

Handelsbanken's climate **change progress report**

Initial findings in line with the recommendations of
the Task Force on Climate-related Financial Disclosures

2021



Handelsbanken

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About this report

The purpose of this report is to inform stakeholders about our progress so far related to climate change. The scope of the report is the lending operations of Handelsbanken. For more information about our work with climate change mitigation in our role as Asset manager and Asset owner, please see the separate, publicly available reports at handelsbanken.com. With this report we hope to contribute to increased transparency and the continued development of forward-looking information related to climate change within the financial sector, as well as in the wider economy. The report has been prepared in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures.

About TCFD

The international Task Force on Climate-related Financial Disclosures (TCFD) was formed in 2015 and tasked with correcting the scarcity of information regarding companies' work on, and management of, climate change. The TCFD has developed a reporting framework focused on providing useful information to lenders, insurers and investors. The widespread adoption of the TCFD framework would allow for climate change to be factored into financial decision making, allowing a more efficient allocation of capital, and help smooth the transition to a low-carbon economy. The TCFD published its final report in June 2017, structuring its recommendations into four areas: Governance, Strategy, Risk Management, and Metrics and Targets. Together with underlying disclosures within each area, the framework provides a standardised and relevant way of helping investors and others understand how the reporting organisation assesses and manages climate-related risks and opportunities.

Introduction and summary

Climate change is possibly the biggest challenge facing the world, with potentially far-reaching negative consequences for people, societies and the economy. In 2021, several reports were published which, together, paint a gloomy picture of the global efforts to limit climate change and highlights the need for increased action.

As a bank we have an important role to play in the alignment of our financial flows with the development towards a net zero greenhouse gas economy. The global average temperature continues to rise as the level of greenhouse gases in the atmosphere continues to increase. The beginning of 2021 saw the downward trend from 2020 turn, and global emissions increase at the second fastest rate ever, despite significant growth within renewable energy and electric vehicles sale. This can be explained by the fact that when the global economy started to recover after Covid-19, it did so partly through a substantial increase in the use of coal and oil. The window to keep the Paris agreement alive is closing with each year that passes in which the world does not reduce its emissions. This means that the world is edging increasingly closer to two costly outcomes: a delayed and disorderly transition with high costs as a result of stranded assets, or a transition which is too slow – or does not happen – with high costs as a result of adaptations to a warmer climate and a more unstable world.

During 2021, Handelsbanken has taken several important steps to strengthen our work in relation to climate change. We published an overarching climate target to achieve net zero emissions of greenhouse gases as soon as possible, and by 2040 at the latest. A target within the financing area was also adopted: by 2025, at least 20 per cent of the Bank's

lending is to be defined as 'green' or contain conditions that contribute to a sustainable, measurable transition by the borrower. Furthermore, we strengthened the credit process to improve its ability to assess our customers' climate risks. During the year, we also joined the Net-Zero Banking Alliance, and the Partnership for Carbon Accounting Financials and calculated, for the first time, so called 'financed emission' for part of our Swedish loan portfolio. This year, we also committed to setting science-based targets in line with the 1.5 degree target, in accordance with the Science Based Targets initiative.

The Bank has also performed its first forward looking scenario analysis exploring potential future impact on the Bank's real estate lending in Gothenburg by 2050.

We are now taking an additional step by presenting our first climate report in line with the TCFD recommendations that apply to the Bank's lending. The work to strengthen procedures and processes in order to further improve the Bank's ability to identify, measure, and report climate-related risks and opportunities, and the financial consequences of these, will continue and intensify over the coming years. Significant work remains to be done before we are able to fully quantify the future financial consequences of climate change on the Bank, but we are committed to transparency when it comes to our progress in this area, and this initial report reflects this ambition.

Governance of climate-related issues

The Board of Directors

The Board has adopted an overarching sustainability policy, which sets out the direction for the Group's sustainability work. The direction of the sustainability work is that Handelsbanken aims to integrate financial, social and environmental sustainability into all its operations, which means that the group is to run financially sound, sustainable operations and to encourage and contribute to sustainable development. This applies to day-to-day operations as well as, for example, to credit and investment decisions, business development, advisory services and purchase decisions. This way, risks and costs can be reduced, while new business opportunities can be identified, employees stay motivated, and confidence in Handelsbanken is maintained. This policy applies throughout the Handelsbanken Group, its operations and employees, and encompasses all activities in relation to customers, suppliers and other business partners. The sustainability policy has been supplemented with a number of CEO guidelines that address specific areas and sectors. Among these are guidelines on matters relating to the environment and climate change.

During 2021, the Board was informed regarding the development of the Bank's sustainability work, which includes both climate risks and opportunities. Climate risks are also reported within the framework of existing reporting procedures to the Board and its committees. Accordingly, during the year, the Bank's independent risk control unit presented the outcome of the physical climate risk analysis which was carried out on the Bank's property-related lending in Gothenburg. For more information, see Properties – physical climate risk, page 12.

Climate-related issues are considered together with other relevant factors when setting the overall strategic targets for parts of the operations, such as the climate-related targets (see Our climate strategy, page 6) presented in the Bank's Annual and Sustainability Report 2020. Reporting to the Board on work related to the Bank's sustainability targets was initiated as of the fall of 2021 and will be broadened as the targets gradually become further integrated in the ordinary operations.

Executive management

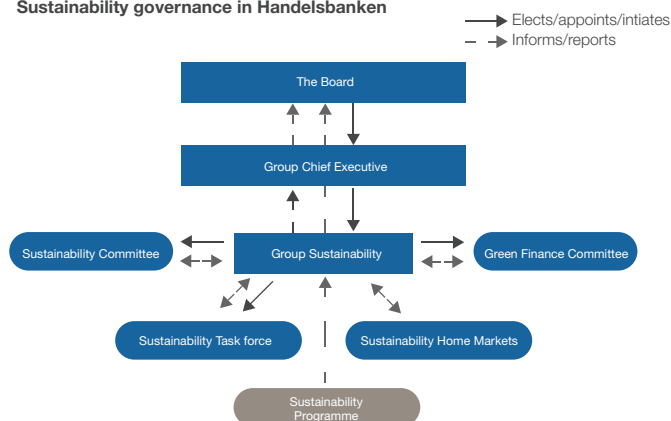
Group-wide decisions concerning strategies for work related to climate change, and targets linked to this area, are made by the Bank's Group Chief Executive (CEO). It is also the CEO who adopts new guidelines such as Handelsbanken's guidelines on the Environment and Climate change.

The Bank's central sustainability department, Group Sustainability, has the task of co-ordinating, supporting and acting as a driving force behind our sustainability work. This includes the responsibility of developing proposed improvements to the Bank's sustainability strategy, as well as compiling and communicating the work externally. The work is led by the Head of Group Sustainability, who reports directly to the Bank's CEO.

The Head of Group Sustainability is also head of Handelsbanken's group-wide Sustainability Council. In 2021, the composition of the Sustainability Council changed to now also include, among others, the Bank's Chief Financial Officer, Chief Risk Officer, Chief Compliance Officer and Head of Group Credits.

