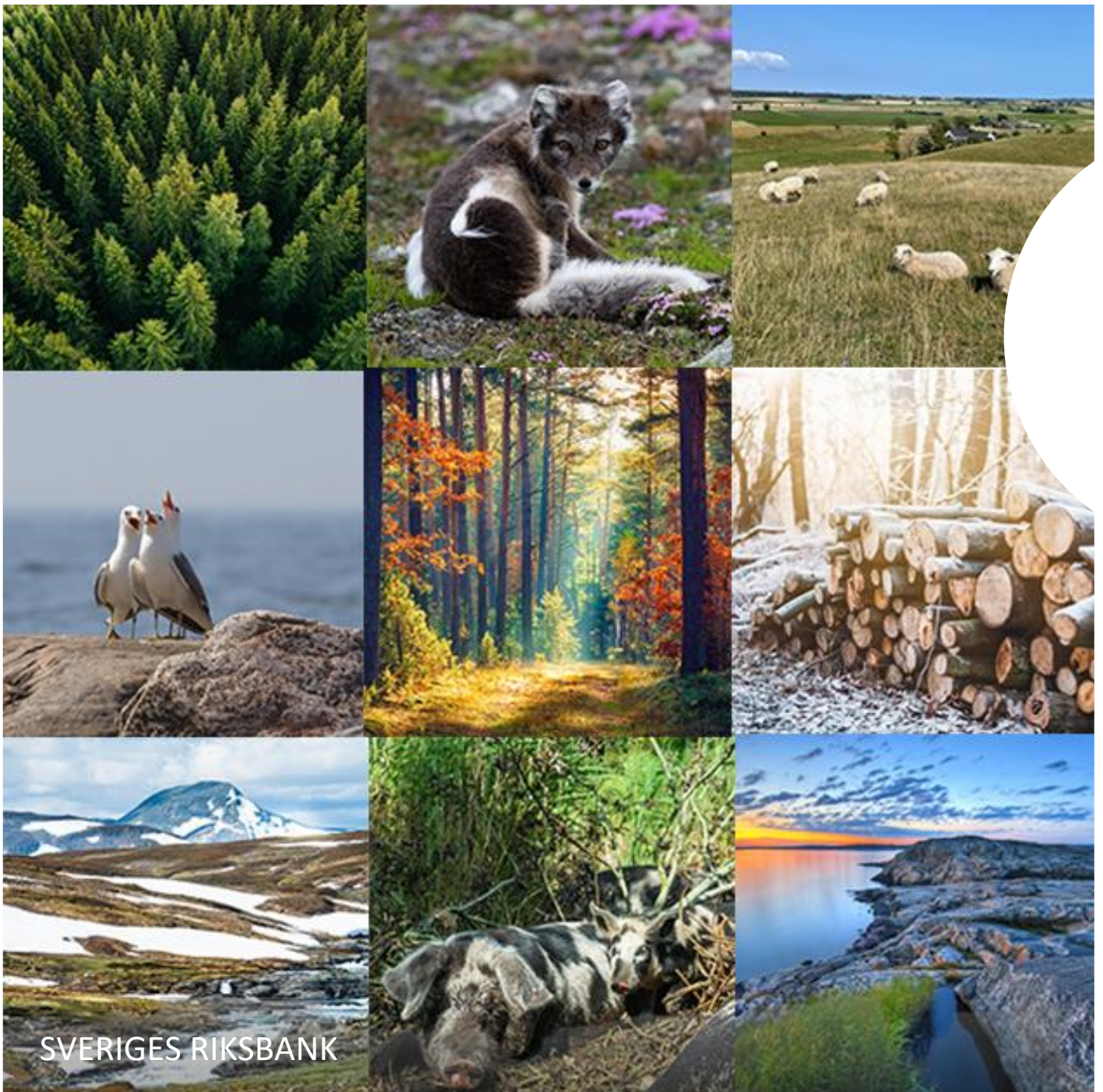


# The Riksbank's Climate Report

January 2023



# Table of contents

1	Central banks and climate change	5
1.1	Climate change affects everyone	5
1.2	Climate change affects the Riksbank's mandate	6
1.3	The direction of the Riksbank's climate-related work	7
2	The Riksbank's work on sustainability	8
2.1	Climate-related risks can affect monetary policy	8
2.2	Climate change affects financial stability	10
2.3	Sustainability considerations in the Riksbank's asset management	13
2.4	The Riksbank participates in international climate work	19
2.5	The Riksbank takes the climate into account in its cash management and payment infrastructure	20
2.6	The Riksbank's energy consumption and carbon dioxide emissions	22
3	Focus: Riksbank looks into possibilities for stress test of climate risks in Swedish banks	23
3.1	Climate stress tests differ from regular stress tests	23
3.2	Which risks should the test capture?	24
4	Focus: The new Sveriges Riksbank Act, sustainability and climate transition	26
4.1	The Riksbank shall promote sustainable development	27
4.2	The Riksbank shall identify threats to sustainable development	27
	Appendix: The Riksbank's climate-related publications	28
	Glossary	31

# Foreword

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The Riksbank is an independent authority under the Riksdag, which operates in accordance with the Sveriges Riksbank Act. The central government's core values guide the Riksbank's operations.

The Riksbank also has a Sustainability Strategy that specifies how the Riksbank takes sustainability into account in its internal operations and policy work.

The main focus of this report is on the Riksbank's climate-related work which is an important part of the Riksbank's sustainability-related work. The report also includes a description of what the new Sveriges Riksbank Act, which entered into force at the beginning of the year, means for the Riksbank's sustainability- and climate-related work.

The Executive Board made a decision regarding this report on 24 January 2023.

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## IN BRIEF – Riksbank Climate Report

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Climate change and measures to promote the transition to a sustainable economy have consequences for actors throughout society, including the Riksbank. This is therefore an important issue for the Riksbank to monitor and analyse. However, the responsibility for putting in place policy measures against climate change lies primarily with the world's governments.



In its asset purchases and asset management, the Riksbank takes into account the risks associated with climate change and climate transition. The Riksbank takes sustainability into account in the selection of assets in the foreign exchange reserves as far as this is possible, without affecting the Riksbank's ability to carry out its main task. The Riksbank also reports the carbon footprint of the foreign exchange reserves. During the period in which the Riksbank purchased corporate bonds, various measures were introduced to take account of, and report on, sustainability.



Climate change and the transition to a sustainable economy create risks that could jeopardise both price stability and financial stability. This would affect the Riksbank's ability to fulfil its mandate and the Riksbank therefore needs to gain an understanding of how these risks affect the economy. To reduce financial risks, it is important that agents across the entire financial system take responsibility for identifying, assessing and managing climate-related risks in their operations to the greatest extent possible.



In 2022, the Riksbank carried out an analysis of transition risks in the Swedish banks' loan portfolios using the PACTA method. A preliminary examination of other methods and in-depth studies has been undertaken and will form the basis for further analytical work.



The new Sveriges Riksbank Act requires the Riksbank to identify threats to sustainable development that affect the conditions for its activities, and to pay particular attention to how sustainable development can be promoted in its asset management. The overriding objective of the Riksbank remains price stability and, without prejudice to this objective, the Riksbank shall also contribute to a balanced development of output and employment. The Riksbank shall also assess the stability and efficiency of the financial system. This includes identifying and assessing risks linked to climate change.

# 1 Central banks and climate change

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The consequences of climate change and the measures taken to counteract them affect the Riksbank's ability to fulfil its mandate regarding price stability and financial stability. The Riksbank shall identify and assess risks associated with climate change in its stability analysis and external monitoring. The Riksbank shall also take sustainability into account in its asset management.

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## 1.1 Climate change affects everyone

Climate change is one of the most important societal issues of our time, requiring a global transition to a sustainable economy. The responsibility for pursuing policies that lead to a sustainable society lies with the world's governments and parliaments. They also have the most effective tools. For the world's central banks, it is essential to manage the risks posed by climate change, as well as the measures to counteract it, and to contribute to the transition to a sustainable economy whenever possible. This report describes what the Riksbank is doing in these dimensions.

