SOURCES AND METHODS

# CLIMATE-RELATED INDICATORS

DANMARKS NATIONALBANK

Statistics

1 May 2024

*Climate-related indicators contribute to monitoring of greenhouse gas emissions in the financial sector through the sector's investments and lending etc. The climate indicators cover the financial sector's investments in listed equities, corporate bonds and Danish mortgagebonds.*

**CLIMATE-RELATED INDICATORS**



## 0 Administrative information about the statistical product

### 0.1 Name

Climate-related indicators comprise:

- Absolute financed emissions
- Carbon intensity
- Weighted average carbon intensity
- $CO_2e$ footprint

### 0.2 Subject group

Climate

Insurance and pension statistics

Investment funds

Bank and mortgage credit institutions

**0.3 Responsible authority, office, person etc.**

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**0.4 Purpose and history**

The purpose of the climate indicators is to show the financial sector's financing of greenhouse gas emissions and exposure to emission-intensive companies.

**0.5 Users and areas of application**

The climate-related indicators are aimed at users with an interest in climate-related agendas and, more specifically, the development in greenhouse gas emissions through the financial sector's investments. The users are insurance and pension companies, investment funds, banks and mortgage credit institutions, universities, Danmarks Nationalbank, ministries, special interest organisations, households etc.

**0.6 Sources**

The system for collection of information for the climate-related indicators is based on the following main sources:

- Insurance and pension statistics, see sources and methods of the statistics
- Investment funds statistics, see sources and methods of the statistics
- Securities statistics, see sources and methods of the statistics
- Institutional Shareholder Services (ISS)
- Morgan Stanley Capital International (MSCI)

- European Covered Bond Council (ECBC)

### 0.7 Legal basis

Danmarks Nationalbank collects the information in accordance with section 14 a of the Danmarks Nationalbank Act (*Nationalbankloven*), pursuant to Act no. 579 of 1 June 2010, under which Danmarks Nationalbank collects, processes and publishes statistical information within its field of competence. The collected information may be used for other purposes than the compilation of statistics. This applies, in particular, to oversight of financial stability and to planning and organisation of monetary policy and foreign exchange policy as well as in relation to Danmarks Nationalbank's participation in the European collaboration in the financial sector.

### 0.8 Respondent burden

None.

## 1 Contents

### 1.1 Contents description

The publication of climate-related indicators covers four key figures compiled on a quarterly basis for insurance and pension companies', investment funds', banks and mortgage credit institutions investments in listed equities, corporate bonds and Danish mortgage bonds.

### 1.2 Statistical concepts

Climate-related indicators are experimental climate statistics for the financial sector. Sources and methods may change going towards the final form of the statistics, and the indicators are expected to be expanded as data become more accessible and of a higher quality. There is not yet a global standard for how the financing of greenhouse gas emissions and exposure to financial climate risks should be disclosed and reported. The chosen calculation methods are based on recommendations from the Task Force on Climate-Related Financial Disclosures (TCFD)[1] and the

[1] Recommendations of the Task Force on Climate-related Financial Disclosures, 2017 https://assets.bbhub.io/company/sites/60/2021/10/FINAL-2017-TCFD-Report.pdf

Partnership for Carbon Accounting Financials (PCAF)[2], which are working to create a common set of global reporting standards.

Dimensions in the statistics:

- Investor
- Investment
- Issuing sector
- Issuing country (Denmark and abroad)
- Category of emissions
- Values (Climate-related indicators and coverage ratio)
- Quarter

***Investor***

The investor breakdown follows the ESA2010 guidelines for sectoral breakdown (European National Accounts System). The designations in brackets state the accompanying sector codes.

The following sectors are included in the calculation of climate-related indicators:

- Investment funds (S.1240)
- Insurance companies (S.1280)
- Pension funds (S.1290)
- Banks and mortgage credit institutions (S.1220)

Other credit institutions (S.1223) as well as holding companies (S.1259 and S.1270) are included in the financial sector in addition to the above sectors when calculating the national accounts.. Holding companies are not included in the calculation of climate-related indicators because the main part of their listed shareholdings is held as part of the selected group structures.

In the statistic it is possible to choose Danish investment funds and equity funds owned by insurance and pension companies. This illustrates which investments – in the form of equities, bonds and Danish mortgage bonds

[2] The Global GHG Accounting & Reporting Standard for the Financial Industry, 2020 https://carbonaccounting-financials.com/files/downloads/PCAF-Global-GHG-Standard.pdf

– insurance and pension companies hold through Danish investment funds and equity funds.