In other respects, Handelsbanken's work on climate-related issues adheres to the our decentralised structure. This means that the head of every unit has the responsibility to identify risks related to climate change and integrate them into the operations.

Sustainability governance in Handelsbanken



Our climate strategy

With sustainability being an area of strategic importance for Handelsbanken, we are proud to have launched Group-wide sustainability targets in February 2021. The targets address not only the Bank's long-term climate ambition, but also our determination to further and fully integrate sustainability into our core business - financing, asset management and advisory services.

We are now working to further develop our strategies around these targets, with particular focus on product and business development, training, governance, measuring and reporting. With core values such as low risk tolerance, local engagement and long-term customer relationships, sustainability has been a deep-rooted value within our culture for many years. But to remain successful in our sustainability journey, we need to further embed sustainability aspects into all business areas. At the end of the day, Handelsbanken is a reflection of our customers and thus, we want to be a sustainable bank by supporting and accelerating our customers' sustainability journey. There is plenty of work to do in the coming years and we look forward to working together with our customers to achieve a more sustainable society and world.

Four pillars

Handelsbanken's climate strategy is founded on four pillars:

- 1) Scientific targets
- 2) Measure and report
- 3) Support our customers
- 4) Responsibility and collaboration

Scientific targets

Handelsbanken's target is to achieve net zero emissions¹ of greenhouse gases as soon as possible, and by 2040 at the latest. This target applies to the entire Group and covers lending, leasing and investments, as well as Handelsbanken's own operations, such as energy consumption and business travel. Handelsbanken has adopted an ambitious schedule, because we are convinced that a rapid, co-ordinated transition, aimed at limiting global warming to as close to 1.5°C as possible, would be best for our customers, for the communities we operate in, and thus also for the Bank.

In order to ensure that our emission targets are based on a solid scientific footing, the Bank will seek validation from the Science Based Targets Initiative (SBTi). This also involves setting milestones for reductions between now and 2040, such as a target for 2030. An important step on this journey was taken just before COP26 in Glasgow, when the Bank became a signatory to the Business Ambition for 1.5°C Commitment Letter – meaning that we have now committed to set emissions targets in line with prevailing scientific understanding.

Measure and report

Measuring, reporting and transparency are central tenets of our climate strategy. For over a decade, we have reported emissions linked to our internal operations, such as energy consumption and business travel. Within Handelsbanken Fonder, we have been calculating the carbon footprint of our mutual funds since 2015. In setting our targets for 2040, we will now take the step to also include our financed emissions of our lending portfolio. As a means to ensure this is done correctly, the Bank has joined the Partnership for Carbon Accounting Financials (PCAF). This will serve to guarantee that our emissions are calculated according to best practice, as well as contributing to harmonisation and standardisation within this developing area. Work on calculating emissions from the loan portfolio has commenced with emissions from our real-estate lending in Sweden. For more information, see The Bank's financed emissions, page 21.





Support our customers

Handelsbanken aims to work alongside our customers on their journey towards net zero emissions of greenhouse gases. Central to this is the development of products and services that contribute to such reductions. In order to steer our work and build momentum, Handelsbanken published a target for its financing operations in early 2021 – by 2025, at least 20 per cent of the Bank's lending is to be defined as 'green', or have terms and conditions that contribute to a sustainable, measurable transition by the borrower, such as a reduction of emissions.

Handelsbanken has offered green loans for projects and investments that promote a more sustainable society since 2017. For example, financing renewable energy, waste management, sustainable forest management, green transport and energy-efficient and environmentally certified buildings.

For larger corporate customers without a need for green financing for a specific project or investment, but that have a clear, ambitious sustainability strategy, Handelsbanken can offer sustainability-linked loans and bespoke advisory around structure, materiality, additionality and transparency. Handelsbanken is also active in the field of advisory services regarding green bonds and has been involved in developing many of the green financing frameworks for Nordic issuers. We also put great emphasis on analysing and guiding our customers regarding the EU taxonomy.

Given the positive development we have seen during the year and the substantial levels of demand among our customers, we intend to launch additional loan products with sustainable objectives to both private and corporate customers.

In the rapid developments of 2021, we are proud to have not only advised one of our customers on the world's first EU taxonomy aligned EU Green Bond but also to have granted Europe's first EU Taxonomy-aligned loan.

Through our responsible approach to granting credit, we recognise that we can influence small and medium-sized corporate customers in their transition to more sustainable business operations. For example, in spring 2021 we launched green leasing for electric cars and green energy loans to both private and corporate customer. We have also started a collaboration with the energy company Vattenfall in order help our private customers to invest in solar power for their homes. To further improve the Bank's ability to harness the business opportunities related to energy efficiency investment in buildings, we launched a web-based information package² to private customers in Sweden, in which different measures that may lead to improved energy efficiency in properties are described. At the same time, our green energy loan product was launched with advantageous terms and conditions for the financing of such energy efficiency improvements.

A key factor in our ability to support our customers in the best way possible is the competency of our employees. For this reason, a new training course in sustainability was launched in 2021, mandatory for all employees. The aim is to give the Bank's sustainability expertise a broad boost, and to highlight the opportunities available to the financial sector to contribute to a green transition. The training course takes its lead from relevant regulations and initiatives, and how these impact the financial sector, our services, products and, not least, interactions with customers.

² handelsbanken.se/sv/privat/lan/bolan/kampanj/energieffektivisera-ditt-boende

Responsibility and collaboration

Climate change is a global problem requiring global solutions and co-operation. If the target of the Paris Agreement – net zero greenhouse gas emissions across the globe – is to be achieved, then the global financial system will need to change. This is why Handelsbanken has proudly endorsed the Principles for Responsible Banking (PRB) for several years, and why it continues to support other international initiatives for sustainable business such as the Sustainable Development Goals, the UN Global Compact and the Principles for Responsible Investment (PRI). When the Bank signed up to the PRB, we committed to align our operations with the Paris Agreement, to set targets related to our emissions of greenhouse gases, and to report openly and transparently on the progress of this work. This report should be seen as part of the implementation of the PRB at Handelsbanken.

If the financial sector is to properly fulfil its role in the transition, ambitious global climate policies will be needed, limiting greenhouse gas emissions and improving the conditions for green investments. There are examples of such policies at regional and national level, especially within the EU, but from a global perspective, current climate policies mean that the targets of the Paris Agreement will not be achieved. In an attempt to help shape political action to address climate

change, Handelsbanken joined a number of other companies in signing an open letter, written by the We Mean Business Coalition, and addressed to the G20 countries, calling on them to go all in to keep the Paris Agreement's 1.5°C target within reach. The letter urged politicians to strengthen their national commitments, to discontinue subsidising to the fossil fuel sector, to put a price on carbon dioxide and to improve the conditions for green investments.