Climate change is caused by excessive emissions of greenhouse gases that have led to a rise in the Earth's temperature. This in turn imposes costs on individuals, businesses and countries as we experience more severe droughts, floods and other extreme weather, as well as rising sea levels. Ecosystems are also being destroyed as animals and habitats cannot adapt to rapid warming and die out, leading to loss of biodiversity.

Greenhouse gas emissions thus create a *negative externality*, as those who cause the emissions do not bear the full cost of the consequences. There is a broad consensus in economic research that the key to reducing greenhouse gas emissions is to make them more expensive, so that those who cause them bear the full socio-economic costs. One way of achieving this is through various kinds of taxes, primarily on CO<sub>2</sub>. Another way is through overall quantitative limits, where allocation to companies is made through the purchase of emission rights.

Emissions move around the world regardless of national boundaries and climate change can occur in places completely different from where the emissions occurred. The task of reducing overall greenhouse gas emissions is therefore global. But this also means that reducing emissions at national or regional level is also good for the global climate.

The overall climate target for EU countries is to achieve climate neutrality by 2050, which includes a 55 per cent reduction in EU greenhouse gas emissions by 2030.<sup>1</sup> These targets are binding on all EU Member States through the EU Climate Change Act.<sup>2</sup> In 2022, the European Commission agreed on a climate package proposing a series of reforms to achieve the target. In 2023, the reforms will begin to be negotiated by members and the EU Parliament.

## 1.2 Climate change affects the Riksbank's mandate

Both climate change itself, and the measures taken to counteract it and to promote the transition to a sustainable economy, can bring about structural changes in different parts of the economy. This can contribute to instability in financial markets and the wider economy, for example more variable inflation. The Bank for International Settlements (BIS) estimates that climate change could cause a major financial crisis.<sup>3</sup> Chapter 2 presents the Riksbank's analysis and work in this area.

One way to assess climate risks is to test the resilience of banks in scenarios where the risks materialise. The Riksbank is therefore working to develop a climate stress test for Swedish banks. This is discussed in more detail in chapter three.

Since the Riksbank published its previous climate report in December 2021, a new Sveriges Riksbank Act has come into force. As before, the Riksbank's main objective is to maintain price stability. In addition, the Riksbank is legally required to take real economic considerations into account by contributing to a balanced development of production and employment.

The new Act also establishes the Riksbank's tasks with regard to financial stability. The Riksbank is to identify risks of serious disturbances or significant efficiency losses and assess whether the financial system is stable and efficient, including reporting on these assessments.

Climate change and climate transition affect the Riksbank's ability to perform all of these tasks. It will therefore continue to be an important area for the Riksbank to monitor.

According to the new Sveriges Riksbank Act, the Riksbank is also to conduct an external analysis to identify threats to sustainable development that affect the conditions for fulfilling its tasks and to take sustainability into account in its asset management. Chapter 4 discusses what the new Riksbank Act says about climate and sustainability.

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<sup>1</sup> Compared to 1990 levels.

<sup>2</sup> [Regulation \(EU\) No 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations \(EC\) No 401/2009 and \(EU\) 2018/1999 \('European Climate Law'\)](#)

<sup>3</sup> P. Bolton, et al. (2020) [The green swan - Central banking and financial stability in the age of climate change \(bis.org\)](#), Bank for International Settlements.

## 1.3 The direction of the Riksbank's climate-related work

Since climate change affects the Riksbank's areas of responsibility, long-term sustainability is important for the Riksbank. There is a sustainability committee at the Riksbank that coordinates and develops work on the basis of a sustainability strategy.<sup>4</sup> The Riksbank's ambition is to work systematically with the sustainability dimension in all of its various activities.

Based on the sustainability strategy, the Riksbank shall take account of climate change and promote an orderly transition to a sustainable economy within the framework of its mandate. The Riksbank will do this by

- working to bring its own operations gradually into line with international agreements such as the Paris Agreement
- contributing to the understanding of the impact of climate change on the economy through its own research and analysis
- having a sustainability perspective in its asset purchases and in the management of the foreign exchange reserves within the limits of the Riksbank's mandate
- promoting increased transparency and disclosure related to climate footprint
- promoting financial market rules that reduce the risks that climate change may pose to the financial system
- actively participating in various international networks and partnerships to help reduce the risks of climate change at a global level.

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<sup>4</sup> See [the Riksbank's sustainability strategy and work on sustainability](#).

## 2 The Riksbank's work on sustainability

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The issue of climate change is relevant to all parts of the Riksbank's operations. This applies to external monitoring, risk assessments, financial stability work, monetary policy implementation, cash management and payment systems. As an authority, the Riksbank must manage the state's resources, and internal sustainability work is therefore also important.

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### 2.1 Climate-related risks can affect monetary policy

Climate change creates new risks that affect both prices and production. This affects the Riksbank's ability to fulfil its mandate and the Riksbank therefore needs to acquire knowledge about how these risks affect the economy. These include physical risks in the form of extreme weather conditions such as hurricanes, heavy rainfall and rising sea levels. The second is the transition to a less fossil-based economy, which entails various transition risks, such as when taxes on carbon emissions and the price of emission allowances are increased or when consumption patterns change.

Another type of risk is tipping points in different ecosystems, i.e. critical points that, when crossed, accelerate further climate change. Once a tipping point has been passed, the changes in ecosystems can become irreversible. The Amazon rainforest, the Arctic polar ice and the Siberian permafrost are examples of ecosystems where tipping points may be passed. If this happens, the consequences will include physical and transition risks, which become more difficult to manage.

How climate change might affect inflation more specifically, but also the economy more generally, was discussed in an Economic Commentary during 2022.<sup>5</sup> In the transition to new and sustainable energy, there may be negative supply-side effects as carbon-intensive technologies are phased out. Energy prices may therefore initially rise. Increased investment in new technologies will gradually have a positive impact on demand and, as new technologies come on stream, this will also have a positive impact on supply.

The extent to which inflation is affected depends, among other things, on how monetary policy reacts. One challenge may be to maintain confidence in the inflation target without lowering output and employment. Inflation resulting from high energy prices may be transitory. But the longer inflation remains high, the greater the risk that it will affect expectations in the long run, and the more difficult it will be to bring inflation down without large costs in terms of output and employment. Monetary policy may therefore face difficult trade-offs.

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<sup>5</sup> See Mikael Apel [How does the climate transition affect inflation?](#) Economic Commentary, no. 13, Sveriges Riksbank. See also, [Climate change: possible macroeconomic implications](#), Bank of England Quarterly Bulletin quarter 4, 2022.



In two ongoing projects, the Riksbank is studying how weather changes can affect variations in prices and output in Sweden, and how monetary policy should respond to sharply rising energy prices. In the first project, historical weather data are used to study the relationship between temperature, prices and output. The second project analyses how different monetary policy strategies can affect inflation and economic development in an environment of sharply rising energy prices, which may be due to, for example, transition risks.

### **Rising energy prices, inflation and monetary policy**

Russia's invasion of Ukraine, disruptions to the global economy that occurred during the pandemic and new pandemic-related restrictions in China contributed to higher prices for energy as well as various inputs and food in 2022. Much of these cost increases were passed on by companies to consumers, contributing to a rapid rise in consumer prices during the year. The spillover effects to other prices were also larger than expected. However, ever since the rise in energy prices became evident at the end of 2021, the Riksbank has stressed that it will be difficult to predict how lasting the rise in inflation will be.

The high gas and oil prices in Europe this year cannot be explained by the green transition, but are primarily due to the effects of Russia's invasion of Ukraine. However, the transition to a fossil-free economy is likely to play a greater role in energy prices in the future, although the effects are highly uncertain.<sup>6</sup> For example, the transition will have an impact on both demand and supply of fossil fuels, with uncertain effects on prices. In addition, the cost and availability of renewable energy is uncertain, affecting the potential for fossil fuel substitution. However, the transition does not necessarily mean sustained higher inflation. Much will depend on the policies implemented to switch from fossil fuels to green energy.<sup>7</sup>

The impact of the green transition on inflation also depends on the shaping of monetary policy, which affects, among other things, inflation expectations of businesses and households. If high inflation as a result of the transition were to become established in price setting and wage formation, the period of high inflation would be longer and monetary policy may need to be tightened further. The Riksbank monitors price and wage developments on an ongoing basis and adjusts monetary policy so that inflation is close to the target. Bringing inflation down quickly is important because high and volatile inflation makes it difficult for households and businesses to plan their economic decisions and can dampen investment and growth.

