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Sustainability reporting - need for greater standardisation and transparency

Maria Ferlin

Johan Blixt

Emma Brattstr¶m

Economic Commentary

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Maria Ferlin, Johan Blixt and Emma Brattström

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Economic Commentaries

Economic Commentaries are brief analyses of issues that are relevant to the Riksbank. They may be written by individual members of the Executive Board or by staff members at the Riksbank. Commentaries written by staff are approved by the author's head of department, while Executive Board members are themselves responsible for the content of their commentaries.

Summary

The management of climate-related risks requires more and better disclosure of climate-related information and data. It is therefore positive that a global standard for sustainability reporting is beginning to take shape. However, to increase the standardisation and transparency it is important that companies now start to report in line with the recommendations from the Task Force for Climate-related Financial Disclosures (TCFD).

Johan Blixt, Emma Brattström and Maria Ferlin[1]
The authors work at the Markets Department and the Financial Stability Department of the Riksbank

Sustainability reporting is a rapidly evolving field and over the past year, several steps have been taken towards a global standard for such reporting. This is important as there is a major need for uniform, comparable and reliable climate-related information. Only once there is access to such information can sustainability and climate-related risks be priced correctly and investors invest their capital effectively.

However, many companies still do not report their greenhouse gas emissions, making it difficult to assess and manage climate-related risks. It is therefore important for more companies to report climate-related information in line with the TCFD recommendations.

The role that central banks can play in the environment and climate issue is now being discussed globally. A starting point for the work of central banks is that environment and climate-related risks are a source of financial risk that does not merely affect the analysis of economic development and financial stability, but also the central bank's own balance sheet.

The Riksbank is now taking a first step towards disclosure of its own climate-related risks on the Riksbank's balance sheet. We are doing this by calculating and reporting the carbon footprint of the holdings of corporate bonds. Our aim is to help promote transparency in climate-related information and we are also taking a first step towards TCFD reporting in our own operations.

[1] The authors would like to thank Niklas Frykström, Mia Holmfeldt, Marianne Nessén, Christina Nordh Berntsson, Albina Soultanaeva, Marianne Sterner and Lena Strömberg for their valuable comments. The opinions expressed in Economic Commentaries are those of the authors and are not to be seen as the Riksbank's standpoint.

1 Climate-related information is a prerequisite for risk management and promotes the transition to a low-carbon economy

Global warming is one of the greatest challenges of our time. It poses climate-related risks that all actors in society, not least companies, must manage. It is a question of both managing the effects of global warming itself, and transitioning to a less fossil-dependent economy. This, in turn, requires the management of both physical risks and transition risks.[2]

For the participants of the financial system – banks, insurance companies, other financial and non-financial companies and central banks – climate-related risks can create financial risks. If these are not managed, they can pose risks to the financial system, which can in turn have consequences for financial stability. It is therefore part of the Riksbank's mandate to promote resilience to climate-related risks in the financial system. The Riksbank also has an obligation to measure and manage financial risks on its own balance sheet.[3]

For the world to be able to transform and achieve the goals in the Paris Agreement – according to which the global rise in temperature shall be limited to less than 1.5-2 degrees Celsius compared to pre-industrial levels – significant investment and new technology will be required. Although governments are primarily responsible for achieving the goals in the Paris Agreement, the financial system still has an important role. It can, for example, channel financial flows into activities that have low carbon emissions and promote long-term sustainable development. But in order for investors to be able to invest sustainably and manage climate-related risks, they need access to reliable and comparable climate-related information.

In this Economic Commentary, we explain why climate-related information needs to be transparent and comparable. We provide a general description of various sustainability reporting initiatives taken at the global level and within the EU. We then describe the Riksbank's climate-related information – in the form of calculating and reporting of the carbon footprint of our corporate bond holdings.[4] We also outline other measures of climate risks and describe how well the companies that are included in the Riksbank's purchases of corporate bonds adhere to the climate goals. Finally, we discuss the need for more and better reporting of climate-related information from companies.

[2] Physical risks concern effects caused by climate-related events. These effects may be the consequences of gradual warming, such as reduced harvests or rising sea levels, or of extreme weather such as drought and flooding. Transition risks are about the effects of adapting to a less fossil-dependent economy, such as tighter regulations or changes in energy prices.

[3] For more information on the Riksbank's role and tools to combat climate change, see Breman, A. (2020) and Sveriges Riksbank (2020).

[4] The Annual Report for Sveriges Riksbank 2020 reports climate-related information for the bank's operations, in the form of energy consumption and carbon emissions as a result of official travel.

The Riksbank purchases corporate bonds for monetary policy purposes and takes sustainability into account

The Riksbank's purchases of corporate bonds are justified in terms of monetary policy and are included in the series of measures implemented over the last year to mitigate the effects of the pandemic on the Swedish economy. [5] As it is a monetary policy measure, the Riksbank is obliged to follow the regulatory framework for monetary policy in its choice of corporate bonds. This includes managing any financial risks posed by a measure.