Climate-related risks and opportunities

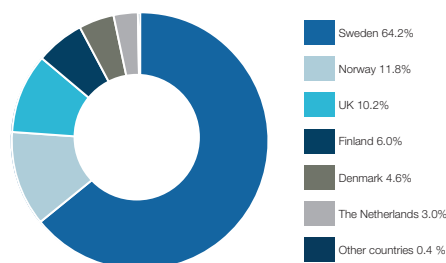
A bank's exposure to risks and opportunities, as these relate to climate change, is materially affected by the geographical and sectorial spread of the credits. Our analysis of climate-related risks and opportunities uses this understanding as a starting point. Handelsbanken's loans to the public amounted to approximately SEK 2,361 billion at the end of the third quarter 2021, and these loans were almost exclusively granted in the six markets in which the Bank currently has significant operations.

Sweden is the Bank's single largest market, with over 64 per cent of the total volume of Loans to the public, followed by Norway with almost 12 per cent and the UK with just over 10 per cent. An overwhelming majority of the lending refers to real estate, almost 89 per cent, divided between mortgage loans to private individuals (49.8 per cent), lending to real estate companies (27.9 per cent) and housing co-operative associations (11.1 per cent).

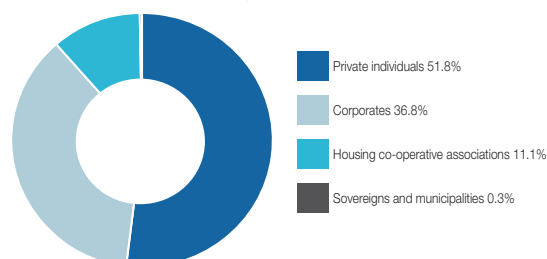
Loans to the public, by sector 30 September 2021

	SEK m	Proportion of total %
Private individuals	1,223,580	51.8
of which mortgage loans	1,176,459	49.8
Housing co-operative associations	263,676	11.1
Property management	659,496	27.9
Manufacturing	23,707	1.0
Retail	21,134	0.9
Hotel and restaurant	8,755	0.4
Passenger and goods transport by sea	4,312	0.2
Other transport and communication	9,317	0.4
Construction	19,104	0.8
Electricity, gas and water	11,897	0.5
Agriculture, hunting and forestry	23,029	1.0
Other services	16,902	0.7
Holding, investment, insurance companies, mutual funds etc.	51,635	2.2
Sovereigns and municipalities	5,867	0.3
Other corporate lending	19,087	0.8
Total	2,361,498	100

Loans to the public, geographical breakdown
30 september 2021



Loans to the public, by client type
30 September 2021



Buildings – risks and opportunities

Given our large exposure to real estate, our lending to this sector constitutes a potentially substantial climate-related risk and business opportunity. Properties can be exposed to both physical climate risks and transition risk, but also entail opportunities for increased business volumes, in terms of financing our customers' increased investments related to climate change mitigation and adaptation.

Transition risk

Transition risks arising from regulatory requirements, such as a reduction in energy consumption or emissions of greenhouse gases, may be significant depending on the customer's capacity to bear the necessary investment costs. The EU sees energy efficiency in buildings as critical to achieving net zero greenhouse gas emissions by 2050. Buildings account for approximately 40 per cent of the EU's energy consumption and 36 per cent of its carbon dioxide emissions. The emissions are primarily attributable to construction, usage, renovation and demolition³. According to a 2016 International Energy Agency (IEA) report on the Nordic region, the energy efficiency of Nordic buildings needs to roughly double by 2050 in order for the Nordic energy sector to reach carbon neutrality⁴.

Physical climate risks

Buildings may also be exposed to physical climate risks depending on their geographical location. An increase in the average temperature can lead to more rain and rising water levels in seas, lakes and waterways, which, in turn, may result in properties being flooded. These factors may lead to higher operating expenses and/or reduced property values.

From a global perspective, the markets in which the Bank conducts material business operations have generally been less affected by costly natural disasters. In the Global Climate Risk Index published by Germanwatch, all of Handelsbanken's main markets have been placed in the two lowest risk categories out of five in terms of "level of exposure and vulnerability to extreme weather events". All the Nordic countries have been placed in the lowest risk category. But the fact that the risks have been relatively low historically does not mean that they will remain low, or that specific properties or small geographical areas are not exposed to significant risks.

Regulatory Transition Risks



Physical Climate Risks



³ EU Commission – https://ec.europa.eu/info/news/focus-energy-efficiency-buildings-2020-feb-17_en

⁴ IEA – Nordic Energy Technology Perspectives 2016



Opportunities

Among Handelsbanken's main climate-related opportunities are increased investments in energy efficiency in properties. To meet the EU's recently proposed target of a reduction in emissions of at least 55 per cent by 2030, buildings' energy efficiency must increase in order to achieve a significant reduction in the greenhouse gas emissions caused by energy consumption in buildings. As part of the post-Covid-19 recovery package, the EU has presented "A renovation wave for Europe" – a strategy aimed at improving buildings' energy performance via renovation. The renovation rate for buildings in the EU today is low – only 1 per cent of renovations improve buildings' energy performance. The aim is to at least double this annual rate with the renovation wave, so that 35 million buildings in the EU are renovated to be more energy efficient by 2030. According to the European Commission, annual investments of around EUR 325 billion will be needed to reach the set energy and environmental targets for 2030.

Increased investments in energy efficiency in properties may result in increased business volumes for the Bank thanks to our good market position, in terms of a large proportion of lending to the sector, coupled with good, long-term customer relationships. If undertaken to the requisite standard, renovations can lead to reduced energy costs, a stronger cash flow, and a higher property value. Combined, this may improve the customer's financial situation, thereby reducing the Bank's credit risk in terms of a stronger repayment capacity and higher value on collateral for the loan, meaning the property's market value.

Fossil fuels – risks

The one sector that, in Handelsbanken's assessment, constitutes the greatest climate risk is fossil fuel extraction and production for energy purposes. Globally, the emissions of greenhouse gases amount to approximately 50 billion tonnes of carbon dioxide equivalents (CO₂e), of which just over 34 billion tonnes derive from the usage of fossil fuels. Coal is the single greatest emission source, followed by oil and natural gas⁵.

According to the International Energy Agency (IEA), a complete restructuring of the global energy system will be needed if the world is to achieve net zero emissions of greenhouse gases and limit global warming to 1.5°C. Among other things, the IEA estimates that this includes an immediate stop of new plans for coal power plants without carbon capture and storage (CCS), new coal mines, and new oil and gas fields⁶. What the IEA is describing is, to a large extent, an immediate start to the phase out of fossil fuels over the next 30 years.

⁵ <https://ourworldindata.org/co2-emissions>

⁶ IEA, Net Zero by 2050 - A Roadmap for the Global Energy Sector

Exposure to carbon-intensive sectors

The table below shows the volume of the Bank's loans to the public to carbon-intensive sectors. Groups and sectors are defined in accordance with the recommendations of the TCFD. Oil and gas represent approximately 0.2 per cent of lending to carbon-intensive sectors and approximately 0.1 per cent of total loans to the public.