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<sup>6</sup> See F. Panetta (2022) [Greener and cheaper: could the transition away from fossil fuels generate a divine coincidence?](#) speech, Italian Banking Association, Rome 16 November 2022.

<sup>7</sup> See also Irene Heemskerk, C. Nerlich and M. Parker (2022) [Turning down the heat: how the green transition supports price stability](#), ECB blog, 9 November 2022.

## 2.2 Climate change affects financial stability

Climate change and the transition to a sustainable economy also create risks that could threaten financial stability. The physical risks can include damage to households, businesses and infrastructure. A delayed or protracted climate transition increases the risk of large price movements and uncertainty on the financial markets.

The European Central Bank (ECB) and the European Systemic Risk Board (ESRB) presented a report in 2022 on the systemic risks that could result from climate change. The report concluded that the interconnectedness of the financial system increases the likelihood that climate risks will be amplified and propagated within the system. For example, if the price of emission allowances rises rapidly and sharply, the costs for companies with high emissions increase. This can lead to investors quickly trying to sell off their holdings in these companies in a so-called "fire sale". This, in turn, can cause sharp price movements in financial markets. Even before the price of emission allowances rises, investors with carbon-heavy investment portfolios may be perceived as uncertain. This could reduce confidence in these investors and contribute to instability in financial markets.<sup>8</sup>

To reduce financial risks, it is therefore important that agents across the entire financial system take responsibility for identifying, measuring, assessing and managing climate-related risks in their operations to the greatest extent possible.

### **The banks need to manage their exposure to climate risk**

Banks are a central part of the Riksbank's stability analysis because they play an important role in the financial system. Banks are exposed to climate-related risks in a number of ways, most notably through the credit they provide to companies in industries that either affect, or are affected by, climate change. This lending is directly exposed to transition risks, as the cost for companies in these sectors to adapt their operations can be high.

In April 2022, the Riksbank and Finansinspektionen published a study of the transition risks in the banks' loan portfolios, based on the PACTA methodology.<sup>9</sup> PACTA (Paris Agreement Capital Transition Assessment) is used to analyse how well companies meet climate targets in different climate scenarios over a five-year period. Although the study covers only a small part of bank lending, about SEK 80 billion, corresponding to about 3 per cent of total bank lending to non-financial corporations,<sup>10</sup> it can be concluded that banks are exposed to transition risks. More than half of the money goes to companies that are currently engaged in activities that are directly harmful to the environment and that, moreover, will not meet the climate targets in five years' time.

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<sup>8</sup> See ESRB, (2022) [The macroprudential challenge of climate change](#).

<sup>9</sup> Finansinspektionen, Sveriges Riksbank (2022), "[Transition risks in the banks' loan portfolios - an application of PACTA](#)", joint report by Finansinspektionen and Sveriges Riksbank.

<sup>10</sup> "Non-financial corporations" refers to corporations outside the financial sector.

The results can be used to support the analysis of transition risks associated with bank lending to non-financial corporations. The Riksbank has previously noted that both companies and banks need to improve their sustainability reporting so that the climate risks they are exposed to can be better analysed and managed. The Riksbank considers that the Swedish banks should already report their exposures to climate risks in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).<sup>11</sup> The banks themselves need to understand how climate risks affect the risks of loan losses and to adjust their lending accordingly. Chapter 3 describes how the Riksbank is working to develop its analysis of these risks. A necessary step towards better management of climate risks is better data to describe them.

### Managing climate-related risks requires better climate-related data

In order for participants in the financial system to assess and manage climate-related risks, they need access to reliable climate-related data. In the absence of such data or if data is inadequate, investors can easily get a misleading picture of the exposure of different companies to climate-related risks. This can lead them to invest in unsustainable companies, believing them to be sustainable, and thus expose themselves to higher risks than desired. It also hampers climate transition, increasing climate risks in the long run. Uniform and standardised frameworks must therefore be developed to increase the transparency of climate-related data.

Internationally harmonised requirements exist for financial reporting, but are still lacking for sustainability reporting. This makes it difficult to compare and use sustainability reports.<sup>12</sup> On the other hand, extensive work is under way to create such standards, both in the EU and globally. Table 1 presents ongoing projects on sustainability and climate transparency in financial companies.

**Table 1. Overview of sustainability standards**

	TCFD	NFRD	CSRD (ESRS)	EU pillar 3	IFRS sustainability reporting
Standardised reporting	No	No	Yes	Yes	Yes
Quality assurance (audit)	No	No	Yes	No	No
Implementation	2,017	2,014	Will take effect 1 Jan 2024 with first reporting in 2025.	Has applied since mid-2022 with first reporting in 2023.	Standard is expected to be ready in early 2023. Unclear when implementation will take place in countries but voluntary use is supported.
Jurisdiction	Global	EU	EU	EU	Global, not the US

<sup>11</sup> See [Financial stability report 2022:2](#), Sveriges Riksbank

<sup>12</sup> See N. Frykström (2022) [Transparency for efficiency and financial stability](#), Economic Commentary, no. 11, Sveriges Riksbank.

European banks will need to disclose both physical and transition risks in a standardised format under Pillar 3 of the EU. To do this, they need reliable information from their customers. The current Non-Financial Reporting Directive (NFRD) requires certain major companies to report on environmental and social sustainability factors. Work is currently under way to replace the NFRD with the more far-reaching Corporate Sustainability Reporting Directive (CSRD), which also introduces harmonised disclosure standards (European Sustainability Reporting Standards or ESRS) to facilitate comparisons.<sup>13</sup> The CSRD is scheduled to come into force on 1 January 2024, with the first reporting of sustainability information by major companies in 2025.

### **Greenwashing can be a stability risk**

Greenwashing is a problem that arises precisely because of a lack of transparency. Many consumers and companies are demanding sustainable and green products. This can lead companies to market themselves, or some of their products, as more environmentally friendly than they really are. For example, a fund may be marketed as environmentally friendly but not invest in green companies to any significant extent. This is a form of greenwashing.

Greenwashing is problematic from a financial stability perspective. Capital that would otherwise have been invested in companies actively working on the climate transition is instead invested in companies that, in the worst case, are hampering the transition, which in turn can increase the risk of a disorderly transition. In the long run greenwashing can affect the confidence in green financial products and the role of the financial sector in the transition to a fossil-free society. To tackle this problem, clear rules are needed for how companies can classify and market products, and there must be effective monitoring and supervision of the rules.

### **Swedish mutual funds can do more to contribute to the climate transition**

In Sweden, several investment management companies have joined the Net Zero Asset Managers Initiative. A study by the Riksbank shows that, on average, over the period 2019-2021, equity mutual funds that have joined this initiative do not have a lower carbon footprint than others. However, the results suggest that they are more likely to invest in a way that leads to lower carbon emissions in the long run.

Importantly, these mutual funds have not reduced their exposure to the most polluting companies in their portfolios. There may be two main explanations for this:

- the funds are keeping the most polluting equities in their portfolios because they consider the companies issuing them to be working sufficiently on their green transitions
- the funds are not greening their portfolios quickly and effectively enough.

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<sup>13</sup> ESRS (European Sustainability Reporting Standards) are developed by EFRAG, the European Financial Reporting Advisory Group.

The latter explanation is more problematic, both for the climate transition and for the financial system. To better understand why the carbon footprint is not declining in the funds that have joined the initiative, there is a need for better structured, more transparent and more easily verifiable information that allows for proper monitoring.<sup>14</sup>

## 2.3 Sustainability considerations in the Riksbank's asset management

The Riksbank's gold and foreign exchange reserves account for a large part of the Riksbank's total assets and are worth approximately SEK 560 billion. When selecting assets for the foreign exchange reserves, the Riksbank takes sustainability into account as far as it can without affecting its ability to carry out its main tasks.

