentage of Swedish limited companies that, pursuant to the Swedish implementation of the EU NFR Directive, are subject to a statutory requirement to supplement their financial statements with information regarding their policies on the environment, corporate social responsibility, respect for human rights and anti-corruption. Our analysis shows that just over 1,500 Swedish limited companies are covered by the new reporting requirement. The net turnover of these companies was SEK 4,470 billion, equivalent to two thirds of the total net turnover of the Swedish business sector. Between them, sustainability reporting companies account for 67% of the business sector's carbon dioxide emissions and 58% of the other greenhouse gases.

Reporting obligations differs widely across business sectors, with approximately 1% of companies in the agricultural sector preparing sustainability reports compared to close to 100% of mining and quarrying companies.

4 Has Swedish Sustainability Reporting Become More Transparent and Comparable Over Time?

One purpose of this study was to investigate whether Swedish companies' sustainability reporting has become more transparent and comparable over time, especially since the implementation of the NFR Directive. In the study, transparent sustainability reporting is translated to the amount of information companies choose to report, while comparable sustainability reporting is interpreted as the uniformity of the information contained in sustainability reports from one company to the next. By focusing on the environmental ESG indicators, it is possible to study both whether the amount of information has increased and if companies are choosing to report the same information.

It is also important to find out whether ESG indicators feed back into the company's systematic environmental management and environmental reporting. If this proves to be the case, then companies that evaluate their operations according to ESG criteria should have progressed further in their systematic environmental management, or at the very least developed the manner in which they report their environmental work. From this perspective, one reasonable hypothesis would be that the more years companies evaluate according to ESG criteria, the greater the convergence of report content from one company to the next. We are therefore investigating the following related questions: Does the amount of sustainability work reported increase in line with the number of years the company has been ESG evaluated? Does the comparability of sustainability reports increase in line with the number of years the company has been ESG evaluated?

It is not inconceivable that regular evaluations may lead to the development of an industry standard. That ESG evaluations have any impact on a company's own environmental reporting is a premise that has been rejected, at least by major corporations (Swedish Agency for Growth Policy Analysis, 2018). It is also reasonable to assume that this development will differ from sector to sector. We will therefore also investigate the following: How do different industries and sectors differ with regard to what work they report in their sustainability reports?

Our analysis is based on sustainability reports produced both voluntarily and subject to a statutory requirement. Given that only one year of statutorily regulated sustainability reports are available at this time, it is not possible to derive any direct effects of this new legislation using statistical methods. We are therefore conducting a descriptive analysis and observing trends or major shifts over the time period.

4.1 Methodology

A large body of literature addresses the analysis of sustainability reporting based on its scope, structure, quality and substance, from varying perspectives and using various methods.⁸ Many studies have analysed Swedish companies that are considered pioneers in sustainability reporting (Cahan et al, 2016; KPMG, 2018; Lin and Edvinsson, 2008; Hedberg and von Malmborg, 2003, Arvidsson, 2017). The content of sustainability reports is often analysed manually in order to identify, categorise and quality-assess sustainability indicators (Roca och Searcy, 2012).

⁸ For a general overview, see Unerman, 2000; KPMG, 2018; Roca and Searcy, 2012

As ESG evaluations are based on the same non-financial information that companies have a statutory duty to report, ESG data has been chosen as the basis for investigation in this study. By basing analysis on the mapping and classifications of corporate sustainability management used by ESG evaluators, it is a straightforward matter to measure both the quantity and uniformity of the reviewed material. As ESG data is gathered annually and organised by a business team, the level of coverage is significantly greater than the collected data on which research is usually based.

One objection raised against using ESG data is that the research survey published by the Swedish Agency for Growth Policy Analysis (2018) shows that the evaluations by different ESG rating agencies do not always coincide. The models and praxis used to illuminate and evaluate a company's environmental management vary. It is however reasonable to assume that the evaluations methods and models that each rating agency uses vary only marginally over time, making it less problematic to analyse changes over time in the ESG evaluations conducted by a specific rating agency, at least if comparison is conducted year over year.