Lending (gross) to TCFD-sectors 30 September 2021

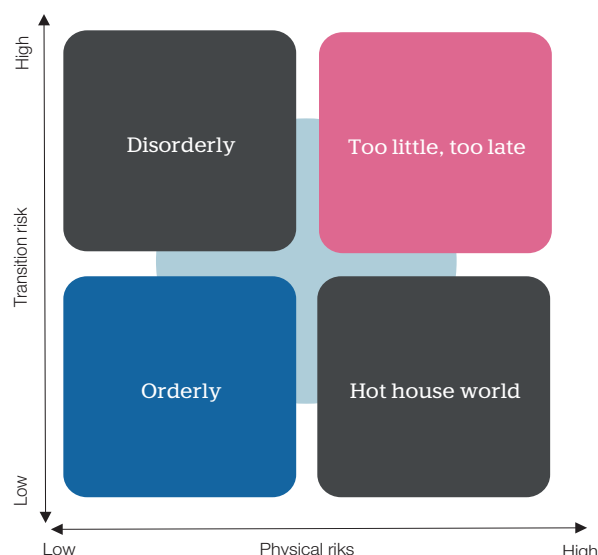
SEK m

Energy	8,834
Oil and Gas	1,608
Coal	0
Electric Utilities	7,226
Transportation	9,915
Air Freight	77
Passenger Air Transportation	2
Maritime Transportation	4,791
Rail Transportation	1,671
Trucking Services	3,093
Automobiles and Components	281
Materials and Buildings	683,741
Metals and Mining	2,181
Chemicals	1,701
Construction Materials	518
Capital Goods	92
Real Estate Management and Development	679,249
Agriculture, Food, and Forest Products	31,677
Beverages	2,069
Agriculture	13,409
Packaged Foods and Meats	3,996
Paper and Forest Products	12,203
Total	734,167

Resilience of Group strategy

The exact consequences of climate change (physical risks) and the global response (transition risk) to prevent continued global warming, are impossible to predict. These two risks are connected, and at the overall level, a higher transition risk means a reduced physical risk, and vice versa.

Handelsbanken is convinced that a rapid and orderly transition aimed at limiting global warming to as close to 1.5°C as possible, would be best for our customers, for the communities we operate in, and thus also for Handelsbanken.



In order to better understand the way that these risks may affect the Bank, two forward-looking climate analyses were carried out in 2021. The first analysis was carried out in collaboration with the Swedish Meteorological and Hydrological Institute (SMHI), with a focus on physical climate risk and properties. The second was carried out via the PACTA tool, with a focus on transition risks within sectors with high emissions.

Properties – physical climate risk

In 2021, the Bank carried out its first forward looking scenario analysis of physical climate risk and properties. The purpose was to gain a better understanding of ways in which Handelsbanken can work on climate-related risks within this sector. Together with experts at SMHI, a proof of concept was carried out in order to assess the extent to which climate change affects properties in Gothenburg, a city located on the south-west coast of Sweden with a metropolitan area of around one million inhabitants. Gothenburg was selected for the analysis because (1) the climate is expected to change in several ways, (2) the Swedish Civil Contingencies Agency (MSB) has identified the area where Gothenburg is located (Göta älvdalen) as a location seriously at risk in terms of flooding⁷, and (3) the Bank has considerable lending in Gothenburg.

The analysis was based on two different emission scenarios⁸ - one with limited emissions and a robust climate policy (RCP 4.5), and one with no additional climate policy (RCP 8.5). RCP 4.5 corresponds to a rise in global average temperature of 1.7-3.2°C, and RCP 8.5 corresponds to 3.2-5.4°C above pre-industrial levels. The time perspective for the analysis was the year 2050, with the exception of floods near major rivers, for which the time perspective was the year 2100.

A total of just over 25,000 buildings were analysed as part of almost 11,000 properties and lending corresponding to nearly SEK 60 billion. The analysis included ten climate change indicators, divided into four general categories:

- Temperature
- Sea levels
- Precipitation
- Floods

The analysis does not include increased risk of landslide or effects on ground water supply. All indicators have been analysed separately meaning that the analysis does not take into account potential consequences of several indicators interacting.

Temperature

Three different climate change indicators linked to temperature were analysed: (1) average annual temperature, (2) average winter temperature and (3) heatwaves. The annual average

temperature for the Gothenburg region is expected to increase by approximately 2°C on average until 2050, compared with the reference period 1961-1990. The rise in temperature is expected to be particularly high during winter (December, January, and February); around 2.5°C in the region.

The two studied climate scenarios are similar up until 2050, after which, in the scenario with higher emissions, the temperature rises at a significantly faster rate up until 2100. Hotter summers increase the frequency of heatwaves and these also last longer. The number of days a heatwave is expected to last is predicted to increase by approximately eight days in the Gothenburg region by 2050 in the RCP 4.5 scenario and slightly more in the RCP 8.5 scenario.

When it comes to properties, an increase in temperature may challenge the operating systems which govern and optimise the usage of electricity and water, control ventilation, heating and cooling, and may lead to higher costs for cooling systems, particularly during summer. The occurrence of longer heatwaves can present an immediate health risk, with consequences for the occupants. Properties that have been built as hospitals or housing for the elderly may need to be adapted in order to continue to be used for their intended purpose. On the other hand, milder winters may reduce the need for heating and reduce costs related to repairs of equipment as a result of freezing.



⁸The use of different emissions scenarios aims to provide information about climate change at various concentrations of greenhouse gases in the atmosphere. RCP stands for Representative Concentration Pathways, and these are established emissions scenarios which are used by, for example, the IPCC.

Sea level rise

The coasts in the Gothenburg area will be exposed to increasingly high sea levels, which means an increased risk of flooding of coastal properties. So far, the gradual land elevation has counteracted the effects of rising sea levels. In locations where land elevation is relatively high, such as in the coastal areas of northern Sweden, rising sea levels will not be as notable, at least not during the next few decades.

The greatest effect of the rising sea levels will be noticeable in the south of Sweden, where the land elevation is zero or at a very low level. By 2050, the average sea level in Gothenburg will be approximately 20-30 cm higher than in 2020.

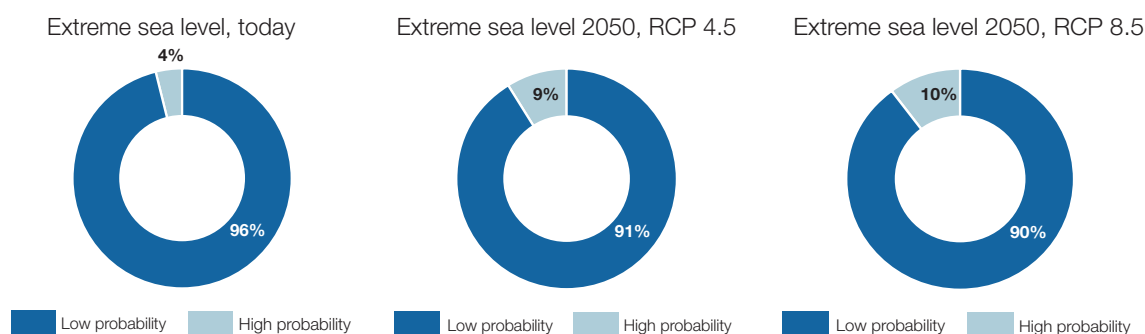
Sea levels along the Swedish coastline rise mainly for two different reasons:

- Average sea level rise – long-term (permanent) sea level rise
- Extreme sea level rise – short-term (temporary, weather-related) sea level rise

To be able to assess the risk of floods caused by the rise in sea levels, the street levels outside the properties were compared to the estimated sea levels in 2050 for each scenario. If the street levels are found to be lower than the estimated sea levels, the property is defined as at a high probability of being flooded.