The management of financial risks by the Riksbank and other central banks in their asset management is nothing new, but nowadays, sustainability and climate are also included as sources of risk that we need to consider. Since January 2021, the Riksbank has therefore applied sustainability considerations to its holdings of corporate bonds.[6] This is the first step on the work to mitigate the sustainability and climate-related risks posed by the purchases. This means that the Riksbank only purchases bonds issued by companies deemed to comply with international standards and norms for sustainability. [7, 8]

[5] The Riksbank has decided to purchase corporate bonds from Swedish non-financial companies that fulfil certain criteria linked to credit risk and maturity.

[6] The Riksbank took a decision on this on 25 November 2020, see Annex B to the minutes – Programme for the Riksbank's asset purchases for monetary policy purposes in 2021.

[7] See the Economic Commentary Sustainability considerations when purchasing corporate bonds (2021) for a description of the legal basis to which the Riksbank must adhere.

[8] The decision on purchases of corporate bonds on 31 August 2020 also meant that the Riksbank shall begin to measure and report greenhouse gas emissions for the portfolio being built up, as relevant data becomes available. Furthermore, the Riksbank decided in November 2020 to publish the carbon footprint for the corporate bond portfolio in the spring of 2021.

2 Sustainability reporting – a rapidly evolving field

A fundamental prerequisite for markets to function well is the availability of standardised, comparable and reliable financial information. Only then can financial risks be correctly priced and investors invest their capital effectively. It is therefore important that there is also information and data on climate-related financial risks.

Initiatives for a global sustainability reporting standard

The reporting of sustainability factors by companies, including climate and environment, is less well developed than financial reporting, which is regulated globally by accepted standard-setters. Financial reporting is also standardised and comparable, and subject to audit.[9] For sustainability reporting, however, there is currently no uniform global standard to adhere to. Instead, there are a number of organisations, frameworks and recommendations.[10] A global standard for sustainability reporting therefore needs to be developed. Several steps have been taken in this direction over the past year and rapid progress is being made.

An important step is the proposal by the International Financial Reporting Standards Foundation (IFRS Foundation) for it to take on an active role in the development of a global standard for sustainability reporting.[11, 12] The IFRS Foundation proposes the creation of a new body – the Sustainability Standards Board (SSB) – for sustainability reporting similar to the existing financial reporting body.[13] Another important step is the agreement between the leading organisations for sustainability reporting, Sustainability Accounting Standards Board (SASB), Global Reporting Initiative (GRI) and Climate Disclosure Project (CDP), to promote more standardised sustainability reporting

[9] Standardisation is required in order to enable high-quality auditing. Auditing in itself highlights the importance of sustainability information and gives it a "seal of approval". It also increases confidence in the accuracy of sustainability information and describes the company's operations and risks to an adequate degree.

[10] Sustainability is a broad field referred to by investors as ESG, Environmental, Social and Governance. Some of the more widespread and accepted sustainability frameworks and recommendations are the Global Reporting Initiative (GRI) and the Sustainable Accounting Standards Board (SASB), the Climate Disclosure Standard Board (CDP) and the Task Force on Climate-related Financial Disclosures (TCFD). See Finansinspektionen (2020).

[11] IFRS is a global accounting standard developed by the International Accounting Standards Board (IASB). All listed companies within the EU are obliged to apply the IFRS reporting standards.

[12] Currently, the IFRS does not explicitly highlight sustainability and climate-related risks in the reporting standard, but companies shall report the risks and consequences deemed to have a significant material impact for investors, including climate-related risks.

[13] See IFRS (2020).

globally. They also welcome cooperation with the IFRS Foundation.[14] Another important step was taken in February 2021 when the board of IOSCO, the International Organisation of Securities Commissions, decided to actively work towards achieving a uniform and comparable global standard for corporate sustainability reporting. IOSCO sees an urgent need for globally consistent disclosure standards and welcomes the creation of the Sustainability Standards Board (SSB) under the IFRS Foundation.[15]

However, companies do not need to wait for a global standard for their sustainability reporting. Since 2017, there have been voluntary recommendations for the reporting of climate-related risks and opportunities from the Task Force for Climate-related Financial Disclosures (TCFD).[16] The industry-led TCFD was established in 2015 by the Financial Stability Board to improve and increase reporting of climate-related financial information. Their recommendations will most likely play an important role in the design of a global standard for the reporting of climate-related information, such as companies' carbon footprints. The TCFD recommendations are in part adapted to other voluntary reporting frameworks such as the Global Reporting Initiative (GRI) and the Climate Disclosure Project (CDP). Several frameworks, for example in the EU (see below), have also been adapted to the TCFD.