Foreign investment funds and equity funds owned by insurance and pension companies are not shown in the statistics.

***Investment***

Listed equities, corporate bonds and Danish mortgage bonds.

***Issuing sector***

The sector type breakdown follows the ESA2010 guidelines for sectoral breakdown (European National Accounts System). The designations in brackets state the accompanying sector codes.

- All sectors
- Non-financial corporations (S.11) consist of institutional entities with status of independent legal entities and market producers whose main activity is the production of goods and non-financial services.

***Issuing country (Denmark and abroad)***

Country codes are used for a breakdown on investments in listed equities and corporate bonds in Denmark and abroad. Country groupings can be found in the ECB's Guideline on the statistical reporting requirements of the European Central Bank in the field of external statistics (ECB/2011/23) with subsequent additions (ECB/2013/25).

***Category of emissions***

*Scope 1 emissions*

Scope 1 emissions measure the greenhouse gas emissions that can be directly controlled by the portfolio company. These could be the burning of fossil fuels in connection with production.

*Scope 2 emissions*

scope 2 emissions measure the greenhouse gases that can be indirectly controlled by the portfolio company. These could be emissions from energy purchases from utility companies.

*Scope 3 emissions*

Scope 3 emissions are indirect greenhouse gas emissions in the portfolio company's value chain. The emissions are related to processing of materials at suppliers (downstream), or emissions related to the use of the produced products (upstream).

***Values (Climate-related indicators)***

*Absolute financed emissions*

The indicator shows how many tonnes of greenhouse gases a sector finances through its investment portfolio, measured in tonnes of $CO_2$ equivalents ($CO_2e$). The greenhouse gas emissions in the company in which the portfolio invests are attributed to the portfolio based on the ownership share of the company, see the formula below.

Formula:

$$\sum_{i=1}^{N}\left(\frac{Investment\ in\ company_i}{Value\ of\ company_i}\cdot Emissions\ by\ company_i\right)$$

- *i* indicates the company.
- *N* is the number of companies in the portfolio.
- *Investment in company* is measured in kr. million and is calculated as the market value of the listed equities and corporate bonds held by the Danish financial sector.
- *Value of company* is measured in kr. million and is calculated as enterprise value including cash (EVIC), i.e. the market capitalisation of common stock and preferred stock at the end of the financial year plus book value of debt and minority interests as well as cash and cash equivalents.
- *Emissions by company* are measured in tonnes of $CO_2$ equivalents and are stated as the company's scope 1 and scope 2 greenhouse gas emissions.

**Box 1. Example of calculation of absolute financed emissions**

A portfolio consists of three equities, each of which emits $CO_2$ equivalents. The value of the companies is calculated as EVIC.

| Equity | Invested amount (kr.) | EVIC (kr.) | Emissions ($tCO_2e$) |
|---|---|---|---|
| A | 1,000,000 | 5,000,000,000 | 600,000 |
| B | 1,000,000 | 3,000,000,000 | 180,000 |
| C | 1,000,000 | 6,000,000,000 | 275,000 |
| *Total* | *3,000,000* | *14,000,000,000* | *1,055,000* |

The portfolio finances $CO_2$ equivalents corresponding to its ownership share in the company. This means that the total financed emissions of the portfolio are calculated as follows:

$$\sum_{i=1}^{N}\left(\frac{Investment\ in\ company_i}{Value\ of\ company_i}\cdot Emissions\ by\ company_i\right), \qquad i = A, B, C$$

$$= \frac{1{,}000{,}000}{5{,}000{,}000{,}000} * 600{,}000 + \frac{1{,}000{,}000}{3{,}000{,}000{,}000} * 180{,}000 + \frac{1{,}000{,}000}{6{,}000{,}000{,}000} * 275{,}000$$

$$= \mathbf{226}$$

The portfolio thus finances 226 tonnes of $CO_2$ equivalents with its investments.

*Carbon intensity*

A company is said to be emission intensive if it emits many greenhouse gases relative to its revenue. The carbon intensity indicates how large a volume of greenhouse gases the companies in the portfolio of a sector emit for every kr. million in revenue. It is measured in tonnes of $CO_2$ equivalents per kr. million in revenue and is calculated as the ratio between absolute financed emissions and a weighted sum total of the companies' revenue. The revenue in the company in which the portfolio invests is attributed to the portfolio based on the ownership share of the company, see the formula below.