During the coronavirus pandemic of 2020 and 2021, the Riksbank increased its holdings of assets in the form of securities denominated in Swedish kronor in order to support the economy and to attain the inflation target.<sup>15</sup> In 2022, the Riksbank continued to purchase securities denominated in Swedish kronor, albeit to a lesser extent, and holdings declined due to redemptions. At the turn of 2022/2023, purchases of Swedish securities ceased and holdings are thus set to decline as they mature.<sup>16</sup> Among other things, in its Swedish asset purchases, the Riksbank has purchased bonds issued by Swedish non-financial corporations and has taken sustainability into account in order to manage the financial risks on its balance sheet.

### **Sustainability considerations in the foreign exchange reserves**

The gold and foreign exchange reserves exist to enable the Riksbank to offer banks liquidity support in foreign currencies in times of financial stress and to enable the Riksbank to carry out currency interventions. The reserves are also used to deal with some of Sweden's commitments to the IMF.<sup>17</sup> These assignments are used as a starting point when the Riksbank is determining the currency distribution and which assets need to be held in the foreign exchange reserves.

In order for the Riksbank to have a good level of preparedness, the foreign exchange reserves consist mainly of bonds issued by governments with high credit ratings, as such assets can be quickly converted into liquid funds. The Riksbank holds assets primarily in US dollars and euros, but also in British pounds and Norwegian and Danish kroner. In order to spread the risks and increase the return, the Riksbank has also chosen to hold a small part of its foreign exchange reserves in Australian and Canadian dollars.

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<sup>14</sup> C. Cella (2022), [Fifty shades of green: the colour of Swedish equity funds](#), *Staff Memo*, September, Sveriges Riksbank.

<sup>15</sup> The purchases included covered bonds (mortgage bonds), municipal bonds, government bonds, treasury bills and corporate debt securities (corporate bonds and commercial paper). The Riksbank also purchased government bonds for monetary policy purposes between 2015 and 2020.

<sup>16</sup> On 31 December 2022, the Riksbank's holdings in Swedish securities amounted to approximately SEK 820 billion.

<sup>17</sup> As a result of the new Sveriges Riksbank Act, which entered into force on 1 January 2023, loans to the IMF are to be made via the Swedish National Debt Office.

Since 2019, the Riksbank's financial risk and investment policy has stated that the Riksbank shall take sustainability into account in the selection of assets in the foreign exchange reserves. We do this by taking the carbon footprint into account when deciding on the composition of the foreign exchange reserves. We try, as far as possible given the purpose of the foreign exchange reserves, to limit the overall carbon footprint without significantly reducing the return or increasing the risk. This has meant that the Riksbank has made some adjustments to its holdings in recent years.<sup>18</sup> The Riksbank also makes an assessment based on sustainability factors before including new assets in the foreign exchange reserves.

### **The Riksbank reports the carbon footprint of the assets in the foreign exchange reserves**

Since 2022, the Riksbank reports the carbon footprint of its holdings of bonds in the foreign exchange reserves.<sup>19</sup> This is part of the process of calculating and reporting climate-related risks on the balance sheet and helps to promote transparency regarding climate-related information.

The Riksbank reports the carbon footprint as an intensity measure, which, in this case, means that countries and regions' greenhouse gas emissions are placed in relation to their output. This makes it possible to compare the footprint of different countries and regions. An Economic Commentary explains why the Riksbank uses this particular measure.<sup>20</sup>

In the calculation, the carbon intensity of each asset is weighted against its share in the foreign exchange reserve (weighted average carbon intensity or WACI). Figure 1 shows the carbon footprint as of 31 December 2022, which amounted to 264 tonnes of carbon dioxide equivalents<sup>21</sup> per million dollars of GDP.

The bonds included in the calculations represent approximately 73 per cent of the market value of the foreign exchange reserves. The remaining 27 per cent consists of bonds issued by international organisations and state-guaranteed organisations, as well as of liquid funds in bank accounts. For these holdings, data on greenhouse gas emissions are not available or reporting is not yet sufficiently developed. Consequently, these holdings are not included in the calculations. The carbon footprint of the foreign exchange reserves has to be interpreted with some caution as the holdings that are included are given a higher weight in the calculation than if all holdings had been included.

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<sup>18</sup> In 2019, the Riksbank decided to invest only in Australian states and Canadian provinces that have the same or lower carbon footprints than the country's total carbon footprint.

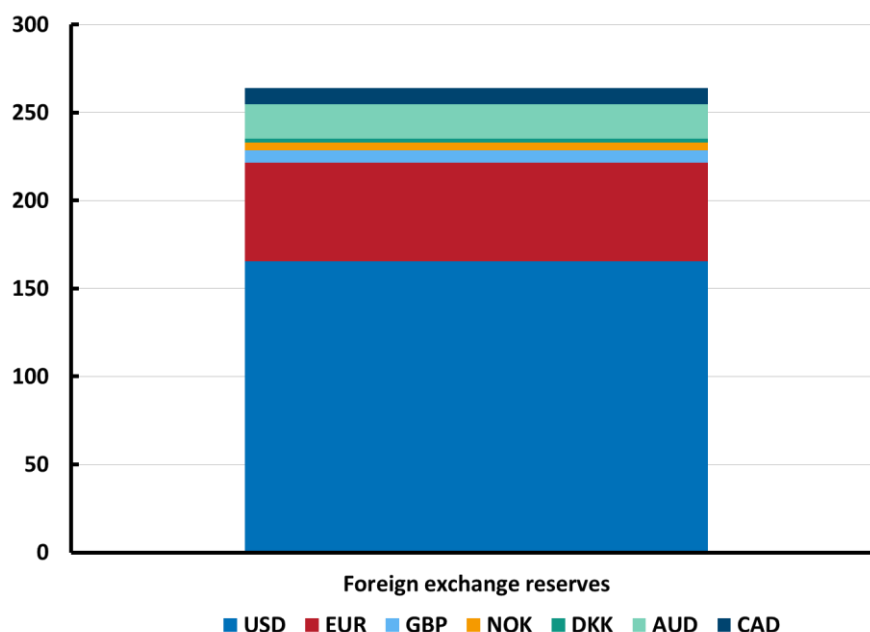
<sup>19</sup> The carbon footprint is updated annually and reported on the Riksbank's website; see [Carbon footprint of the Riksbank's foreign exchange reserves](#).

<sup>20</sup> See E. Brattström and R. Gajic (2022). [The carbon footprint of the assets in the Riksbank's foreign exchange reserves](#), Economic Commentaries, No. 4, Sveriges Riksbank.

<sup>21</sup> Carbon dioxide equivalents are a measure whereby the warming potential of different greenhouse gases is translated into a standard unit. This is because emissions of a certain amount of greenhouse gas have different effects on the climate.

**Figure 1. Carbon footprint of the foreign exchange reserves on 31 December 2022**

Tonnes of carbon dioxide equivalents per million dollars of GDP

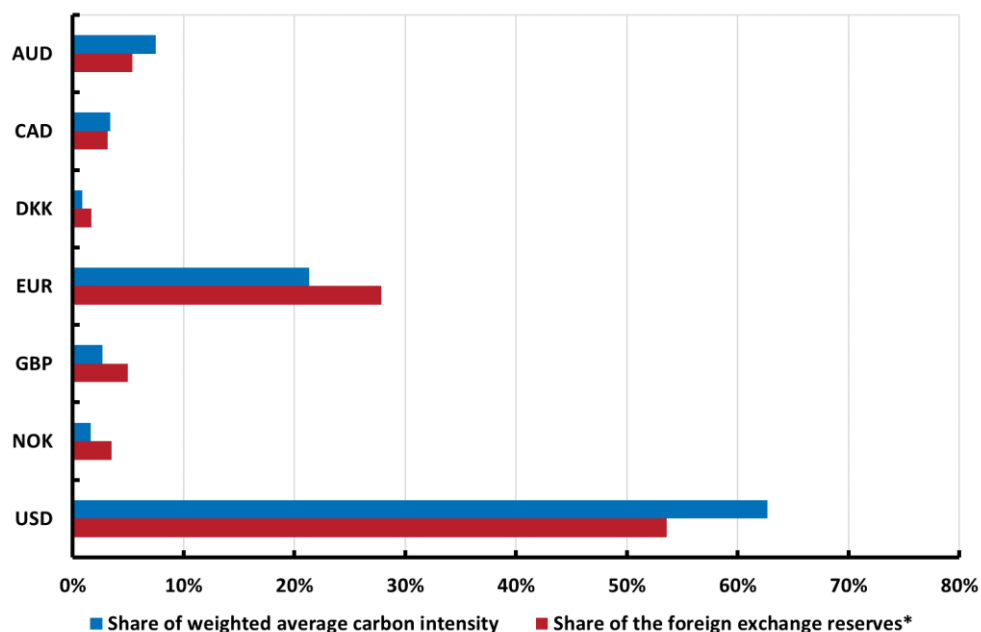


Note. The carbon footprint is calculated for bonds in the foreign exchange reserves issued by states and regions, which represent just over 73 per cent of the foreign exchange reserves. Due to a lag in the reporting of national greenhouse gas emissions, emissions data and GDP data for 2020 are used in the calculations.