The TCFD recommendations aim to give investors, lenders, insurance companies and other stakeholders better access to information on how companies manage climate-related risks and opportunities in their operations. The main elements in TCFD reporting are illustrated in Figure 1 below and include the company's governance, strategy, risk management and established financial metrics and targets. The TCFD recommends the use of different metrics and targets to assess and manage relevant climate-related risks and opportunities, where such information is material.[17] An important component of TCFD reporting is also the ability of companies to manage future climate risks. Therefore, the TCFD also recommends that companies perform scenario analyses, which is a systematic way of analysing different feasible outcomes and consequences of uncertain future circumstances. The Financial Stability Board encourages the IFRS Foundation to use the TCFD recommendations as a basis for climate-related financial reporting.[18]

[14] See IFRS (2020). The IFRS Foundation has an established relationship with SASB, GRI and CDP through the International Accounting Standards Board's (IASB) membership in the Corporate Reporting Dialogue (CRD).

[15] See IOSCO (2021).

[16] See TCFD (2017a).

[17] The metrics and targets recommended by the TCFD include internal carbon prices and climate-related metrics as revenue from products and services designed for a low-carbon economy, the Greenhouse Gas (GHG) protocol Scope 1 and Scope 2 and if applicable Scope 3 and related risks and key performance indicators (KPI) used to assess progress towards set targets, etc.

[18] See FSB (2020).

Figure 1. Main elements of TCFD reporting

Governance The organisation's governance around climate-related risks and opportunities

Strategy The actual and potential impact of climate-related risks and opportunities on the organisation's business, strategy and financial planning

Risk management The processes used by the organisation to identify, assess and manage climate-related risks

Metrics and Targets The metrics and targets used to assess and manage relevant climate-related risks and opportunities

Source: TCFD.

Legislation at EU level and in Sweden

At the EU level, the Non-Financial Reporting Directive (NFRD) came into force in 2014 and requires certain companies to draw up a sustainability report in which climate change is one of several factors to be included.[19,20] In Sweden, the NFRD has been incorporated via provisions in the Annual Report Act. The Commission has supplemented the directive with non-binding guidelines for sustainability reporting, based largely on the TCFD recommendations.[21, 22] Since the NFRD was incorporated into Swedish law, around 1,600 companies in Sweden must draw up sustainability reports.

According to the Commission's guidelines on how sustainability reports are to be designed, companies are encouraged to report climate-related information according to the TCFD recommendations, although this is not yet a mandatory requirement. However, some countries, including the United Kingdom and New Zealand, have announced that they will introduce the TCFD recommendations as a mandatory requirement in sustainability reporting.

There are also two EU regulations – the regulation on sustainability-related disclosures and EU taxonomy for sustainable activities – that supplement the requirements

[19] The Directive applies to large companies with more than 500 employees and covers approximately 6,000 large companies and corporate groups across the EU. The sustainability report shall contain an account of sustainability factors such as environment, social and individual-related issues, respect for human rights, the fight against corruption and bribery, etc.

[20] In the spring of 2021, the European Commission plans to publish a proposal for a revision of the NFRD.

[21] See European Commission (2019).

[22] The Commission's guidelines are more far-reaching than the TCFD recommendations and include both reporting of how companies are affected by climate change and the transition to a low-carbon economy, and companies' own impact on the climate, so-called double materiality. In addition, there are special guidelines for banks and insurance companies.

for sustainability reporting in the NFRD.[23] The regulation on sustainability-related disclosures regulates, among other things, how fund managers, some insurance brokers and securities companies shall inform their investors and clients about ESG factors.[24] The taxonomy regulation contains a classification system that is to be used to determine when an economic activity shall be considered environmentally sustainable.[25] As from 1 January 2022, it will be a mandatory requirement for certain companies to report according to the new EU taxonomy, which means they must report how sustainable their products and services are in accordance with the provisions in the taxonomy regulation.[26]

How are the TCFD recommendations used?

The need to compile and disseminate information on climate change factors has been stressed by organisations such as the Network for Greening the Financial System (NGFS). The NGFS is a global network for supervisory authorities and central banks, one aim of which is to develop and highlight best practices in environment- and climate-related risk management. The NGFS encourages companies issuing public debt or equity as well as financial sector institutions to disclose in line with the TCFD recommendations.[27] The Riksbank and Finansinspektionen participate in the NGFS and support this.[28] By March 2021, more than 1,900 companies and organisations globally have given their support to the TCFD recommendations, 46 of which are Swedish.

A report shows that just over a third of the Swedish companies included in a study use the TCFD framework.[29] On the other hand, there are only a few companies that make a financial link to climate-related risks and opportunities. The report also shows that those inspired by the TCFD in general do not base the information on performed scenario analyses. According to the report, few companies describe what needs to change in their operations and how this is to be done. The picture is confirmed in the TCFD's latest status report, which indicates that the reporting of financial effects of climate change on corporate operations is still scant, although it has increased since 2017. The status report also points out that few companies (one in fifteen) apply climate-related scenario analysis.[30]

[23] EU regulations apply in all Member States regardless of national legislation, while EU directives shall be incorporated into national legislation.

[24] See (EU 2019/2088). This regulation is also known as the disclosures regulation.