Formula:

$$\frac{\sum_{i=1}^{N}\left(\frac{Investment\ in\ company_i}{Value\ of\ company_i}\cdot Emissions\ by\ company_i\right)}{\sum_{i=1}^{N}\left(\frac{Investment\ in\ company_i}{Value\ of\ company_i}\cdot Revenue\ of\ company_i\right)}$$

- *i* indicates the company.
- *N* is the number of companies in the portfolio.
- *Investment in company* is measured in kr. million and is calculated as the market value of the listed equities and corporate bonds held by the Danish financial sector.
- *Value of company* is measured in kr. million and is calculated as enterprise value including cash (EVIC), i.e. the market capitalisation of common stock and preferred stock at the end of the

financial year plus book value of debt and minority interests as well as cash and cash equivalents.

- *Emissions by company* are measured in tonnes of $CO_2$ equivalents and are stated as the company's scope 1 and scope 2 greenhouse gas emissions.
- *Revenue of company* is measured in kr. million and calculated at the end of the financial year.

**Box 2. Example of calculation of carbon intensity**

A portfolio consists of three equities, each of which emits $CO_2$ equivalents. The value of the companies is calculated as EVIC.

| Equity | Invested amount (kr.) | EVIC (kr.) | Emissions ($tCO_2e$) | Revenue (kr.) |
|---|---|---|---|---|
| A | 1,000,000 | 5,000,000,000 | 600,000 | 10,000,000,000 |
| B | 1,000,000 | 3,000,000,000 | 180,000 | 8,000,000,000 |
| C | 1,000,000 | 6,000,000,000 | 275,000 | 7,000,000,000 |
| *Total* | *3,000,000* | *14,000,000,000* | *1,055,000* | *11,600,000,000* |

Carbon intensity is a key figure showing the $CO_2e$ emissions of the portfolio for every kr. million in revenue. In Box 1, the absolute financed emissions have been calculated and must now be divided by the portfolio's share of the company's revenue in kr. million. This means that the carbon intensity of the portfolio is calculated as follows:

$$\frac{\sum_{i=1}^{N}\left(\frac{Investment\ in\ company_i}{Value\ of\ company_i}\cdot Emissions\ by\ company_i\right)}{\sum_{i=1}^{N}\left(\frac{Investment\ in\ company_i}{Value\ of\ company_i}\cdot Revenue\ of\ company_i\right)}, \quad i = A, B, C$$

$$= \frac{\frac{1{,}000{,}000}{5{,}000{,}000{,}000} * 600.000 + \frac{1{,}000{,}000}{3{,}000{,}000{,}000} * 180{,}000 + \frac{1{,}000{,}000}{6{,}000{,}000{,}000} * 275{,}000}{\frac{1{,}000{,}000}{5{,}000{,}000{,}000} * 10.000 + \frac{1{,}000{,}000}{3{,}000{,}000{,}000} * 8{,}000 + \frac{1{,}000{,}000}{6{,}000{,}000{,}000} * 7{,}000}$$

$$= \mathbf{38.7}\ tCO2e\ pr.kr.million$$

The companies in the portfolio thus emit 39 tonnes of $CO_2$ equivalents for every kr. million in revenue.

*Weighted average carbon intensity (WACI)*

The indicator shows how much the portfolio of a sector is exposed to emission-intensive companies. The indicator is a weighted sum total of greenhouse gas emissions per kr. million in revenue, where the weight corresponds to the investment's share of the sector's portfolio. It is measured in tonnes of $CO_2$ equivalents per kr. million in revenue.

Formula:

$$\sum_{i=1}^{N}\left(\frac{Investment\ in\ company_i}{Total\ value\ of\ portfolio_i}\cdot\frac{Emissions\ by\ company_i}{Revenue\ of\ company_i}\right)$$

- *i* indicates the company.
- *N* is the number of companies in the portfolio.
- *Investment in company* is measured in kr. million and is calculated as the market value of the listed equities and corporate bonds held by the Danish financial sector.
- *Value of company* is measured in kr. million and is calculated as enterprise value including cash (EVIC), i.e. the market capitalisation of common stock and preferred stock at the end of the financial year plus book value of debt and minority interests as well as cash and cash equivalents.
- *Emissions by company* are measured in tonnes of $CO_2$ equivalents and are stated as the company's scope 1 and scope 2 greenhouse gas emissions.
- *Revenue of company* is measured in kr. million and calculated at the end of the financial year.
- *Total value of portfolio* is measured in kr. million and has been calculated as the sum total of all the portfolio's investments in listed equities and corporate bonds.