Sources: UNFCCC GHG Data Interface, OECD National Accounts Statistics and own calculations.

The size of the carbon footprint in the foreign exchange reserves depends on two things: how much we own of a country or region's securities and their related carbon intensity. Figure 2 illustrates how the holdings in various countries and regions' bonds contributes to the Riksbank's carbon footprint (red bar) and how much the bonds make up of the part of the foreign exchange reserves included in the carbon footprint calculations (blue bar). For example, holdings of US government bonds (expressed as USD in the figure) account for 63 per cent of the foreign exchange reserve's carbon footprint, while they represent 54 per cent of the basis used to calculate the carbon footprint. For the holding of government bonds in euros (expressed as EUR in the diagram), the relationship is the opposite. The assets in euros instead account for 21 per cent of the foreign exchange reserves' carbon footprint, while the holding represents 28 per cent of the basis for calculation. The assets in USD thus have a relatively higher carbon intensity and the assets in EUR have a relatively lower carbon intensity.

**Figure 2. How much different countries and regions contribute to the carbon footprint and their share of the foreign exchange reserves**



Sources: UNFCCC GHG Data Interface, OECD National Accounts Statistics, Sveriges Riksbank and own calculations.

\*The share of the foreign exchange reserves in a given country and region is calculated from the bonds that form the basis for calculating the carbon footprint.

### The Riksbank has taken sustainability into account in its purchases of corporate bonds

Since January 2021, the Riksbank has applied so-called norm-based negative screening when purchasing corporate bonds. This means that the Riksbank has only considered buying bonds issued by companies that are deemed to meet the principles of sustainability formulated in international standards and norms.<sup>22</sup> This screening has been based on the assumption that it is more risky to buy bonds issued by companies that violate these principles. The aim of the screening has thus been to limit the Riksbank's financial risks linked to sustainability.<sup>23</sup>

Since 2021, the Riksbank has measured and reported the carbon footprint of the holdings in its corporate bond portfolio. This analysis helps us to understand the climate-related risks in the Riksbank's operations. However, in the absence of comprehensive carbon data, it is difficult to reliably measure and manage these risks. Therefore, in order to take climate-related financial risks into account when purchasing corporate

<sup>22</sup> The negative screening is based on the UN Global Compact, the OECD Guidelines for Multinational Enterprises and the UN Guiding Principles on Business and Human Rights. These standards span the areas of human rights, working conditions, the environment and anti-corruption.

<sup>23</sup> A longer discussion of this can be found in a previously published Economic Commentary; see M. Andersson and M. Stenström (2021), "[Sustainability considerations when purchasing corporate bonds](#)", Economic Commentary, No. 3, Sveriges Riksbank.



bonds, the Riksbank introduced a new purchase criterion in 2022.<sup>24</sup> In short, this meant that the Riksbank only offered to purchase bonds issued by companies that reported their annual direct emissions (scope 1) and indirect emissions (scope 2)<sup>25</sup> in accordance with the TCFD recommendations<sup>26</sup> (see more on the TCFD in section 2.2).

### **The carbon footprint of the Riksbank's holdings of corporate bonds**

When the Riksbank reports the carbon footprint of its holdings of corporate bonds, weighted average carbon intensity is used, just as for the foreign exchange reserves.<sup>27</sup> On 31 December 2022, the carbon footprint totalled 99 tonnes of carbon dioxide equivalents per million US dollars of revenue. The carbon footprint is calculated using both the companies' reported greenhouse gas emissions in 2020 and quantitative estimates of emissions made by the company Sustainalytics. As the calculations are partly based on estimates, the carbon footprint of the Riksbank's holdings of corporate bonds should be seen more as an indication than a precise calculation.

### **FACTS - The Riksbank collects statistics on the issuance of green bonds in Sweden**

There is currently no single definition of green bonds, but there are two international frameworks: the Green Bond Principles (GBP)<sup>28</sup> and the Climate Bonds Initiative (CBI), better known as the Climate Bonds Standard (CBS).<sup>29</sup> The EU is continuously working to develop and quality assure the frameworks and definitions, for example so that external auditors ensure that the green bond meets the requirements set out.

The issuance of green bonds does not imply that the activities of the companies or governments issuing green bonds are sustainable in their entirety. The real estate company Vasakronan was the first Swedish company to issue a green bond in 2013 and the first green Swedish government bond was issued in 2020.<sup>30</sup>

<sup>24</sup> The decision was taken in conjunction with the monetary policy meeting in June 2022 and can be read about in [Annex B to the minutes](#).

<sup>25</sup> Emissions are divided into different categories, where scope 1 refers to direct emissions, i.e. emissions from sources owned or controlled by the company, and scope 2 refers to indirect emissions, such as emissions from electricity purchased by the company.

<sup>26</sup> In turn, these recommendations are based on the Greenhouse Gas Protocol, a global reporting standard used by companies to quantify, evaluate and manage greenhouse gas emissions.

<sup>27</sup> The carbon footprint is updated quarterly; see the Riksbank's website on the [Carbon footprint of the holdings of corporate bonds](#). For more information on how the carbon footprint is calculated, see J. Blixt, E. Brattström and M. Ferlin (2021), "[Sustainability reporting - need for greater standardisation and transparency](#)", Economic Commentaries, No. 4, Sveriges Riksbank.

<sup>28</sup> See [Green Bond Principles \(GBP\)](#).

<sup>29</sup> See [Climate Bonds Standard \(CBS\)](#).

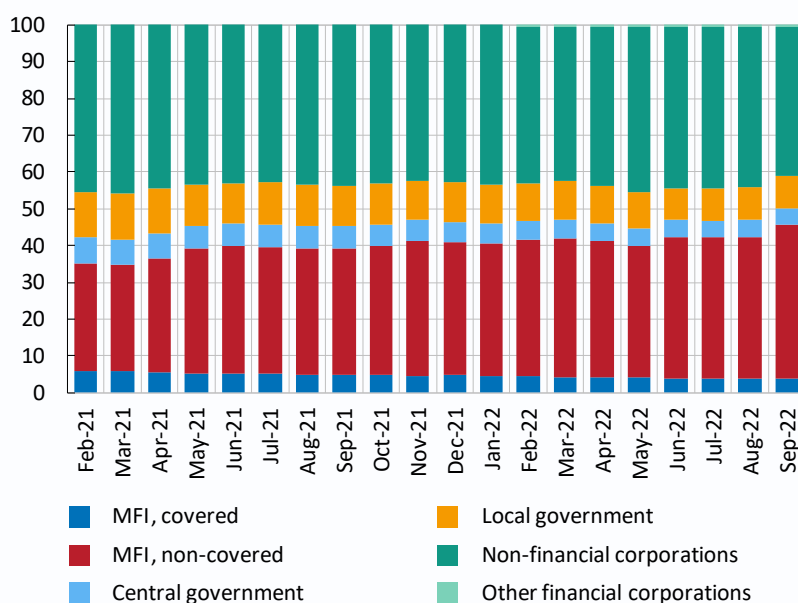
<sup>30</sup> See M. Ferlin and V. Sternbeck Fryxell (2020), "[Green bonds – big in Sweden and with the potential to grow](#)", Economic Commentaries, No. 12, Sveriges Riksbank.