[25] See (EU 2020/852). As a first step, the taxonomy covers climate change mitigation and climate change adaptation. As a second step, it will be expanded to cover sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control, protection and restoration of biological diversity and ecosystems.

[26] Which companies that are subject to the requirements, see the non-financial reporting directive (NFRD), which applies to the same actors as in the regulation on sustainability-related disclosures as well as to public bodies and listed companies and other large corporations that have to draw up sustainability reports.

[27] See NGFS (2019a)

[28] See Sveriges Riksbank (2019), Thedéen, E. (2020) and Finansinspektionen (2021).

[29] See PwC (2020). In its yearly report, PwC reviewed 125 annual reports from 2019.

[30] See TCFD (2020).

The NGFS also encourages central banks to start disclosing climate-related information.[31] So far, however, only a few central banks, including the central banks of the United Kingdom and France, have started to disclose in line with the TCFD recommendations.[32] The aim is to increase transparency regarding the exposure of central banks to climate-related risks and to promote TCFD reporting by setting best practice. A first step towards TCFD reporting for the Riksbank is to start disclosing the carbon footprint of its corporate bond holdings.

[31] See NGFS (2021).

[32] See Bank of England (2020) and Banque de France (2020).

3 Carbon footprint of the Riksbank's holdings of corporate bonds

By calculating and reporting the carbon footprint, the Riksbank is taking a first step towards disclosure of its own climate-related risks, which can be a source of financial risk on the Riksbank's balance sheet. By doing this, the Riksbank wishes to help promote transparency regarding climate-related reporting.

Carbon footprint as a metric of climate-related risks

The carbon footprint is a calculation of the greenhouse gas emissions that arise from, for example, a company's operations. The carbon footprint can be reported using different metrics. A common metric is carbon intensity, which for companies is often measured as their greenhouse gas emissions in relation to their revenue.

The carbon footprint is one of the metrics most often used to assess climate-related risks (see the article on page 13 that discusses methods for assessing climate-related risks). It can give an indication of the extent to which a company may be affected financially by a transition to a less fossil-dependent economy. This is normally referred to as transition risk. The metric is also often used by financial and non-financial companies to show how they help to mitigate climate change and the extent to which their operations are in line with the goals in the Paris Agreement. It has the benefit of being relatively easily accessible and often reported based on the same reporting standards, which means that footprints can be compared.

Metrics to calculate carbon footprint

When the Riksbank reports the carbon footprint of its holdings of corporate bonds, it uses a metric known as the weighted average carbon intensity.[33] This metric adds together the carbon intensity of each company weighted by the company's share of the holdings. The weighted average carbon intensity is the measure recommended by the TCFD in its guidance from 2017.[34]

The carbon data reported by the Riksbank also adheres to the global reporting standard Greenhouse Gas (GHG) Protocol. It is a standard used by companies to quantify, understand and manage greenhouse gas emissions. The GHG Protocol has three definitions of emission data: Scope 1 is direct emissions, Scope 2 is indirect emissions and Scope 3 is indirect emissions not included in Scope 2 (see Table 1). The Riksbank will report the emissions of the holdings of corporate bonds according to Scope 1 and

[33] See Appendix for the formula used to calculate this metric.

[34] See TCFD (2017a).

Scope 2. In general, data from Scope 3 is still too insufficient and limited in order to be compiled and compared.[35]

Data reported in accordance with the GHG Protocol includes six other greenhouse gases in addition to carbon dioxide.[36] These are converted into carbon dioxide equivalents, allowing them to be compared and aggregated.

Table 1. Classification of emission data

Scope 1	Scope 2	Scope 3
The company's direct emissions	**The company's indirect emissions**	**The company's indirect emissions not included in Scope 2**
Emissions from sources owned or controlled by the company, e.g. emissions from own production, such as own factories/facilities.	Emissions arising as a consequence of the reporting company's operations, such as electricity or heat consumption.	Such as emissions from the transport of the companies goods by vehicle and from manufacturing by sub-contractors.

Source: GHG Protocol and the Riksbank.

[35] Flaws in comprehensive data from Scope 3 exemplify the previously mentioned problem that there is currently a lack of uniform standards and legal requirements on how companies are to report their greenhouse gas emissions.

[36] Seven greenhouse gases are included in the GHG Protocol: carbon dioxide CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF6) and nitrogen trifluoride (NF3).

Methods for assessing climate-related risks

There are two different reasons why investors choose to give consideration to climate change in their investments. One concerns managing the economic consequences of the financial risks or opportunities that can be linked to the climate and can affect investment (transition risks and physical risks). The other concerns an attempt to help reduce the climate risks posed to society. Depending on the investor's perspective, the various measures can be more or less relevant to attaining the objectives of asset management.