**Box 3. Example of calculation of weighted average carbon intensity**

A portfolio consists of three equities, each of which emits $CO_2$ equivalents. The value of the companies is calculated as EVIC.

| Equity | Invested amount (kr.) | EVIC (kr.) | Emissions ($tCO_2e$) | Revenue (kr.) |
|---|---|---|---|---|
| A | 1,000,000 | 5,000,000,000 | 600,000 | 10,000,000,000 |
| B | 1,000,000 | 3,000,000,000 | 180,000 | 8,000,000,000 |
| C | 1,000,000 | 6,000,000,000 | 275,000 | 7,000,000,000 |
| *Total* | *3,000,000* | *14,000,000,000* | *1,055,000* | *11,600,000,000* |

Weighted average carbon intensity (WACI) is a key figure showing the portfolio's exposure to emission-intensive companies. This means that the WACI of the portfolio is calculated as follows:

$$\sum_{i=1}^{N}\left(\frac{Investment\ in\ company_i}{Total\ value\ of\ portfolio_i}\cdot\frac{Emissions\ by\ company_i}{Revenue\ of\ company_i}\right),\quad i=A,B,C$$

$$=\frac{1{,}000{,}000}{3{,}000{,}000}*\frac{600{,}000}{10{,}000}+\frac{1{,}000{,}000}{3{,}000{,}000}*\frac{180{,}000}{8{,}000}+\frac{1{,}000{,}000}{3{,}000{,}000}*\frac{275{,}000}{7{,}000}$$

$$=\mathbf{40.6}\ tCO2e\ pr.kr.million$$

The companies in the portfolio thus emit 40.6 tonnes of $CO_2$ equivalents for every kr. million in revenue in the portfolio's companies.

*$CO_2$e footprint*

The indicator shows how large a volume of greenhouse gases the companies in the portfolios of the sectors emit for every kr. million invested. It is measured in tonnes of $CO_2$ equivalents per kr. million invested and is calculated as the ratio between absolute financed emissions and the total value of the portfolio.

Formula:

$$\frac{\sum_{i=1}^{N}\left(\frac{Investment\ in\ company_i}{Value\ of\ company_i}\cdot Emissions\ by\ company_i\right)}{Total\ value\ of\ portfolio}$$

- *i* indicates the company.
- *N* is the number of companies in the portfolio.
- *Investment in company* is measured in kr. million and is calculated as the market value of the listed equities and corporate bonds held by the Danish financial sector.
- *Value of company* is measured in kr. million and is calculated as enterprise value including cash (EVIC), i.e. the market capitalisation of common stock and preferred stock at the end of the financial year plus book value of debt and minority interests as well as cash and cash equivalents.
- *Emissions by company* are measured in tonnes of $CO_2$ equivalents and are stated as the company's scope 1 and scope 2 greenhouse gas emissions.
- *Revenue of company* is measured in kr. million and calculated at the end of the financial year.
- *Total value of portfolio* is measured in kr. million and has been calculated as the sum total of all the portfolio's investments in listed equities and corporate bonds.

**Box 4. Example of calculation of $CO_2$e footprint**

A portfolio consists of three equities, each of which emits $CO_2$ equivalents. The value of the companies is calculated as EVIC.

| Equity | Invested amount (kr.) | EVIC (kr.) | Emissions ($tCO_2e$) |
|---|---|---|---|
| A | 1,000,000 | 5,000,000,000 | 600,000 |

| | | | |
|---|---|---|---|
| B | 1,000,000 | 3,000,000,000 | 180,000 |
| C | 1,000,000 | 6,000,000,000 | 275,000 |
| *Total* | *3,000,000* | *14,000,000,000* | *1,055,000* |