### Non-financial corporations are the largest issuers of green bonds

Since 2021, around 90 major Swedish bond issuers have been submitting monthly data to the Riksbank's securities database to indicate whether their issued securities are green or not. Of the reporting entities, around 40 issue green bonds that comply with the principles of one of the frameworks mentioned above. Non-financial corporations are the largest issuers of green bonds; see Figure 3. Most green bonds issued in Sweden are in Swedish kronor. Green bonds have grown strongly in recent years and now account for around six per cent of the value of all bonds issued.

**Figure 3. Issuers of green bonds, by sector.**

Per cent



Note. MFIs refer to monetary financial institutions, such as banks and housing credit institutions.

Source: Statistics Sweden (SVDB)

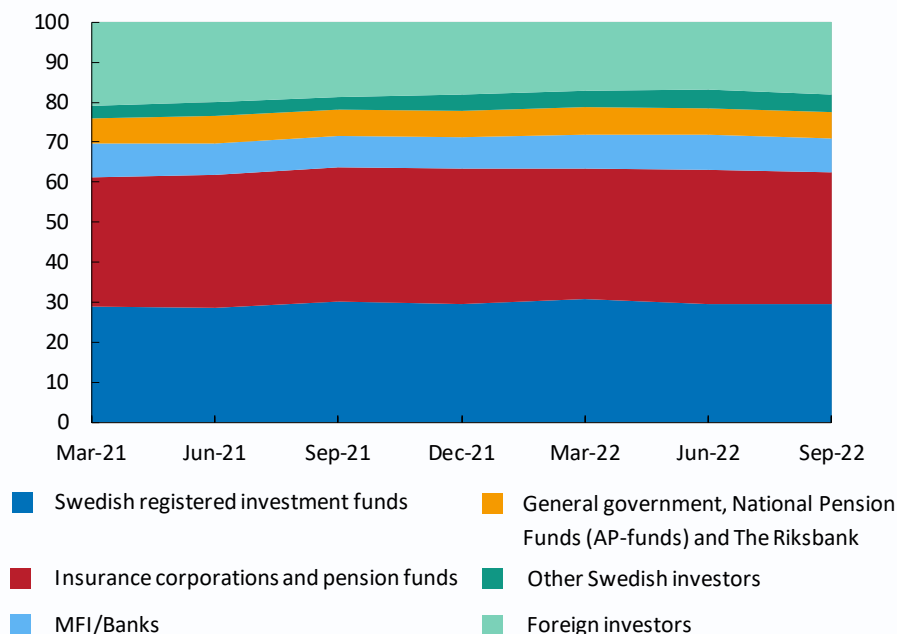
### Investment funds, insurance corporations and pension funds are the largest holders

Of the green bonds issued in Swedish kronor, foreign investors own about one-fifth, while those issued in foreign currency are overwhelmingly owned by foreign investors.

Among Swedish investors, green bonds are mainly held by investment funds, insurance corporations and pension funds. Together, their holdings account for about three-fifths of green bonds in Swedish kronor; see Figure 4. They also account for a large share of holdings of Swedish interest-bearing securities in total. However, their holdings of green bonds are also relatively higher than the green holdings of other sectors. The fact that the general government sector, the Riksbank and the National Pension Funds (AP funds) do not own such a large share of green bonds is due to the

fact that large parts of their securities holdings consist of government bonds and covered bonds. As Figure 3 shows, the share of green bonds among these is relatively small.

**Figure 4. Holders of green bonds in Swedish kronor**



Note. Issued by Swedish issuers and with SEK as issuing currency.

Sources: Statistics Sweden and the Riksbank (SVDB and VINN).

## 2.4 The Riksbank participates in international climate work

Climate change is a global problem and international cooperation is needed to combat it as effectively as possible and manage the risks it poses. For this reason, the Riksbank participates in several international working groups that are working to address climate-related problems in the financial system.

Since 2018, the Riksbank has participated in the Network for Greening the Financial System (NGFS), a global network of central banks and supervisory authorities focusing on climate aspects in the work of the authorities. The Riksbank participates in three NGFS working groups and one expert network for legal issues. Among other things, these three working groups look at issues surrounding the design and analysis of climate scenarios, monetary policy and the impact of climate change, and approaches for central banks to work on sustainable investment, climate-related reporting and sustainable central banking.

In the work of the Basel Committee<sup>31</sup>, the Riksbank participates in the Task Force on Climate-related Financial Risks (TCFR). The TFCR works with a broad assessment of potential measures – spanning the three pillars of the Basel framework: disclosure, supervision and regulatory measures – to address climate-related financial risks that can threaten the global banking system. One step on that path was taken in 2022 with the Basel Committee's publication of Principles for the Effective Management and Supervision of Climate-Related Financial Risks<sup>32</sup> and clarifications of how the existing Basel Framework can capture climate-related financial risks.<sup>33</sup>

At a European level, the Riksbank also participates in the Project team on climate risk monitoring of the ECB and European Systemic Risk Board (ESRB). The working group surveys the extent to which macroprudential policy instruments can be used to manage climate-related risks in the financial system. By the end of 2023, the working group plans to be able to present recommendations on how the banks' capital requirements could be adapted to include climate-related systemic risks or on what additional risk measures could be used in the regulation of the banks' climate risk management.

## 2.5 The Riksbank takes the climate into account in its cash management and payment infrastructure

The Riksbank has the exclusive right to issue banknotes and coins in Sweden. This means that the Riksbank both supplies and destroys banknotes and coins, as well as redeeming banknotes that are no longer legal tender. In the lower denominations, the Riksbank issues coins instead of banknotes. Lower denominations are used more often and therefore suffer more wear than higher denominations, and coins last longer than banknotes. In 2015, the Riksbank introduced a new banknote and coin series. The new coins are lighter than the previous versions, meaning lower transport costs, among other things. The Riksbank has also stopped using nickel and other alloys that were used in older coins. Steel, which has a lower environmental impact from mining, is mostly used today. Nickel and other alloys can also cause allergy problems for people using the coins.

The Riksbank requires some of the cotton used in banknote paper to be grown organically, meaning without pesticides and with regard to the natural environment and human beings. The cotton is certified by the Global Organic Textile Standard (GOTS). The paper in Swedish banknotes is also designed to be as physically sustainable as possible and to withstand dirt and wear. This ensures that the banknotes last a long time and do not need to be replaced so often. In 2022, the Riksbank also started using new banknote sorting machines that automatically determine when used banknotes

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<sup>31</sup> The Basel Committee on Banking Supervision develops global standards, guidelines and recommendations for the supervision and regulation of banks. The Basel Committee's standards are introduced by the national legislative systems of the members. For Sweden, this takes place under the framework of the EU.

<sup>32</sup> BIS (2022), [Principles for the effective management and supervision of climate-related financial risks](#), Basel Committee on Banking Supervision.

<sup>33</sup> BIS (2022), [Frequently asked questions on climate-related financial risks](#), Basel Committee on Banking Supervision.

should be destroyed. This means that banknotes can circulate for longer than before, meaning that fewer banknotes need to be printed.

When the Riksbank finally destroys worn and invalid banknotes, the waste material is burned by Swedish heating plants and used for district heating. Worn and invalid coins are sold so that the metal can be melted down and recycled.

### **ISO certification required**

The Riksbank requires the companies manufacturing Sweden's banknotes and coins to be ISO-certified in terms of quality, the environment and the working environment, and to have a well-developed CSR policy.<sup>34</sup> Both the manufacturer of banknotes and the manufacturer of coins are certified according to ISO 14001, an environmental management system that helps different types of organisations to reduce their environmental impact but also serves as a support for business development. This certification means that the manufacturers aim to reduce their environmental impact by limiting their emissions to waste water and landfill and reducing their use of water and energy. The Riksbank's banknote manufacturers also make efforts to reuse destroyed banknotes in the production of new ones. The goal is a circular economy, where everything that is used can be reused.

### **Climate perspective in the payment infrastructure**

The Riksbank also monitors developments in the payments market and continuously analyses the use of cash and other means of payment in the economy. This is to be able, if necessary, to adapt our activities to changes in society in the most sustainable way for the environment and individuals. In the Payment Report for 2022, the Riksbank assesses whether payments in Sweden are safe and efficient. One factor in the assessment of efficiency is that the costs to society, including energy consumption, for various methods of payment should be low. Energy consumption for card payments is assessed to be lower than for cash. For crypto-assets, it is primarily the underlying technology that determines energy efficiency. Some crypto-assets have extremely high energy consumption, while others are more energy efficient than charge cards, for example.