Backward-looking metrics of greenhouse gas emissions – such as carbon footprints – have a number of flaws if they are to be used as measures of financial risk. For instance, they do not capture the efforts of companies to reduce emissions in the future. Carbon intensity can also differ markedly between industries and between individual companies within an industry, depending on whether, for instance, they outsource some activities. Nor do they capture risks that are dependent on the company's exposure to fossil assets or the possibilities that can be expected to arise in a transition to a less fossil-dependent economy. Despite these flaws, the measures are linked to transition risk. They are used both to reduce the risks and to improve the return on the assets managed, and by customers who want to take climate issues into consideration when choosing between different funds.[37]

To enable better management of climate-related financial risks, we probably need several different measures. Something that is currently under development is forward-looking methods of measuring climate-related risks, such as scenario analyses. [38] This kind of method would enable the calculation of transition risks based on various scenarios for development in the climate and policies, for instance, the size of the risks in the event of an increase in temperature of 1.5-2 degrees.[39] There is currently no standardised method for making this type of forward-looking analyses.[40] The assumptions on scenarios, time horizons and quantification of the climate-related risks vary, as do the ways they are then translated into financial effects for individual companies. The methods are also dependent on reliable climate-related information at company level. At the same time, one advantage of these methods is that they can take into consideration both transition risks and physical risks and present the results as financial measures of risk, such as the probability of a suspension of payments.

[37] For some background on companies' carbon emissions and the link to climate-related financial risk, see for instance Bolton et al. (2020) and Andersson et al. (2,016).

[38] This is a method recommended by the TCFD. The TCFD has also provided guidance on scenario analysis for non-financial companies, see TCFD Guidance on Scenario Analysis for Non-Financial Companies (2020).

[39] See, for instance, NGFS (2020) for different scenarios where data is also available to download from the internet.

[40] See Bingler et al. (2020a) and Bingler et al., (2020b) for a review of a number of commercial and academically developed financial climate-risk models and comparisons of their risk estimates for a selection of companies.

Methods for assessing climate-related risks (cont.)

Scenario analysis can also be used to produce metrics of the expected effect of an asset portfolio on the climate. The metric can be expressed as temperature alignment. Such a measure is both forward-looking and informative for an investor endeavouring to help reduce the climate risks posed to society.

Investors can also follow how companies included in the asset portfolio work to attain the climate goals. The Science-Based Targets, for example, signal that a company's climate targets are in line with the Paris goals. [41] Setting such targets is in line with the TCFD's proposals on metrics and targets. Table 2 shows how many of the companies in the Riksbank's holdings of corporate bonds follow the science-based climate targets.

Table 2. Number of companies with science-based climate targets

Number of companies.

Companies that have set Science-Based Targets or are committed to do so	Companies that have set 1.5 degree targets	Companies that have set 2 degree targets	Companies that are committed to set Science-Based Targets but have not set temperature goals yet
16 (of 51) companies	10 companies	3 companies	3 companies

Note. The table shows results based on the list of companies with bonds meeting the Riksbank's criteria as of 1 February 2021. The first column includes companies that have set Science-Based Targets (11 companies) and companies that have only committed to do so (5 companies). Of the companies that are committed, it is only 3 companies that have set temperature goals.

Sources: Science-Based Targets and the Riksbank.

[41] The Science Based Target Initiative is a collaboration between the UN Global Compact, the World Wide Fund for Nature (WWF), the World Resources Institute (WRI) and the CDP. It involves companies taking stock of their greenhouse gas emissions in the entire value chain, in accordance with the GHG protocol. The company can choose to relate the target to the 1.5 degree target or 2 degree target and then calculate how large an annual reduction is required.

The Riksbank disclose the carbon footprint for its holdings of corporate bonds

For companies that have issued bonds that meet the Riksbank's purchase criteria[42], the access to reported emission data is limited. Table 3 shows the situation for these companies. Only 40 per cent of the companies (19 out of 51 companies) report their greenhouse gas emissions. With regard to the companies that do not report their emissions, the Riksbank has access to estimates based on emission data produced by an external data provider, Sustainalytics.[43]

The availability of data on carbon emissions varies between companies listed on the stock exchange and those not listed (see Table 3). Almost 70 per cent of listed companies report data on their greenhouse gas emissions, while only around 10 per cent of non-listed companies report their emissions.

Table 3. Accessible data for companies that meet the Riksbank's purchase criteria
Number of companies.

	Number	Report greenhouse gas emissions	Quantitative estimates of emissions of greenhouse gases
Listed company	24	16 (67%)	8
Non-listed company	27	3 (11 %)	24

Source: The Riksbank, Bloomberg and Sustainalytics.

The carbon footprint – calculated as the weighted average carbon intensity of the portfolio - for the Riksbank's holdings of corporate bonds is 135 tonnes of carbon per USD million[44] of revenue (see Figure 2).[45] The carbon footprint is then calculated on the basis of both emission data reported by the companies and quantitative estimates of their emissions. As almost 60 per cent of the companies do not report greenhouse

[42] See the Riksbank website on formal criteria for the Riksbank to purchase a bond.

[43] As credit ratings can change and new issuers can issue bonds that meet the Riksbank's criteria, the Riksbank will not always have access to reported or estimated greenhouse gas intensity for all holdings. The Riksbank will order estimates for companies where this data is missing.