A further challenge is presented by the low coverage of ESG evaluations across the Swedish business sector, particularly in smaller or unlisted companies. The companies that are ESG evaluated are by and large those of interest for major international investors. It is therefore debatable whether any general conclusions can be drawn regarding the development of the company's environmental management over time based on the sample chosen for the survey; however, there is no obvious reason why environmental reporting should develop differently in unlisted rather than listed companies over time. The sample is also in line with previous research that generally focuses on sustainability reports from large listed companies (Guthrie and Abeysekera, 2006). Large companies are not simply viewed as pioneers and trendsetters (Arvidsson, 2017), they also have considerable influence over society (Stiller och Daub, 2007).

A company's goals, actions, monitoring activities and risks can be reported in sustainability reports with varying levels of ambition; the information may be poor quality, unstructured, inaccurate or far too general. It is difficult to capture such qualitative variations in an ESG database – it might reasonably call for manual collection and analysis. For the purposes of this report, we do not analyse which individual sustainability indicators companies choose to report, nor do we study how they report individual indicators or whether they report them over time. A study that analyses companies reporting of specific indicators after the implementation of the NFR Directive was conducted in Member States by the Climate Disclosure Standards Board (CDSB) and CDP Europe (2018), covering 80 large European companies. A similar analysis of Swedish financial institutions' statutorily regulated sustainability reporting has been conducted by Finansinspektionen (2018).

4.2 ESG data

The Swedish Agency for Growth Policy Analysis uses data collected and organised by the ESG consultancy Resility and the Swedish House of Finance research centre. The Nordic Compass database contains information on ESG indicators for around 400 companies that are traded in the NASDAQ OMX Nordic Large Cap and Mid Cap segment. These ESG indicators are not graded or evaluated, they are simply presented as raw data; for example, as an amount or yes/no. The time series covers the four years from 2014 to 2017.

Table 8 summarises the total number of companies in Resilify Nordic Compass divided by the country in which their head office is located. The percentage of companies with a Swedish head office remains at approximately 40% throughout the four-year period. The total number of companies varies from year to year depending on the number of companies operating in the Mid Cap and Large Cap segments. The level of coverage of listed companies is between 60 and 80% with the exception of the first year, which includes just under 50%. If the sample of companies were to be systematically skewed, our descriptive analysis would also be distorted. In order to ensure that the analysis is not affected by a skewed sample, we therefore perform all analyses using both the unbalanced sample and a balanced sample including only those companies that are in the sample in all of the last three years.

Table 8 Total number of companies in Nordic Compass divided by country.

Country	2014	2015	2016	2017
Denmark	35	51	54	59
Finland	52	66	67	73
Norway	44	62	82	95
Sweden	100	150	164	202
Other	22	36	44	46

Table 9 shows the division of companies across sectors.

Table 9 Total number of companies in Nordic Compass divided by sector.

Sector	Companies	2014	2015	2016	2017
Basic materials	Swedish	7	6	7	6
	Overseas	13	14	13	15
Consumer goods	Swedish	12	16	18	22
	Overseas	19	30	31	33
Consumer services	Swedish	5	15	15	22
	Overseas	5	15	16	20
Finance	Swedish	19	36	42	49
	Overseas	15	38	45	53
Healthcare	Swedish	4	19	20	28
	Overseas	10	20	22	24
Industry	Swedish	41	45	44	54
	Overseas	54	56	60	66
Oil and gas	Swedish	1	2	2	2
	Overseas	13	20	33	30
Technology	Swedish	8	8	13	16
	Overseas	14	15	19	21
Telecommunications	Swedish	3	3	3	3
	Overseas	4	4	4	6
Utilities	Swedish	0	0	0	0
	Overseas	5	3	4	5

Nordic Compass includes almost 80 variables based on the frameworks UN PRI, GRI and CDP, divided into the categories Environment, Corporate Social Responsibility and

Governance. In addition to these background variables, the database consists of 12 million indicators, 27 of which are related to corporate social responsibility and 28 to governance issues. In our tables, the indicators are reported under the headings Environmental, Social and Governance.

4.3 Has corporate sustainability reporting become more transparent?

In order to investigate whether companies' sustainability reporting has become more transparent over time a simple analysis was performed of the average amount of reported indicators per industry, country, ESG class and year. The percentage of reported indicators in relation to the maximum number is a recurring method in scientific literature for analysing the quantitative scope of sustainability reporting (Roca och Searcy, 2012; Arvidsson, 2017).