The analysis of the 'average sea level rise' climate change indicator shows that the proportion of property values that, by 2050, is at risk of being permanently below the sea level, is below half a per cent in both scenarios.

Extreme sea level rise shows a significant increase in the values exposed to high risk between the years 2020 and 2050. Today, four per cent of lending is at risk, but by 2050 that number is estimated to be around 10 per cent. The analysis is conducted by combining (1) the estimated sea level rise with a 100-year return period⁹ at the current climate with (2) the changed global average sea level rise according to the respective climate scenarios. Consideration has also been given to local land elevation rises. Up until 2050, the differences between the two climate scenarios are relatively minor. This is because the system is very slow moving, meaning that the full effect of the emissions cannot be felt within the relatively short time frame, but after this the differences between the two scenarios increases.



RCP 4.5 – Intermediate emissions scenario

Consistent with a future with relatively ambitious emissions reductions and robust climate policy.

Entails:

- Higher energy efficiency
- Strong reforestation programmes
- Increased food yields and dietary changes
- Decreasing use of croplands and grasslands
- Robust climate policies
- Stable methane emissions
- Small increase of CO₂ emissions until around 2040 and then declining emission.
- Emissions are halved between 2050 and 2100.
- Increase of around 1.7-3.2°C in global average temperature by the end of the century

RCP 8.5 – High emissions scenario

Consistent with a future with no policy changes to reduce emissions.

Entails:

- Low energy efficiency
- Increased use of croplands and grassland
- A global population of 12 billion by 2100
- No implementation of new climate policies
- Rapid increase in methane emissions
- Lower rate of technology development
- Heavy reliance on fossil fuels
- Emission rise throughout the 21st century
- Three times today's CO₂ emissions by 2100
- Increase of around 3.2-5.4°C in global average temperature by the end of the century

Increased precipitation and flooding

In the Gothenburg region, annual precipitation is expected to increase by 20 per cent by the year 2050. Large amounts of rainfall in a short time may result in flooding. In a future climate, flooding is expected to increase due to heavy rainfall becoming more common. Both the climate scenarios studied indicated that heavy rainfall would become more common as well as more severe.

How the flows of rivers, streams and lakes change in the future will depend on local conditions in urban areas, forests and other land, and will vary across the different places along the Gothenburg region's large waterways. In general, in both scenarios the flow of water in large waterways will increase by 0-20 per cent by 2050. Low-lying areas that are already easily affected by floods today will be hit even harder in the future.

In order to ascertain which areas may be exposed to an elevated risk of flooding in the event of rising waterway levels, a 100-year flood map was drawn up.¹⁰ The analysis showed that extremely high flood waters in unregulated waterways in Gothenburg (Säve and Mölndal rivers) put less than one per cent of the analysed property collateral at risk of flooding.

Conclusion and next steps

The analysis shows that, above all, extreme sea level rise is the most significant physical climate risk compared with the current situation. If this risk were to materialise, this would have negative consequences for the customers affected, and possibly also the Bank, in terms of expected credit losses. However, the extent to which this will impact the Bank is hard to assess based on this analysis alone. First of all, the analysis does not take into consideration whether the costs for such an event would primarily be covered by insurance companies, which is generally the case today in Sweden, or the customers themselves. Secondly and perhaps more importantly, the analysis does not include measures to be taken to protect the city from future sea level rises in the coming decades. The City of Gothenburg has begun a project involving the design and construction of storm barriers at sea, water pumps at the mouth of the Göta älv and a raising of the riverbanks. These measures and others like it are likely to significantly reduce the risks from extreme sea level rises.

The next step for Handelsbanken in its work with physical climate risks is to scale up the analysis to cover, initially, all of Sweden. Our ambition is that this work can be completed within the near future.



¹⁰ The flows used for MSB's flood maps are based on a previous generation of emissions scenarios (SRES). These climate scenarios were used before the RCP scenarios were put into use, but are the most recent available for this purpose.

Real estate – transition risk

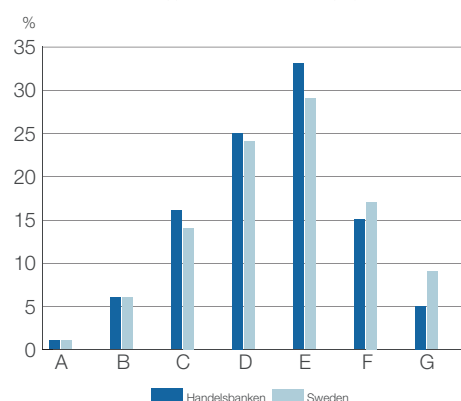
Properties may be exposed to regulatory transition risks linked to requirements for reduced energy consumption or greenhouse gas emissions. In order to achieve net zero, emissions must be reduced and energy efficiency must increase, and in this regard buildings are crucial since they are large consumers of energy.

Handelsbanken uses the Swedish National Board of Housing, Building and Planning's data base of Energy Performance Certificates (EPC) with Energy label to assess the energy efficiency of the Bank's collateral in properties. Since 2014, all EPC contains an Energy label of A-G, with A representing the highest levels of energy efficiency. A total of around SEK 1,055 billion of the Bank's property-related lending in Sweden was analysed, with approximately 40 per cent of this amount having an Energy label. The proportion was highest among real estate companies, at just below 80 per cent, while it was lowest among private house owners, at slightly above 22 per cent.

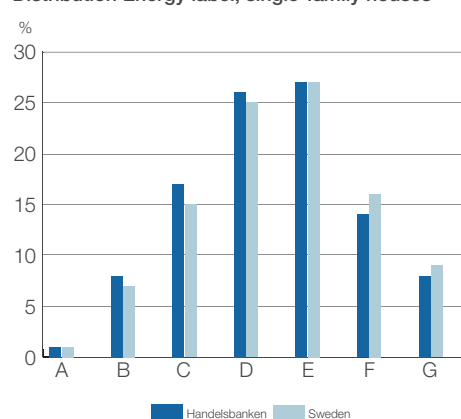
The analysis gives an overall indication that Handelsbanken's lending in the Swedish market reflects the overall market. Handelsbanken has a slightly smaller proportion in the lower energy classes, with this pattern being most obvious in the Premises building category. One possible explanation for this is that new properties tend to be more energy efficient as well as have more debt. The diagrams to the right show the share of Handelsbankens lending per Energy label as well as the share of buildings per Energy label in the national database of the Swedish National Board of Housing, Building and Planning.