### **RIX-INST settlement service**

In 2022, the Riksbank launched the RIX-INST service, which will enable banks to offer more account-to-account payments that reach the recipient immediately. Currently, households and companies use the mobile service Swish to make and receive instant payments. Swish payments are currently settled via the banks' accounts in a private system called BiR (Betalingar i Realtid). The plan is to move Swish from the privately owned platform to RIX-INST before summer 2023, when Swish payments will be settled with money in the banks' accounts at the Riksbank, known as central bank money. Central bank money is secure because the Swedish state stands as guarantor.

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<sup>34</sup> Corporate Social Responsibility.

RIX-INST uses the Eurosystem's platform for instant payments TIPS (TARGET Instant Payment Settlement).

According to a report from Banca d'Italia, the TIPS platform has a low carbon footprint.<sup>35</sup> Among other things, the report compares TIPS' energy consumption with the Visa card network. The results indicate that TIPS is a more energy-efficient option, although the report points out that the comparison is between systems that handle different total volumes of transactions per year. The report also compares the carbon footprint of Bitcoin in 2019 and finds that Bitcoin had a carbon footprint that was almost 40,000 times greater than that of TIPS.

## 2.6 The Riksbank's energy consumption and carbon dioxide emissions

The Riksbank has been measuring energy consumption and carbon dioxide emissions from business travel for several years and reports this data in its annual report each year. The table below shows the values for the last three years. The low figures for carbon dioxide emissions from official travel in 2020 and 2021 were due to the fact that little official travel was carried out as a result of the pandemic.

During the year, the Riksbank took measures to save energy in its premises by lowering the heating.

**Table 2. The Riksbank's energy consumption and carbon dioxide emissions from official travel**

	2020	2021	2022
Carbon dioxide emissions from official travel (tonnes), total per employee	0.23	0.08	1.15
Energy usage, total (MWh)	5,408	5,785	5,549
Energy usage, total per employee (MWh per square metre)	15.0 (0.21)	14.6 (0.22)	13.1 (0.21)

Note: 'Employee' refers here to the average number of full-time employees. Since the second half of 2021, emissions of carbon dioxide from official travel also include emissions from rail travel.

Source: The Riksbank.

In 2022, the Riksbank hired an external consultancy firm to review the Riksbank's governing documents in area of the environment and to propose changes. This assignment also included proposing appropriate targets for the Riksbank's internal environmental work, including proposals for how these should be measured and followed up. The assignment also included making proposals on how internal environmental work could best be organised and conducted at the Riksbank and an assessment of the need for a new environmental review.

<sup>35</sup> P. Tiberi (2021), [The carbon footprint of the Target Instant Payment Settlement \(TIPS\) system: a comparative analysis with Bitcoin and other infrastructures](#). *Research Paper*, nr 5, Banca d'Italia.

### 3 Focus: Riksbank looks into possibilities for stress test of climate risks in Swedish banks

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Climate change is becoming more severe and the transition is not happening fast enough. As a result, climate-related risks in the financial system are increasing. The Riksbank is currently working to further develop its analysis of the banks' resilience to climate-related shocks.

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The Riksbank has long carried out stress tests of the banks' capital and liquidity to assess the resilience of the financial system to various types of economic disruption. As the financial risks associated with climate change have grown, the Riksbank now also has an interest in analysing the climate-related risks that may affect the banks. In the near term, transition risks are likely to be the most acute of these.

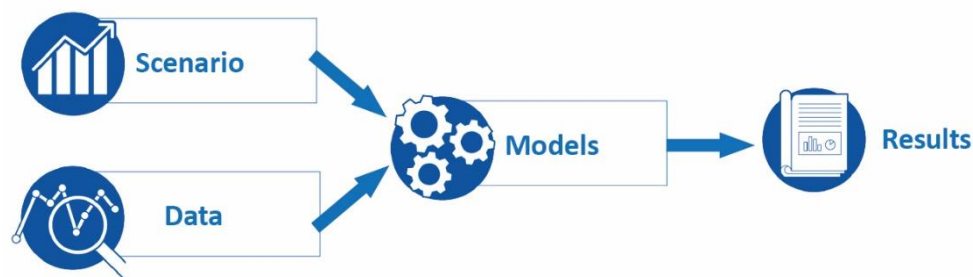
Such an analysis could be done using scenario analysis, or climate stress testing, which involves estimating the impact on the banks' balance sheets and profit and loss accounts in a severe financial scenario. The scenarios commonly used in stress tests typically describe a sharp downturn in the economy over a period of up to three years. To estimate how such downturns would affect banks, or other institutions, we use various models and historical data on institutions' balance sheets and profit and loss accounts. In this way, banks are 'stressed' and the results of the models are used to calculate the banks' hypothetical liquidity needs or loan losses.

The Riksbank is developing an analysis of how a sharp increase in the price of emission allowances could affect the banks through their lending to non-financial corporations. The stress test is based on data on the banks' lending to these corporations, the corporations' balance sheets and data on their carbon emissions. Using this as a basis, the Riksbank then models the probability of corporate bankruptcy, along with how this affects the banks' capital adequacy.

#### 3.1 Climate stress tests differ from regular stress tests

Climate stress tests can be designed as a kind of stress test of banks' capital. However, several aspects distinguish climate stress tests from ordinary capital stress tests. First, the scenarios used are different. In a climate stress test, the scenario is based on the materialisation of physical risks, transition risks or a combination of these. Climate change and measures adopted to counter it can be affected by each other. For example, faster climate change may lead to stronger measures. One possible scenario could be the introduction of a high carbon tax. Another difference is that climate change evolves and climate policy measures have effects over long periods of time. This means that the time horizon in climate stress tests may be longer than in normal stress tests.

Household and corporate exposures to climate risks are complex and the data used in the stress test must be able to capture this. The data requirements are therefore high. A further difference compared with standard stress tests is that historical data are less useful. This applies mainly to risks associated with the climate transition, as we have never experienced one before and thus cannot learn from earlier transitions. Climate stress tests are influenced partly by the expected effects of climate change and partly by expected climate policy measures. Ideally, the same stress test should be repeated regularly to get an idea of how risks evolve over time. This makes it even more difficult to design climate stress tests.



### 3.2 Which risks should the test capture?

It is difficult to capture all climate risks, both physical risks and transition risks, in a single stress test. Consequently, one risk area needs to be selected and the stress test designed accordingly. In order to assess the magnitude of climate-related financial risks, it is necessary to evaluate the impact of different risks on different sectors, the exposure of the financial system to these sectors and the expected policy responses.

#### **Physical risks are currently considered less important for financial stability**

The drought and forest fires in the summer of 2018 gave a taste of how Sweden could be affected by a warmer climate. Despite extensive physical damage to forests and land, the macroeconomic effects and impact on the financial sector were relatively marginal.<sup>36</sup> This can be interpreted as indicating that the risks to financial stability from individual hot summers will be relatively small in the coming years. However, the risk of extreme precipitation and forest fires can be expected to increase in the future.<sup>37</sup>

<sup>36</sup> See Riksbank (2018) [Article - Small effects on production and inflation of the summer's drought and forest fires](#), Monetary Policy Report.

<sup>37</sup> See, for example, Swedish Civil Contingencies Agency (2020) [Risker i ett klimatanpassat Sverige](#), preliminary study (Risks in a climate-adapted Sweden - Swedish only).



In 2020, the Riksbank conducted a study on the proportion of Swedish homes at risk of flooding if sea levels rise.<sup>38</sup> An increased risk of flooding could have a major impact on individual households and could lead to some real estate and other property becoming uninsurable. However, the study concluded that the financial risks associated with future flooding were considered low.

For physical risks to have a significant impact on financial stability in the coming years, a large number of extreme weather events would likely need to occur in Sweden in a short period of time. Such a scenario should not be ruled out, but can be considered less likely in the near term.<sup>39</sup> For the time being, physical risks are thereby deemed to have relatively small implications for financial stability, although the consequences for individual actors could be severe.