Table 10 shows the average reported ESG criteria for Swedish companies and the full sample respectively. Table 11 shows the average reported ESG criteria for Swedish and overseas companies that remained in Nordic Compass during all three years. On average the companies report about half of environmental and social indicators and somewhat more governance indicators. Swedish companies generally report slightly more information than non-Swedish companies, especially on governance. The analysis does not show any increase in reported information over time; in fact, the total amount of information reported appears to have declined, although it is not possible to say whether this represents a significant change. The qualitative observations are also found in the balanced sample in Table 11.

Table 10 Average number of reported ESG criteria.

ESG criteria	Companies	2014	2015	2016	2017
Maximum value					
<i>Environment</i>	Swedish	6.40	6.11	5.68	4.94
12	All	6.40	6.00	5.44	4.65
<i>Social</i>	Swedish	15.71	14.35	14.37	14.35*
27	All	15.57	14.52	13.43	13.80
<i>Governance</i>	Swedish	22.07*	21.77*	21.62*	21.60*
28	All	20.99	20.76	19.97	20.02
Total:	Swedish	44.18*	42.23	41.07*	40.89*
67	All	42.96	41.28	38.84	38.47

Table 11 Average number of reported ESG criteria. All companies that remained in Nordic Compass during all three years 2015, 2016 and 2017. Total 134 overseas and 116 Swedish companies.

ESG criteria	Companies	2015	2016	2017
Maximum value				
<i>Environment</i>	Swedish	6.20	5.94	5.64
12	Overseas	6.13	5.99	5.22
<i>Social</i>	Swedish	14.46	14.53	15.39
27	Overseas	14.62	14.02	14.66
<i>Governance</i>	Swedish	21.82*	21.87*	21.81*

ESG criteria	Companies	2015	2016	2017
Maximum value				
28	Overseas	20.00	19.29	19.76
Total:	Swedish	42.48	42.35*	42.84*
67	Overseas	40.76	39.31	39.65

Table 12 shows that Swedish companies in the Industry Classification Benchmark (ICB) sectors Basic Materials, Consumer Goods and Telecommunications report the most sustainability indicators in total, while companies in Healthcare, Technology and Finance report the fewest. While the number of sustainability indicators reported by Consumer Services and Technology companies appears to have decreased over time, the number of indicators reported by the Oil and Gas sector has increased.

Table 12 Average number of reported ESG criteria by sector, Swedish companies. Maximum value 67

Sector	2014	2015	2016	2017
Basic materials	52	53.17	48.86	52.83
Consumer goods	47,42	45.62	45.28	45.68
Consumer services	49.4	43.67	44.87	40.45
Finance	41.84	41.25	37.83	39.69
Healthcare	44	34.95	36.85	34.96
Industry	42.83	43.18	43.36	43.09
Oil and gas	38	43.5	41	44.5
Technology	41.5	37.88	36.31	35.5
Telecommunications	47	49.33	44	46.67
Utilities	-	-	-	-
Mean value	44.18	42.23	41.07	40.89
Maximum value	67	67	67	67

When the reported ESG criteria for the last financial year (2017) are divided into the categories Environment, Corporate Social Responsibility and Governance, we see in Table 13 that the spread of reporting is especially varied in the first two categories. In the Environment category, the average number of reported indicators varies between 3 and 9 out of a possible 12, while in the Corporate Social Responsibility category the average number of reported indicators varies between 11 and 21 out of a possible 27. Governance indicators reported by Swedish companies remain even and high across sectors, which might be expected given the strength of the Swedish Code of Corporate Governance (Lekvall, 2009).

Table 13 Average number of reported ESG criteria by sector and indicator, Swedish companies, 2017.

Sector	Environment	Social	Governance
Basic materials	8.83	21.33	22.67
Consumer goods	6.59	17.23	21.86
Consumer services	4.59	14.41	21.45
Finance	5.08	13.16	21.45
Healthcare	2.68	11.21	21.01
Industry	5.65	15.67	21.78
Oil and gas	7	15.5	22

Sector	Environment	Social	Governance
Technology	2.31	11.62	21.56
Telecommunications	6	17.67	23
Utilities	-	-	-
Mean value	4.94	14.35	21.60
Maximum value	12	27	28

4.4 Has corporate sustainability reporting become more comparable?

The comparability of sustainability reports has been investigated using inter-rater reliability testing of the uniformity of the companies' reported sustainability criteria. As the binary data is nominal with multiple assessors who, in this context, must be understood as the reporting companies, Krippendorff's alpha is deemed to be the most appropriate reliability coefficient (Hallgren, 2012). This coefficient is a function of observed agreement, likelihood of random agreement and likelihood of agreement. Krippendorff's alpha provides values between -1 och 1, where -1 is complete disagreement (i.e. the assessors disagree on all points), 0 is random agreement and 1 is perfect agreement.