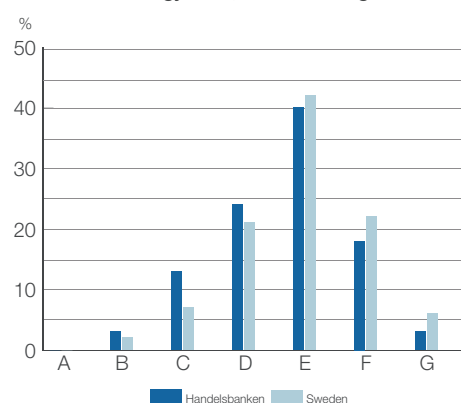
Distribution Energy label, all building types



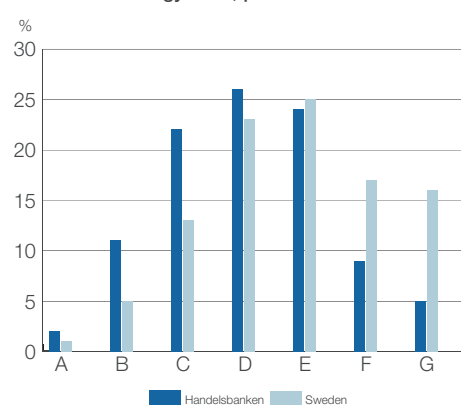
Distribution Energy label, single-family houses



Distribution Energy label, multi-dwelling blocks



Distribution Energy label, premises



PACTA - a tool for climate scenario analysis

During the year, we evaluated a tool for climate scenario analysis for credit portfolios called PACTA for Banks. PACTA is an abbreviation for Paris Agreement Capital Transition Assessment and it is an analytical tool that measures alignment per sector with different emission scenarios ¹¹.

PACTA was originally launched as a tool for measuring the extent to which investments in the form of shares and bonds within certain high-emitting sectors are aligned to different climate scenarios. Recently, PACTA has been further developed to enable banks to measure the alignment of their credit portfolios. To perform the analysis, the PACTA database includes around 42,000 companies in the six industries that are considered to be particularly climate relevant (Vehicles, Cement, Coal, Oil and Gas, Power, Steel).

When applying PACTA to Handelsbanken's credit portfolio, the result was inconclusive in the sense that there were very few matches. In order to better understand why, a deep-dive was performed on the Swedish part of the database, which showed there were only around 650 unique Swedish companies in the database and few of these matched with exposures in Handelsbanken. In order for the tool to provide a relevant analysis of the credit portfolio, it will need to be populated with more companies.

Handelsbanken has therefore chosen to currently not use PACTA for climate scenario analysis of our credit portfolio, but will continue to stay informed regarding progress and updates to the tool.

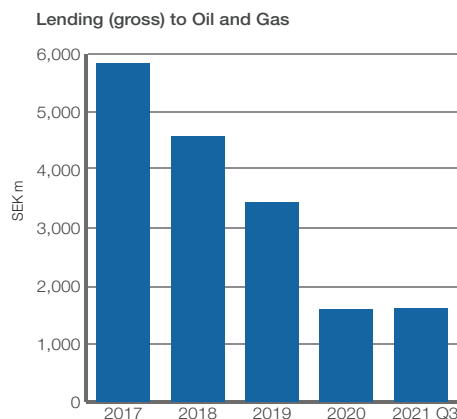


¹¹ <https://2degrees-investing.org/resource/pacta/>

Lending to oil and gas

In December 2015, the world took an important step towards stabilising the global climate through the adoption of the Paris Agreement, an agreement that has since then been ratified by all major economies and emitter's of greenhouse gases. In 2016, Handelsbanken updated its guidelines on the Environment and Climate change and took a more restrictive stance towards the fossil fuel sector. The Bank decided that extra caution must be exercised in business relationships with companies operating in the fossil fuel sector. The same year, we also decided to refrain from directly financing any new mining of coal for combustion or new coal power plants, by stopping the granting of credit to such activities. Nor shall the Handelsbanken Group enter into new business relationships with companies that are active in coal mining for combustion, or with energy companies that are dependent on coal and are not working actively to ensure a transition to renewable energy sources.

The Bank has no lending to the coal sector and our lending to the oil and gas sector is small and has been decreasing for many years. Since 2017, lending to the sector has decreased with more than 70 per cent, from approximately SEK 5.9 billion to SEK 1.6 billion, which represents less than 0.1 per cent of our total lending to the public.



"The Bank has no lending to the coal sector and our lending to the oil and gas sector is small and has been decreasing for many years"

Risk management

The Bank's process for identifying, assessing and managing climate risks is an integral part of the Bank's standard credit process. At Handelsbanken, the credit process is based on a conviction that a decentralised organisation with local presence ensures high quality in credit decisions.

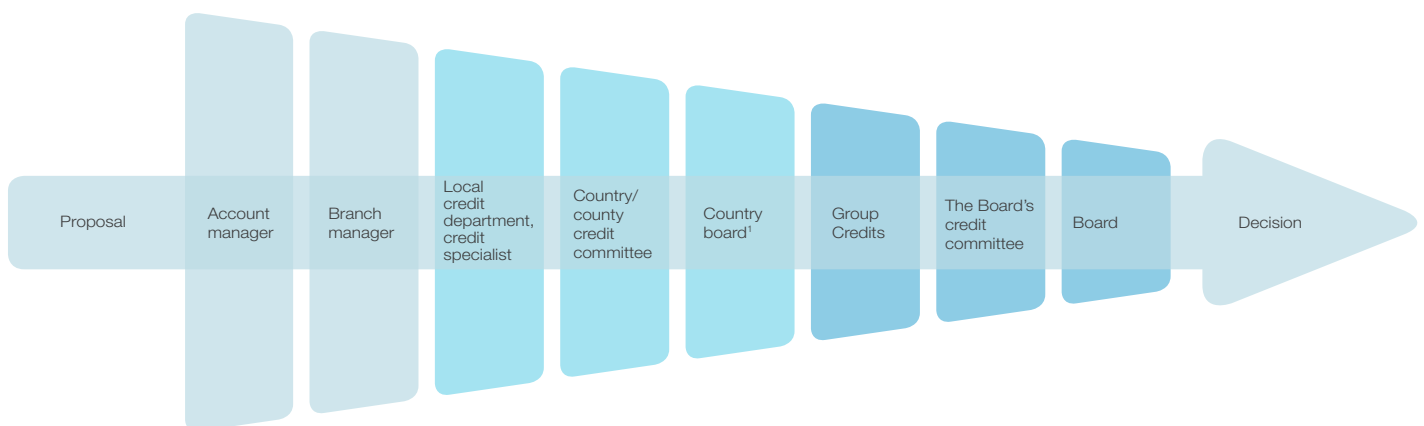
Handelsbanken is a relationship bank where the branches maintain regular contact with the customer, which gives the branch an in-depth knowledge of each individual customer and a continually updated picture of the customer's situation. The Bank's overall risk profile is that risks are to be kept low.