[44] To enable comparisons between investments on different geographical markets, revenue converted to dollars is often used.

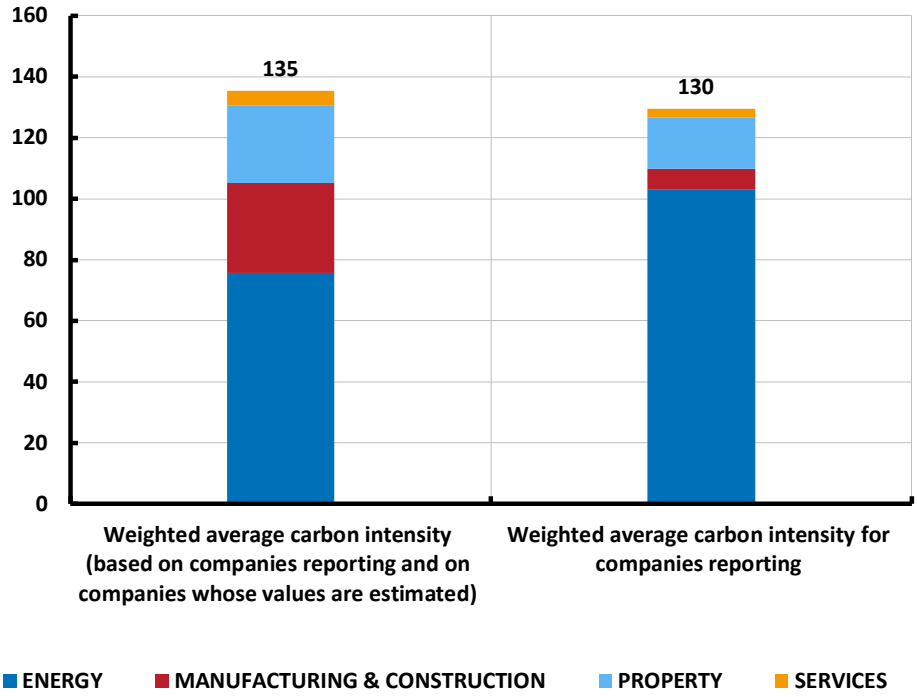
[45] Bank of England (2020) calculated the weighted average carbon intensity of their Asset Purchase Facility Fund corporate bond portfolio, resulting in 294 tonnes carbon dioxide per GBP million of revenue. Using the exchange rate of 31 December 2019, this corresponds to a value of approximately 222 tonnes carbon dioxide per million dollar revenue. The sector distributions of the holdings of Bank of England and the Riksbank are different, however, which makes it difficult to draw conclusions from such a comparison. For example, the electricity sector represents approximately 20 per cent of the corporate bonds that Bank of England has purchased, while the sector represents approximately 4 per cent of the corporate bonds purchased by the Riksbank.

gas emissions, more than half of the carbon footprint is estimated. This means that the results of the calculation are not entirely reliable. [46]

In the same figure we also report the weighted average carbon intensity for only the companies that report emissions according to data from Sustainalytics. Based on this data, the weighted average carbon intensity for the Riksbank's holdings of corporate bonds is 130 tonnes of carbon per USD million of revenue. The share of companies that report emissions vary between sectors, which leads to a different sector breakdown than for the Riksbank's total holdings. Of the Riksbank's holdings in the property sector, only 30 per cent are bonds from companies that report their emissions. Within the manufacturing and construction sector the share of reporting companies is considerably higher at 88 per cent.

Figure 2. Weighted average carbon intensity for the Riksbank's corporate bond holdings

Tonnes of carbon per USD million of revenue



Note. The weighted average carbon intensity is reported for all companies the Riksbank has in its portfolio of corporate bonds as of 1 February 2021 and calculated on the basis of companies' reported emissions and estimates made by Sustainalytics. With regard to the holdings, 19 companies have reported their emissions and Sustainalytics has produced estimates of greenhouse gas emissions for 23 companies. The value of the holdings of bonds issued by companies where the company's reported data is used by Sustainalytics amount to 53 per cent of the value of the portfolio. For comparison, the weighted average carbon intensity calculated only for the holdings where Sustainalytics uses the data reported by companies is also shown. This set of companies has a different sector breakdown.