The $CO_2e$ footprint is a key figure showing the portfolio's $tCO_2e$ emissions for every million invested. In example 1, the financed absolute issues have been calculated and are now to be divided by the value of the portfolio in kr. million. This means that the $CO_2e$ footprint of the portfolio is calculated as follows:

$$\frac{\sum_{i=1}^{N}\left(\frac{Investment\ in\ company_i}{Value\ of\ company_i}\cdot Emissions\ by\ company_i\right)}{Total\ value\ of\ portfolio}, \quad i = A, B, C$$

$$= \frac{\frac{1{,}000{,}000}{5{,}000{,}000{,}000} * 600{,}000 + \frac{1{,}000{,}000}{3{,}000{,}000{,}000} * 180{,}000 + \frac{1{,}000{,}000}{6{,}000{,}000{,}000} * 275{,}000}{\frac{3{,}000{,}000}{1{,}000{,}000}}$$

$$= \mathbf{75}\ tCO2e\ per\ kr.million$$

The portfolio thus emits 75 tonnes of $CO_2$ equivalents for every kr. million invested by the portfolio.

*Coverage (per cent)*

**2 Time**

**2.1 Reference time**

The climate-related indicators are stated on a quarterly basis.

**2.2 Publication time**

The climate-related indicators are published quarterly one month after the end of the quarter.

**2.3 Punctuality**

The climate-related indicators are normally published without delay relative to the announced time.

**2.4 Frequency**

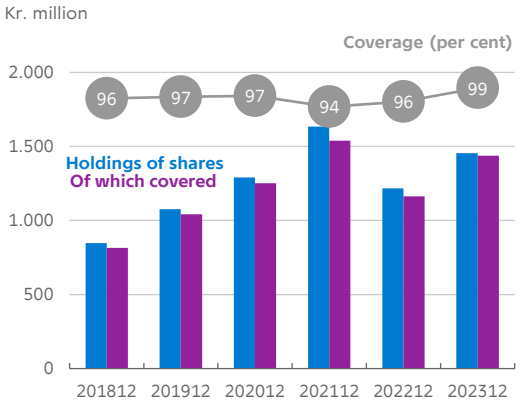
The climate-related indicators are published quarterly.

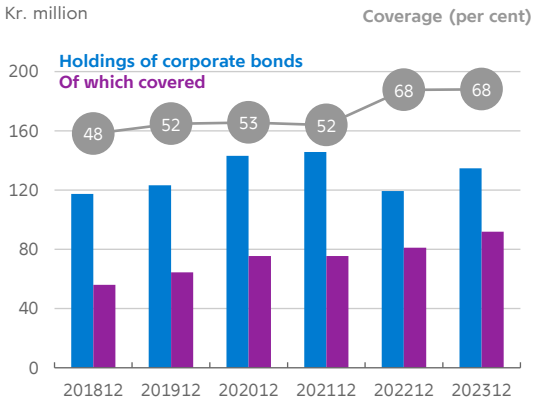
**3 Reliability and uncertainty**

**3.1 Overall reliability**

Climate data is linked to the portfolios via ISIN codes. The coverage ratio for climate data has increased over time. For scope 1 and 2 emissions in non-financial companies the coverage ratio was 99 per cent for listed equities and 68 per cent for corporate bonds in the 4th quarter of 2023 (measured on the holdings of the complete financial sector). It is not unusual for the corporate bond coverage ratio to be lower than for equity issues. The overall coverage ratio for was 96 per cent in the 4th quarter of 2023. The part of the portfolios that cannot be covered with data on emissions is excluded from the population when calculating the climate-related indicators.

Based on the quality of the statistics used from Danmarks Nationalbank as well as the overall coverage ratio for climate data from the data providers, the overall reliability is assessed to be good for scope 1 and 2 emissions.




### 3.2 Sources of uncertainty

***Financed emissions and not real $CO_2e$ reductions in the economy***

The climate-related indicators are an expression of how many greenhouse gas emissions the financial sector helps finance through investments in companies. Therefore, the development in the climate-related indicators does not necessarily follow the development in actual greenhouse gas emissions in the economy. It is possible that the financial sector's exposure to emission-intensive companies will decrease, while actual greenhouse gas emissions in society remain the same.

The financial sector could potentially reduce the level of greenhouse gas emissions by reducing investments in companies in high-emission sectors (e.g. oil, gas and utility companies). However, this is not necessarily what supports a green transition best.

Firstly, investments in emission-intensive supply, materials production and energy companies may contribute to the green transition by securing the materials that will be used, for example, to expand the electricity grid, build renewable energy production and contribute to security of supply.

Secondly, the financial sector can, via its active ownership, influence the companies in question towards the green transition, which will reduce the emissions over time. The financial sector cannot do this if they sell off these equities.