Table 14 shows the uniformity of Swedish and overseas companies' sustainability reporting across the three ESG categories over time.

Table 14 Uniformity of sustainability reporting measured as inter-rater reliability using Krippendorff's alpha.

ESG criteria	Companies	2014	2015	2016	2017
<i>Environment</i>	Swedish	0.228	0.255	0.297	0.300
	Overseas	0.234	0.217	0.213	0.204
<i>Social</i>	Swedish	0.387	0.352	0.373	0.396
	Overseas	0.357	0.309	0.316	0.314
<i>Governance</i>	Swedish	0.651	0.670	0.647	0.700
	Overseas	0.518	0.539	0.450	0.490
Total:	Swedish	0.471	0.475	0.492	0.525
	Overseas	0.409	0.400	0.375	0.397

Note: Krippendorff's alpha provides values between -1 och 1, where -1 is complete disagreement (i.e. the assessors disagree on all points), 0 is random agreement and 1 is perfect agreement.

Swedish sustainability reports maintains an average uniformity somewhere around halfway between random and perfect agreement. This metric also indicates that reporting by companies with head offices outside Sweden is less uniform than that by Swedish companies. It also appears that Swedish sustainability reports are more uniform over time, while non-Swedish reports remain at a more constant level. Divided into ESG categories, it is readily apparent that governance indicators are most homogenous, something that is true of across both Swedish and non-Swedish companies. The uniformity of Swedish governance reporting also seems to increase somewhat over time, while reporting by overseas companies does not follow the same pattern. Environmental indicators are the least homogeneously reported, although even here Swedish companies show an increasing level of homogeneity over the period in question – a development that is not shown in sustainability reporting by overseas companies. The uniformity of reported corporate social responsibility indicators maintains a relatively constant level somewhere between environmental and governance indicators.

Table 15 Uniformity of sustainability reporting measured as inter-rater reliability using Krippendorff's alpha. All companies that remained in Nordic Compass during all three years 2015,2016 and 2017. Total 134 overseas and 116 Swedish companies.

ESG criteria	Companies	2015	2016	2017
Environment	Swedish	0.274	0.339	0.305
	Overseas	0.228	0.222	0.217
Social	Swedish	0.356	0.400	0.430
	Overseas	0.325	0.324	0.342
Governance	Swedish	0.674	0.676	0.703
	Overseas	0.538	0.464	0.528
Total:	Swedish	0.481	0.514	0.529
	Overseas	0.406	0.378	0.415

Note: Krippendorff's alpha provides values between -1 och 1, where -1 is complete disagreement (i.e. the assessors disagree on all points), 0 is random agreement and 1 is perfect agreement.

Table 15 shows the same analysis when the sample of companies remain constant over the three years 2015,2016 and 2017. Uniformity appears to increase somewhat for both Swedish and overseas companies, although observations from the previous analysis seem to hold qualitatively. The major change is found in corporate social responsibility indicators, which show a greater increase in uniformity for both Swedish and overseas companies compared to the analysis of the full sample. At the same time, Swedish reporting of environmental information appears to decline between 2016 and 2017 – a change that is not noted among overseas companies. Judging from these results, previous ESG values do not affect the uniformity of the companies' sustainability reports.

In order to exclude the possibility that it is non-Nordic companies that drive the difference in results between Swedish and overseas companies, we also conducted an analysis without these. The results, which are not reported here, are qualitatively in line with previous results, aside from greater uniformity in governance reporting in neighbouring Nordic countries, even if this is still below the uniformity of Swedish reporting.