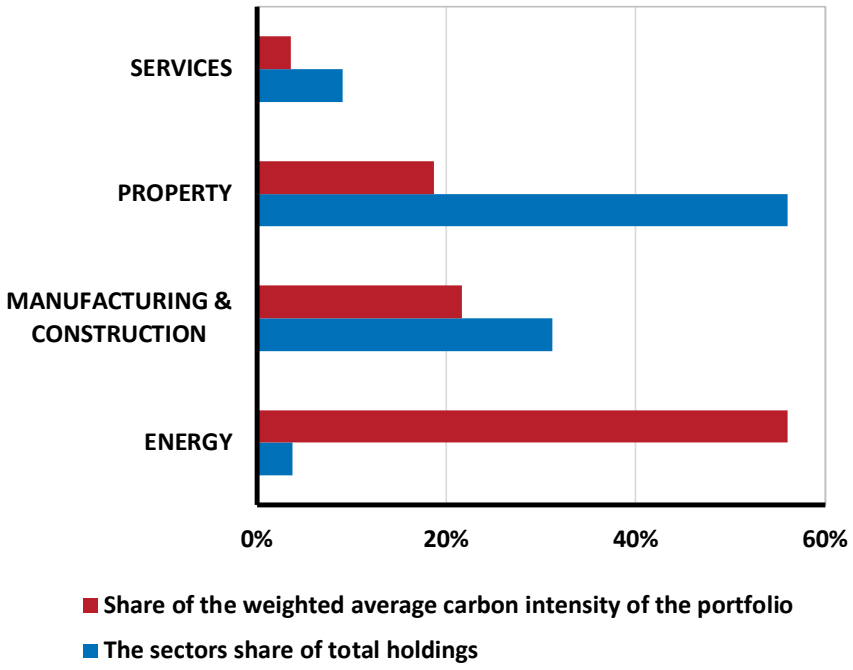
Source: Sustainalytics, Bloomberg and the Riksbank.

[46] In these calculations, we use the data supplied by Sustainalytics. The data supplied states whether the emission figures have been reported by the company or are estimated by Sustainalytics. That a company reports data on its emissions does not automatically mean that these values are used by a third-party supplier. External data providers of data may assess that a company's reported data is not accurate and choose to estimate emission figures for the company, despite the existence of reported data.

Figure 3 illustrates the contribution of different sectors to the total carbon intensity in the Riksbank's portfolio and a sector breakdown for the holdings. Here we use both reported and estimated emission data. It is clear that the energy sector accounts for the largest contribution to the portfolio's carbon intensity (55 per cent), at the same time as the sector only accounts for 4 per cent of the holdings. The services sector instead accounts for the smallest contribution to carbon intensity, 2 per cent, at the same time as the holdings in this sector comprise 9 per cent of the total holdings.

Figure 3. How much different sectors contribute to the carbon footprint and their share of the holdings

Per cent



Note. Weighted average carbon intensity shows the sectors' share (%) of the assets total weighted average carbon intensity, where companies that do not report their emissions have had them estimated by Sustainalytics. The sector's share of the total portfolio shows how the market value of the Riksbank's holdings are allocated between the different sectors.

Source: Sustainalytics and the Riksbank.

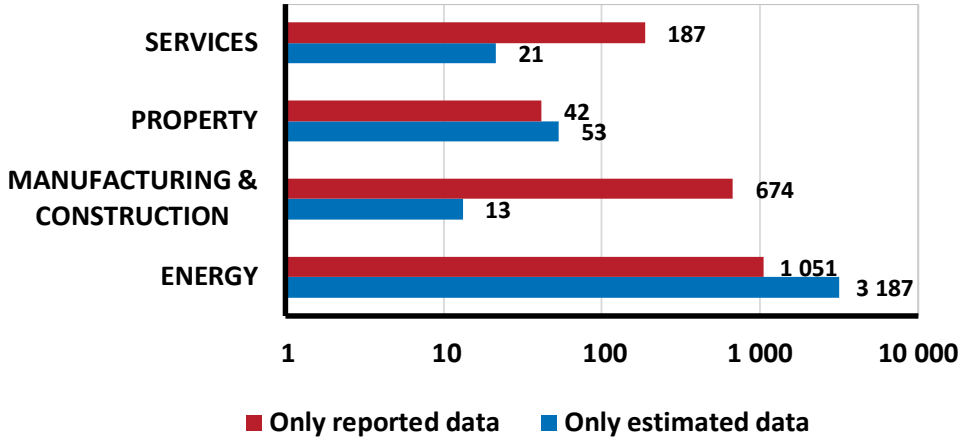
Since the data for carbon intensity contains uncertainty, it is difficult to draw any far-reaching conclusions on climate-related risks in the Riksbank's holdings on the basis of this result. The Riksbank will, however, provide information on the development of the portfolio's carbon intensity based on both reported and estimated data. If the percentage of companies reporting their carbon intensity increases over time, the reliability of the result will increase. In the future, more measures may be appropriate depending on how access to data develops.

Lack of comprehensive data, uncertainty over quality and limitations in comparability

As we noted in the previous section, a large share of companies do not yet report their carbon emissions. To bridge over this shortage, the data provider make quantitative estimates of companies' emissions. However, the data provider use different models to make these estimates, and it is difficult to assess companies based solely on the public information available. This means that the conclusions that can be drawn from the results are uncertain. Figure 4 illustrates how carbon intensity differs between the companies that report and those where estimates have been used, broken down by sector. The difference with regard to reported and estimated data is very large in the manufacturing and construction sectors, for instance.