***Only listed equities, corporate bonds and Danish mortgage bonds in the portfolios***

Only investments in listed equities, corporate bonds and Danish mortgage bonds by insurance and pension companies, investment funds, banks and mortgage credit institutions are included in the calculations of climate-related indicators. This means that the calculation does not fully show the climate footprint of the portfolios. A full overview will require that unlisted investments, loans and other sources of financing are also included. All unlisted investments will not be affected yet due to insufficient data availability at the present time.

***Scope 1, 2 and 3 emissions***

Scope 1 emissions measure the greenhouse gas emissions that can be directly controlled by the portfolio company, while scope 2 emissions measure the greenhouse gases that can be indirectly controlled by the portfolio company. These could be emissions from energy purchases from utility companies. Scope 3 covers other indirect emissions connected with production and consumption of the company's products.

The climate-related indicators are calculated based on scope 1 and scope 2 emissions and thus provide only partial insight into the portfolios' financing of and exposure to greenhouse gas emissions.

The climate-related indicators can be split up in terms of emission category: scope 1, 2 and 3 emissions. There is generally a high coverage ratio for scope 1 and 2 emissions data, and in the 4th quarter 2023, 96,6 per cent of the market value of listed equities in the portfolios of insurance companies' and pension funds could be matched with emissions data. The coverage ratio has improved continuously over the years.

However, measuring scope 3 emissions may be associated with significant uncertainty, as it demands mapping emissions throughout the value chain. The publication of financed scope 3 emissions can illustrate the scale of scope 3 emissions. But the indicator should be interpreted with precaution and no conclusions should be made based on the scope 3 emissions.

In the fourth quarter of 2023, 82,6 per cent of the market value of the listed shares in the insurance and pension fund portfolios is matched with scope 3 emissions. Only reported scope 3 emissions are used in the calculations.

Calculation of climate-related indicators based on scope 1 and scope 2 emissions reduces the amount of double counting at portfolio level[3]. Double counting occurs in connection with scope 3 emissions because one company's scope 3 emissions are other companies' scope 1 and scope 2 emissions. Further, the same emissions may be included several times in the value chain computation. Examples include:

- *Suppliers and sub-suppliers*
  Double counting may occur when companies in the same value chain report the same scope 3 emissions. For example, if a

[3] However, there will still be a certain extent of double counting of scope 1 and scope 2 emissions, as scope 1 emissions from energy companies will be included in their corporate customers' scope 2 emissions.

manufacturer and its supplier both report greenhouse gas emissions from the transport of raw materials.

- *Production processes*
  Double counting may occur when several companies are involved in the production of a product and they report the same scope 3 emissions. For example, a car manufacturer and a supplier of car components, who both report greenhouse gas emissions from the production of car parts.

- *Consumption of products*
  Double counting may occur if several companies use the same product or service. This may, for example, be the case if several companies use the same cloud solution, and therefore report the same greenhouse gas emissions associated with data center operations.

If climate-related indicators are only calculated based on scope 1 and scope 2 emissions, any outsourcing of $CO_2e$ emissions is not registered. A company can thus reduce its climate footprint by outsourcing polluting parts of its production and then purchasing the necessary goods and services from subcontractors etc.

***Inflation and exchange rate fluctuations may affect the figures***

The general price development may affect the calculation of climate indicators that include revenue figures. This makes the climate indicators sensitive to the development in inflation. Correspondingly, the exchange rate may be of importance to the ratio between revenue and emissions in connection with conversion between currencies. These factors mean that the climate indicators need to be interpreted particularly cautiously in periods with high price and exchange rate fluctuations. For reasons of transparency in the statement, the TCFD recommends that no inflation adjustment be made of accounting data, portfolio value etc.

To obtain indicators that are not sensitive to price and exchange rate fluctuations, the focus can instead be on sector-specific intensities, where revenue figures have been replaced by units such as square metres, number of oil barrels etc.

***Choice of company value***

The company value is calculated as *enterprise value including cash* (EVIC), based on accounting information, which is recommended by TCFD for calculations involving both equities and corporate bonds. This valuation includes the market value of the company's equities, the book value of debt in the form of corporate bonds, bank debt etc. as well as cash and cash equivalents.

Alternatively, the market capitalisation can be used if the climate footprint is calculated solely on the basis of listed equities. In this way, exchange rate fluctuations will not affect the size of the financed emissions.