### **Transition risks are deemed to be of greater importance for financial stability in the near term**

The need to reduce carbon emissions affects companies in all sectors. Industries with large direct emissions, such as agriculture, transport and the energy sector, need to reorganise their operations to reduce emissions. Industries with high indirect emissions, such as real estate and textiles, are instead affected, among other things, by the need for high-emitting subcontractors to restructure their operations. In practice, transition risks therefore affect the entire Swedish economy.

Taking into account the risks associated with climate change, this is likely to lead to a higher probability of loan losses for the financial institutions that lend money to the companies. Lending to Swedish non-financial corporations amounts to just under SEK 3,000 billion, which corresponds to about 30 per cent of lending (excluding lending to financial institutions) in Sweden.<sup>40</sup> This means that a large part of the banks' lending is directly exposed to companies' transition risks, although firms in some sectors are more at risk than those in other sectors.

Households will also be affected by the transition. As sustainable energy sources are expanded and fossil energy sources are phased out, energy prices may become high and volatile, with negative consequences for household finances. This may also increase credit risk for the banks, as a large share of Swedish bank lending is to households.<sup>41</sup>

From a Swedish perspective, transition risks are deemed to have a greater impact on the financial sector and thus on financial stability than physical risks, and therefore the Riksbank's intended stress tests will focus on assessing this type of risk.

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<sup>38</sup> See M. Danielsson (2020), [Rising sea levels due to global warming will entail increased risks for housing](#), Economic Commentary, no. 10, Sveriges Riksbank.

<sup>39</sup> See, for example: [Skogsbruksåtgärder och skador på samhällsfunktioner](#) (Forestry measures and damage to social functions - Swedish only).

<sup>40</sup> See [Statistics Sweden Financial Market Statistics](#) (September 2022).

<sup>41</sup> See [Statistics Sweden Financial Market Statistics](#) (September 2022).

## 4 Focus: The new Sveriges Riksbank Act, sustainability and climate transition

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With the new Sveriges Riksbank Act, the Riksbank's possibilities to contribute to Sweden's climate transition have become clearer. The Act requires the Riksbank to take account of sustainability in asset management and external monitoring. The overriding objective of maintaining price stability remains and, in addition, the Riksbank shall take real economic considerations into account. The Riksbank shall assess whether the financial system is stable and efficient. It shall also identify risks of severe disruptions. The Riksbank will therefore continue to identify and take into account climate-related risk and contribute to the transition to a sustainable society.

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A new Sveriges Riksbank Act entered into force on 1 January 2023.<sup>42</sup> The Act identifies two areas in which the Riksbank shall take sustainability aspects into account: in its asset management, the Riksbank shall promote sustainable development and, in its external monitoring, the Riksbank must identify threats to sustainable development.<sup>43</sup>

The overriding objective of the Riksbank's activities remains maintaining permanently low and stable inflation (the price stability objective).<sup>44</sup> The Riksbank cannot ignore the fact that climate change and the climate transition may have an impact on price stability. The new Act also makes clear that the Riksbank, without neglecting the price stability objective, shall contribute to a balanced development of production and employment (consideration for the real economy).<sup>45</sup> In connection with this, the preparatory works to the Act refer, among other things, to how the ECB's secondary objective is to support the general economic policies of the EU, including sustainable development.<sup>46</sup> In Sweden, the Riksdag has approved the Paris Agreement on climate change, which the Government has subsequently ratified. The Paris Agreement stipulates that financial flows must be consistent with low greenhouse gas emissions and climate-resilient development. The Riksdag has welcomed and approved the Government's proposals for the direction of climate policy work. This climate policy can be seen as part of Sweden's general economic policy, which the Riksbank, without prejudice to the price stability objective, shall support within the framework of its mandate.

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<sup>42</sup> Sveriges Riksbank Act (2022:1568).

<sup>43</sup> Sustainable development refers to long-term economic, social and environmental development (see Government Bill 2021/22:41, p. 82).

<sup>44</sup> Chapter 2, Section 1, Sveriges Riksbank Act.

<sup>45</sup> Chapter 2, Section 1, Sveriges Riksbank Act

<sup>46</sup> See Government Bill 2021/22:41, p. 85: "Without neglecting this objective, the common monetary and exchange rate policy shall support the general economic policy of the EU. For its part, the Union's general economic policy aims to achieve sustainable development based on balanced economic growth, price stability, a highly competitive social market economy, full employment, social progress, a high level of environmental protection and a better environment (Articles 3.3 and 119.2 of the Treaty on European Union, cf. Article 282.2 TFEU and Article 2 of the Statute of the ESCB). These subordinate objectives imply that real economic considerations shall be taken into account."

The Riksbank shall also, without prejudice to the price stability objective, contribute to the stability and efficiency of the financial system.<sup>47</sup> The Riksbank shall thereby assess whether the financial system is stable and efficient, identify risks of severe disruptions or significant efficiency losses and report its assessments.<sup>48</sup> The Riksbank therefore also needs to continue to see climate change and the climate transition as factors that may affect financial stability.

For all measures taken by the Riksbank there must be support in law, which also applies to sustainability measures.<sup>49</sup> The measures must be objective and impartial with proportionality between objectives and means.<sup>50</sup>

## 4.1 The Riksbank shall promote sustainable development

The Sveriges Riksbank Act states that the Riksbank shall pay particular attention to how sustainable development can be promoted in its asset management, as long as this does not adversely affect the objectives of asset management or the principles related to the Riksbank's tasks and its asset management at low risk.<sup>51</sup>

The Riksbank shall also seek a high degree of efficiency and sound financial management with state funds in its activities.<sup>52</sup> This means, for instance, that the Riksbank shall manage possible financial risks arising from measures. One way of doing this is to limit credit risk when purchasing bonds. When purchasing corporate bonds, the Riksbank also takes into account financial risks related to climate change and climate transition.

## 4.2 The Riksbank shall identify threats to sustainable development

The Riksbank Act stipulates that the Riksbank shall identify threats to sustainable development as part of its external monitoring,<sup>53</sup> as unsustainable developments in the economy may affect the conditions for the Riksbank's operations.

The Riksbank has long included such threats to sustainable development in its external monitoring. Threats to sustainable development may mean that the climate transition is delayed or disorderly, which entails risks for both price stability and financial stability. In this context, it should also be noted that the Riksbank may conduct and contribute financially to research relevant to its activities,<sup>54</sup> which may include issues related to sustainability.

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<sup>47</sup> Chapter 3, Section 1, Sveriges Riksbank Act.

<sup>48</sup> Chapter 3, Section 9, Sveriges Riksbank Act.

<sup>49</sup> Chapter 1, Section 5, Sveriges Riksbank Act.

<sup>50</sup> Chapter 1, Section 9, Instrument of Government and Chapter 1, Section 8, Sveriges Riksbank Act and Section 5, third paragraph, Administrative Procedure Act, respectively.

<sup>51</sup> Chapter 9, Section 1, Sveriges Riksbank Act.

<sup>52</sup> Chapter 1, Section 7, Sveriges Riksbank Act.

<sup>53</sup> Chapter 1, Section 9, Sveriges Riksbank Act.

<sup>54</sup> Chapter 1, Section 10, Sveriges Riksbank Act.

# Appendix: The Riksbank's climate-related publications

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# Glossary

**CSRD, Corporate Sustainability Reporting Directive:** A new directive within the EU on corporate sustainability reporting. Planned to come into force in 2023.

**IFRS, International Financial Reporting Standard** Global accounting standard that has been developed by the International Accounting Standards Board (IASB), and which all listed companies in the EU are obliged to apply.

**NGFS, Network on Greening the Financial System:** International network where central banks and financial supervisory authorities cooperate to help develop the analysis of environmental and climate-related risks in the financial sector.

**NFRD, Non-Financial Reporting Directive:** EU directive on reporting by non-financial corporations. The NFRD was incorporated into Swedish law through the Annual Report Act (ÅRL 1995:1554).

**TCFD, Task Force on Climate-related Financial Disclosures:** Created in 2015 by the Financial Stability Board for the purpose of developing recommendations for voluntary and consistent reporting of climate-related financial risks and opportunities.



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