Figure 4. Difference in carbon intensity between the companies reporting and those not reporting, broken down by sector

Tonnes of carbon per USD million of revenue (logarithmic scale).



Note. Carbon intensity is reported for the companies the Riksbank has in its portfolio of corporate bonds as of 1 February 2021, divided into four sectors.

Source: Sustainalytics and the Riksbank.

There are also difficulties with comparing the reported data. Companies may choose, for instance, to report their emissions in different ways. As mentioned earlier, there is at present a lack of uniform standards and legal requirements as to how companies should report their greenhouse gas emissions, and there are no requirements for the revision of data that is reported. For instance, in our work on this Economic Commentary we have seen examples of companies reporting their Scope 2 emissions based on two different methods in the same sustainability report.[47] This leads to entirely different values for carbon intensity, depending on which value an analyst or data provider

[47] The GHG protocol allows companies to report Scope 2 emissions based on two methods, a local or market- based method, which can provide very different results. With the market-based method, companies can for instance benefit from certificates for renewable energy. See Busch et al. (2,018).

chooses to use. Another aspect that can make a considerable difference to the reported emissions is what reporting limits a company chooses to use when the company is co-owner of different operations.[48] A further example of a difficulty is how an investor should measure emissions – whether the investor should use the subsidiary issuing the security purchased or whether it is more relevant to measure at group level.

[48] According to the GHG protocol, a company can choose between three types of reporting limits based on operational control, financial control or ownership. See, for example, Busch et al. (2018) which mentions this problem.

4 More and enhanced disclosure of climate-related information is needed

The lack of comprehensive carbon data means that it is difficult to measure, report and manage climate-related risks. A step towards more accessible information is that more companies are now reporting their climate-related information in line with the TCFD recommendations. By starting to calculate and report the carbon footprint for its holdings of corporate bonds, the Riksbank is taking a first step towards disclosing in line with the TCFD recommendations.

Access to financial information is a fundamental prerequisite for the markets to function well and for investors to be able to make wise and efficient decisions on investment. It is therefore important that information and data on climate-related financial risks are available. Companies are increasing their disclosure of such information. This is due not least to the regulation agenda in the EU and the global initiatives taken by several organisations in recent years to increase this type of reporting. An important next step is the global standard for corporate sustainability reporting that is currently being developed and in which the IFRS Foundation plays an important role.

This is a positive development and there is much to indicate that access to climate-related information will improve, become more comprehensive and comparable. At the same time, it is important to point out that climate-related reporting is currently insufficient. To increase transparency now, a gradual process towards enhanced sustainability reporting is required. The TCFD recommendations are a framework that can create the conditions for better and more comparable information on climate-related risks and opportunities. At present, only 3 of the 51 companies in the Riksbank's holdings of corporate bonds explicitly support the recommendations from the TCFD. It is therefore important that more companies report climate-related information in line with these recommendations. By starting reporting, companies are becoming more prepared for the coming requirements in this area. Those who already report have knowledge and an advantage over those who do not report. The reporting also triggers a change process within the organisation or company and a review of the climate-related risks.

The role that central banks can play in the environment and climate issue is now being discussed globally. [49] A starting point for the work of central banks is that sustainability risks – including climate-related risks – area source of financial risks that do not merely affect the analysis of economic development and financial stability, but also their own balance sheets. By beginning to calculate and report the carbon footprint in its holdings of corporate bonds, the Riksbank is taking a first step towards TCFD reporting in its own operations.

[49] See, for example, speeches by Villeroy de Galhau, F. (2021) and Lagard, C. (2021).

This analysis makes it easier for the Riksbank to understand which climate-related risks that exist in its own operations and show which the challenges and opportunities are by using different methods of measuring climate-related financial risk. We need this understanding of the Riksbank's own risks and processes to be able to develop a strategy to manage the risks effectively. The increased understanding of climate-related financial risks can also provide insight in the analysis of economic developments and financial stability.

The overall assessment is that management of climate-related risks requires more and better disclosure of climate-related information and data. It is therefore positive that a global standard for sustainability reporting is beginning to take shape, but at the same time, it is important that companies begin reporting in line with the TCFD recommendations now.

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APPENDIX – Calculation of the weighted average carbon intensity of the portfolio

Here is an account of the calculation of the carbon footprint, in the form of the metric Weighted Average Carbon Intensity (WACI).

The metric shows the portfolio's exposure to carbon-intensive companies and is calculated in two stages. First, the respective portfolio company's annual carbon emissions are calculated in tonnes and divided by the company's annual revenue in US dollars. Then this value is multiplied by the weight the company's bonds have in the Riksbank's portfolio, that is the value of the holdings in relation to the total value of the portfolio, according to the following formula:

$$\sum_{i=1}^{N}\left(\frac{Value\ of\ holding_i}{Total\ portfolio\ value} * \frac{Issuer's\ emissions\ of\ CO_2e\ (Scope\ 1\ and\ 2)}{Issuer's\ revenues\ (USD)}\right)$$

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Tel +46 8 - 787 00 00
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