In Handelsbanken's decentralised organisation, each branch responsible for customers has full credit responsibility. Identifying and assessing a company's climate-related risks is a part of the Bank's credit risk assessment of its customers. This includes assessing whether, and if so to what extent, climate change affects the risk of financial strain and the credit risk that could arise.

When the Bank assesses a company's sustainability risks, we do so within five main areas: Environment, Human rights, Basic principles regarding working conditions, Corruption & bribery and Climate risks. Climate risks was introduced as a separate main area in 2021. At the same time, instructions were revised and clarified regarding the assessment of climate risks and documentation requirements were expanded for larger credits.

The Head of Group Credits is responsible for the design and maintenance of the Bank's credit process. The Head of Group Credits reports to the CEO and is a member of the credit committee established by the Board. The Head of Group Credits also reports to the Board regarding losses and risks in the credit portfolio.

Credit process at Handelsbanken



Metrics and targets

Handelsbanken tracks its exposure to climate-related risk and opportunities through several metrics. The metrics presented in this report will be expanded and developed further, and new ones will be integrated, as the Bank continues its journey towards net zero in the coming years.

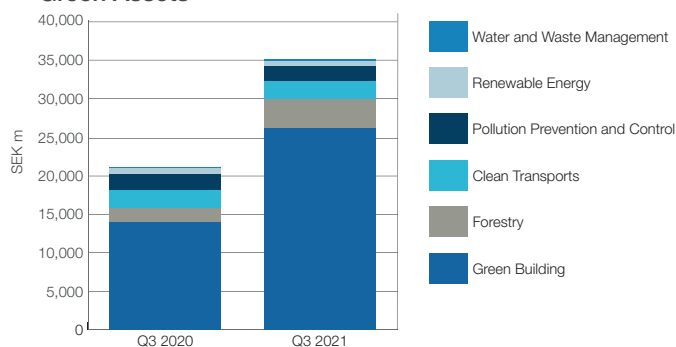
Sustainable financing

With an overall volume of just over SEK 2,361 billion (third quarter 2021) in loans to the public, we have a significant opportunity to work with our customers to promote sustainable development and a transition to a greenhouse gas-neutral economy. To support the transition of our customers towards net zero the Bank offers green and sustainability-linked lending.

The Bank has set an ambitious target for sustainable finance - 20 per cent of the Bank's lending must be green by 2025 or contain conditions that contribute to a sustainable, measurable transition by the borrower. This goal requires additional focus on both products, services and distribution and thus aims to speed-up the Bank's business development within sustainable finance to position us for the years to come.

The Bank's volume of identified green assets amounted to SEK 35 billion at the end of the third quarter 2021. This represents an increase of approximately 66 per cent compared to the previous year. Going forward, the focus is to continue developing our green lending, while also increase focus on developing our sustainability-linked lending.

Green Assets



Taxonomy aligned

Major investments in society are needed to achieve the 17 Sustainability Development Goals and the targets of the Paris Agreement. To accelerate development, the EU has developed an action plan for financing sustainable growth with ten areas for action. The main objectives of the action plan are to redirect capital flows towards a more sustainable economy, integrate sustainability into risk management and to promote transparency and a long-term perspective in the financial market and in the economy as a whole.

Handelsbanken supports the EU's action plan for financing sustainable growth and we work actively to incorporate the various parts of the action plan into our business operations. The Bank's reporting of key figures linked to the EU taxonomy will, over time, become increasingly important as a metric of climate change opportunities.

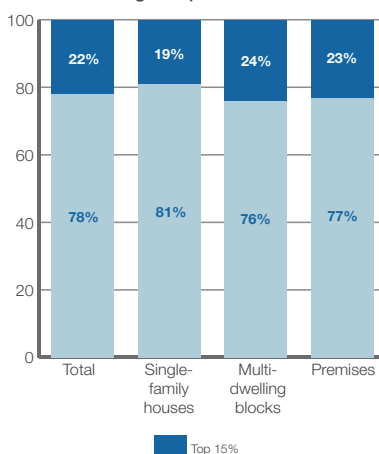
As part of the analysis of Energy Performance Certificates (EPC) (See Real estate – transition risk page 16), Handelsbanken also analysed what share of lending fell within the 15 per cent with the highest energy efficiency. This can be said to correspond to the EU taxonomy's requirements with regards to climate change mitigation within the category *Acquisition and ownership of buildings*. In order for an activity to be taxonomy-aligned, it also needs to comply with the *do no significant harm* criteria. The analysis was made by property type and on loan information and EPC statistics from the beginning of 2021 and was performed on the Bank's Swedish real-estate lending.

Top 15% per building type	Energy performance (kWh/m ²)
Single-family houses	61
Multi-dwelling blocks	93
Premises	91

Of the total analysed lending volume with an EPC, 22 per cent was to buildings within the top 15 per cent most energy efficient for their respective building type. The difference was most notable in lending to Multi-dwelling blocks, where 24 per cent of lending was to buildings within the top 15 per cent.

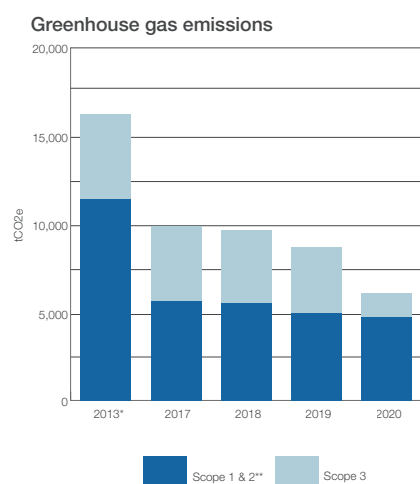
This means that the Bank's lending in terms of volume is positively skewed towards the buildings with higher energy efficiency.

Share of lending to top 15%



The Bank's own emissions

In addition to the emissions attributable to our credits and investments, the Bank's overall climate targets also include emissions of greenhouse gases linked to our own operations, mainly deriving from energy consumption and business travel. Over time, these emissions will be reduced in line with the Paris Agreement and reach net zero as soon as possible. Since 2013, the Bank has reduced its greenhouse gas emissions by 63 per cent. A large proportion of the decrease during 2020 was linked to a large downturn in business travel as a result of Covid-19. Some of this expected to be permanent due to the fact that the Bank recently strengthened its guidelines for business travel, but a rise is predicted for 2021 as countries lift restrictions and travel increases.



* Baseline year

** Market-based approach

The Bank's financed emissions

During 2021 Handelsbanken joined the Partnership for Carbon Accounting Financials (PCAF) and started work on calculating the bank's financed emissions (FE) in accordance with the PCAF methodology. Our long-term ambition is to fully implement the framework and as we do, FE will become an evermore important climate metric for the Bank. We have chosen to start with our largest exposure, namely real estate lending in Sweden.