Studies show that sustainability reports take different forms in different countries (Dhaliwal et al, 2012; Simnett et al, 2009). It is conceivable that the content of sustainability reports tends to converge within a given country; in which case, this may be the underlying cause of the gap between Swedish and Nordic sustainability reports. If Norwegian, Danish and Finnish sustainability reporting demonstrates uniformity at national level but differs greatly from country to country, our results would show an apparent greater uniformity in Swedish sustainability reports than in the Nordic countries as a group. That said, when we repeat the analysis country by country, the results remain the same: Swedish sustainability reporting seems to be more uniform than our Nordic neighbours.

4.5 Conclusions

In this section we report on the development of sustainability reporting by large and medium-sized companies listed on Nasdaq OMX Nordic over the past four years, the last of which was under the statutory requirements of the EU NFR Directive.

We see that the quantity of sustainability indicators reported by companies is by and large less than the total number of indicators generally included in international guidelines. This observation is in line with previous qualitative research demonstrating that in many

countries there is a gap between reported indicators and the total sustainability indicators included in international frameworks (Roca och Searcy, 2012; Yadava och Sinha, 2016; Tarquinio et al, 2018).

Nor does there appear to be any consensus among companies regarding which sets of indicators they should be reporting, especially when it comes to environmental information, something that concurs with the findings of other studies (Radley Yeldar, 2012). The same lack of transparency and uniformity was also noted by Finansinspektionen (2018) in their analysis of sustainability reporting by Swedish financial institutions.

We find that companies with their head office in Sweden appear to report slightly more sustainability information than non-Swedish companies, especially information on governance. Swedish sustainability reporting also seems to be more uniform and is becoming more so over time, while overseas sustainability reporting does not show the same development. That said, we have not tested whether this increase is statistically significant.

The underlying cause of this quantitative difference is unclear; the majority of Swedish and overseas companies traded on Nasdaq OMX Nordic should be covered by statutory reporting requirements even at the proposed minimum level. Nor was the statutory sustainability reporting requirement in Sweden prior to the implementation of the EU's directive any more ambitious than other Nordic countries (Steenstrup and Stordrange, 2017; Szabó and Sørensen, 2015). Even if Swedish companies are usually viewed as pioneers of sustainability reporting, the same might also be assumed to apply to our Nordic neighbourhoods (Cahan et al, 2016; Lin och Edvinsson, 2008; Vandemaele et al, 2005).

5 Summary Conclusions

In 2014, the European Union adopted Directive 2014/95/EU on the disclosure of non-financial reporting with the intention of shaping a more efficient internal market with a level playing field for all companies in Member States. The hope was that increased oversight of corporate sustainability reporting would aid investors, customers and civil society in taking account of sustainability aspects in making investment and consumption decisions.

The non-financial reporting requirement was supposed to give companies the tools to manage their sustainability risks, as well as to provide long-term competitive advantages and increased profitability. Without prescribing specific recommendations or requirements for specific forms, the expectation was that statutory reporting requirements would make data not only more widely available but also more comparable.

Now, two years after the implementation of the directive in Member States and with one year of sustainability reports published, the first assessments are underway as to whether the reporting requirement has had the desired results.

The Swedish Agency for Growth Policy Analysis is contributing with an analysis of the Swedish implementation of the EU's directive with regard to mandatory sustainability reporting. The Swedish implementation included a larger percentage of companies than would have been the case using the EU directive's minimum level and it is of interest to know what percentages of the Swedish economy and carbon dioxide emissions are covered. It is also of interest to gain an understanding of the level of transparency and comparability in Swedish sustainability reports prior to the implementation of the directive and, as far as possible, an indication of developments since the statutory requirement was introduced.

As our analysis has shown, only a small percentage of Swedish businesses are covered by mandatory reporting. These companies do however create a large part of the total added value in the Swedish economy. They also account for the majority of Swedish greenhouse gas emissions.

It also appears that Swedish companies sustainability reporting was already relatively transparent and comparable in relation to our Nordic neighbours, even if that latter observation is not statistically significant. We see no obvious trends regarding transparency and comparability in conjunction with the implementation of the new regulatory framework.

Reason suggests that a few more years of observations will be necessary before the desired effects of the directive can be achieved and measured.

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Sakkunniga medarbetare, unika databaser och utvecklade samarbeten på nationell och internationell nivå är viktiga tillgångar i vårt arbete. Genom en bred dialog blir vårt arbete relevant och förankras hos dem som berörs.

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