***Annual accounting and emissions data***

All climate-related indicators include accounting and emissions data (i.e. company value, revenue and scope 1 and scope 2) up to and including the financial statements published for the most recent financial year. The climate-related indicators for the period after the latest financial year are thus based on the portfolios' most recent monthly financial holdings and the latest published accounting and emissions data.

Climate-related indicators for 2022 are consequently calculated based on company value and emissions figures from the most recent financial year, 2021, and the companies' financial holdings in 2022, which is in accordance with the recommendations from the TCFD not to project accounting and emissions data. The data frequency means that the development in indicators beyond the latest financial year must be interpreted with caution.

***Reported and estimated data***

MSCI and ISS collect this information from publicly available sources, including companies' annual reports, the Carbon Disclosure Project (CDP) etc. If data on companies' emissions is not publicly available, data providers estimate the emissions based on their own estimation methods. Reported data on greenhouse gas emissions from the companies themselves are used to the greatest possible extent, but, in those cases in which no reported data are available on scope 1 and 2 emissions, then estimated values from MSCI and ISS are used to achieve the best possible coverage. No estimated data is used for scope 3 emissions.

There are also other data providers of ESG data, and the various data providers' methods for estimating missing variables generally vary, which may give rise to differences when comparing climate footprints calculated from different data bases. The estimated data points may therefore potentially be subject to uncertainty as they depend on the estimation methods used by the data providers, but, at the same time, a low coverage ratio for the portfolio may lead to bias in the calculated climate-related indicators, as part of the portfolio is left out. Estimation of scope 3 emissions are associated with significant levels of uncertainty as it requires emissions from the entire value chain to be mapped.

The transition from estimated to reported data may change the results. As companies report their greenhouse gas emissions and data providers incorporate them instead of estimates, this may lead to changes in the data base.

***European Covered Bond Council (ECBC) data Danish mortgage bonds***

Climate data for Danish mortgage bonds is calculated on the basis of the energy consumption in the properties for which mortgage loans are granted. This applies to both registered private and commercial properties. The energy consumption, and thus the property's CO2e emissions, are calculated using the property's actual or estimated energy label, utility- and energy source[4]. The emissions are calculated by the Danish mortgage credit institutes, after which they are published on the institutes' own websites and the European Covered Bond Council's website: Covered Bond Label.

The emissions are calculated at capital center level. In the calculation, the loan-to-value ratio in the relevant capital center is taken into account, so that CO2e emissions are only attributed to the mortgaged part of the residence financed by the capital center.

Climate data for mortgage bonds may be associated with computational uncertainties in the form of improvements in energy labels and estimated emission factors as well as changes in the loan-to-value ratio. Therefore, a decrease in the financed emissions of mortgage bonds cannot necessarily be interpreted as a decrease in actual CO2e emissions.

3.3 Uncertainty figures

[4] Read more about the method of estimation in Finans Danmarks $C0_2$-model for the financial sector (link)

Not calculated.

## 4 Comparability

### 4.1 Comparability over time

The statistics are comparable over time. There may be some uncertainty elements connected with changes in data availability. For example, there may be more reported values that replace the estimated values

### 4.2 Comparability with other statistics

The statistics use intersections that are comparable with the insurance and pension statistics as well as with the investment funds statistics. For example, the figures for the holdings of listed equities can be refound in the two statistics.

### 4.3 Relationship between provisional and final figures

Estimation of the climate-related indicators includes accounting and emissions data (i.e., company value, turnover and scope 1 and 2) up to and including the latest published financial year. The climate-related indicators for the period after the last financial year are thus based on the portfolios' latest quarterly financial holdings and latest published accounting and emissions data. This means that financial holdings data is based on period t, while accounting and emissions data are based on period t-1.

The climate-related indicators are revised when new accounting and climate data that match the financial holdings period are available.

See Danmarks Nationalbank's audit policy for financial statistics and the associated audit cycle, for audits of the financial sector's investments in shares and corporate bonds in listed companies as well as mortgage bonds.

## 5 Availability

### 5.1 Distribution channels

Published quarterly at www.nationalbanken.dk.

### 5.2 Basic material: Storage and applications

Data material is primarily received electronically and is stored for further processing.

### 5.3 Documentation

See Statistics.

### 5.4 Other information

No other information is available.

## 6 Supplementary documentation

None.