The overarching principle of the PCAF method is to calculate the share of the scope 1 and 2 GHG-emissions of a building that can be attributable to the financial institution. Ideally, a building's GHG-emissions should be calculated as the product of a building's energy consumption and specific emission factors for each source of energy consumed. The total energy use of a building includes the energy consumed by the building's occupant (see figure below). However, calculating FE for all real-estate in Sweden according to this model is not possible due to lack of available data. Such data will likely not exist for all buildings during the foreseeable future.

$$\text{Financed emissions} = \sum_{b,e} \frac{\text{Outstanding amount}_b}{\text{Property value at origination}_b} \times \text{Energy consumption}_{b,e} \times \text{Emission factor}_e$$

(with b = building and e = energy source)

For the asset classes Single-family houses, Multi-dwelling blocks and Premises, FE has been calculated on the actual buildings energy performance. In order to transform energy consumption to emissions, national statistics regarding energy source per asset class has been used (for more detail see appendix). Total FE according to this calculation method are 42,791 tons of CO2e (tCO2e).

For asset classes Tenant-owned apartment and Tenant-owner association, PCAF provides no methodology that is directly applicable to the Swedish real-estate market. Handelsbanken has therefore developed a model to estimate FE from these two asset classes. The model will be developed over time, and figures possible revised, as more data becomes available, calculation methods are improved and our own understanding develops. In the meantime, we want to contribute to transparency and comparability, which is why we have chosen to present the model in detail in appendix. Total FE according to this model are 35,207 tCO2e.

Financed emissions - Swedish real-estate with Energy label

Asset class	Exposure (SEK m)	Financed emissions (tCO2e)	Financed emissions per SEK (kgO2e/SEK m)	Financed emissions per financed area (kgCO2/m2)	Data score PCAF (1-5, 1= Highest data quality)
Single-family houses	130,303	12,117	93	2.2	3
Tenant-owned apartment	294,312	25,690	87	4.1	-
Tenant-owner association	145,031	9,516	66	1.6	-
Multi-dwelling blocks	90,634	19,863	219	5.8	3
Premises	56,170	10,811	192	5.2	3
Total	716,451	77,998	109	3.4	-

Appendix

Input data

The data is presented as at 30 September 2021 and only includes on-balance-sheet exposures. To be included in the analysis the base requirement is that the exposure is secured by immovable property located in Sweden. As eligible exposures only are the part of the exposure which has an attributed real estate collateral according to Handelsbanken's capital requirements allocation it is possible that an agreement can have a larger exposure than included in the analysis.

The collateral allocation used in the analysis is the one used in Handelsbanken's capital requirements calculation. The property value used in the calculation of the attribution factor is the value of the latest approved valuation.

Property-specific energy data is presented as at January 2021 and is collected from Swedish National Board of Housing, Building and Planning (Boverket)¹. The energy information is split into each building situated at each property. In our calculations the data is per property and therefore we have used the energy data from the building per property with the worst energy performance, if more than one building exist for a property.

Energy Performance Certificates (EPC) are stored in a national database by Boverket and selected information is made available upon request. The information includes building type, energy performance (EP), energy label and size of the building, but does not include the buildings GHG-emission or energy consumption per energy source.

Calculation and Methodology

Handelsbanken's financed emissions calculation is based on the PCAF² methodology "The Global GHG Accounting and Reporting Standard for the Financial Industry" for real estate exposures.

To transform a buildings energy use to GHG-emission, three calculation steps are performed per building type:

1. EP is divided into (a) Heating and hot water consumption and (b) Property electricity (see table 1) using estimated distribution.
2. Energy use for Heating and hot water is converted into energy use per energy source (see table 2) and multiplied by the emission factor of that energy source (see table 3).
3. Energy use for Property electricity is multiplied by the emission factor for electricity.

The resulting emission factor is per kWh per building type (see

1. Distribution energy consumption

	Single-family houses	Multi-dwelling blocks	Premises
Heating and hot water	95%	90%	87%
Property electricity	5%	10%	13%
Total	100%	100%	100%

2. Distribution of energy consumed per energy source

	Single-family houses	Multi-dwelling blocks	Premises
Electricity, Sweden	50%	8%	17%
District heating	19%	91%	77%
Bio fuels	29%	0%	2%
Oil	1%	0%	1%
Gas	1%	1%	2%
Total	100%	100%	100%

3. Emission factors, energy source

	gCO ₂ e/kWh
Electricity, Sweden	13,3
District heating	48,75
Bio fuels	0
Oil	291,2
Gas	201,6

4. Emission factors, building type

	Single-family houses	Multi-dwelling blocks	Premises
gCO ₂ e/kWh	21,1	44,6	41,7

table 4) which is then multiplied with the buildings energy use resulting in the buildings GHG-emissions.

For each property an attribution factor (exposure divided by the property value) is calculated. This factor is multiplied with the energy performance of the property collected from Boverket (energy performance per m²) which is multiplied by the Atemp (heated floor area m²) of the property, also collected from Boverket. To achieve the financed emissions the product is multiplied by the described property type-specific emission factor.

The methodology of PCAF does not currently include methods for tenant-owner associations and tenant-owned apartments, a very common type of housing in Sweden, whereby we have treated these as described below.

To avoid double counting of the emissions we have applied a factor of 0.3 to the tenant-owner associations and a factor of 0.7 to the tenant-owned apartments. In addition to this factor, the financed emission calculation of the tenant-owner associations is performed according to the PCAF methodology. For example, this means that if the bank has financed the tenant-owner association fully but none of the tenant-owned apartments, the bank has financed 30% of the property's emissions. Conversely, if the bank has not financed the tenant-owner association at all but solely fully financed all of the tenant-owner apartments the bank has financed 70% of the property's emissions.

For the tenant-owned apartments we have used the average energy performance and average Atemp from the matched portfolio of the tenant-owner associations in conjunction with the emission factor of the multi-dwelling blocks to get the average total emissions per tenant-owner association.

Thereafter, the average number of apartments per tenant-owner association in Sweden³ is used to divide the average total emissions per average tenant-owner association and thus get the emissions per apartment. Finally, this value is multiplied by the factor of the tenant-owner apartments and each tenant-owned apartment's attribution factor.

Data Quality Score

To transparently disclose the data quality in the analysis the PCAF methodology provides a data quality matrix. Except for tenant-owned apartments (for method, see above) all of the included exposures have been calculated with the data quality score of three (3). This means that we are using energy performance and heated floor area data from official energy labels combined with Swedish country-specific average emission factors.

Including the tenant-owned apartments, approximately half of Handelsbanken's exposures secured by immovable property located in Sweden is included in the financed emission calculation. Excluding the tenant-owned, apartments approximately a third of Handelsbanken's exposures secured by immovable property located in Sweden is included in the financed emission calculation.



³ Statistics Sweden, Central Bureau of Statistics, <https://www.scb.se/hitta-statistik/statistik-efteramne/boende-byggande-och-bebyggelse/bostadsbyggande-och-ombyggnad/bostadsbestand/pong/statistiknyhet/bostadsbestandet-31-december-2020/>

