FINNVERA

Finnvera’s Carbon Footprint 2023

Calculation Document

Contents

Calculation Principles

This emission calculation has been carried out in accordance with the GHG Protocol Corporate Accounting and Reporting standard and the Corporate Value Chain (Scope 3) Accounting and Reporting standard (GHG Protocol, 2004; GHG Protocol, 2011). The GHG Protocol is the most widely used international framework for calculating a carbon footprint. Calculation can be carried out on a company level, for individual products or services. The GHG Protocol is recommended because of the scope of its criteria and its international recognition. Calculation results will be presented as carbon dioxide equivalents (Co2e),$_2$e), which considers the varying warming effects that different greenhouse gases have.

The calculation applies to the calendar year 2023 (01/01/2023-31/12/2023), and this is Finnvera's third emissions inventory. The calculation has been made in collaboration with Green Carbon, with Finnvera responsible for the collection of source data and the actual calculation, and Green Carbon for emission factors and verifying the calculation.

Significant changes in the calculation or its boundaries

(Significant changes in calculations)

Retroactive corrections:

Energy consumption: The unknown electricity factor has been changed to the Energy Authority's residual mix factor, and the calculation has been adjusted retroactively for 2022, because this change is significant. In addition, small corrections to consumption figures have been made retroactively for electricity, district heating and water.

Domestic financed emissions have been retroactively adjusted for 2022, as an inflation adjustment had not been made in the Exiobase factors due to a formula error.

Employee commuting: Calculation adjusted retroactively. In the 2022 calculation, it had been forgotten to calculate the emissions of employees who did not respond to the survey.

The following changes were made retroactively without adjustments:

Air traffic: Factor changed – in previous calculations, the flight company used Defra emissions factors, but this time, they had used factors from the UK Government BEIS database (2023).

Employee commuting: Emissions from passenger cars in 2023 have been calculated based on the fuel type and using the 2022 average factor for passenger cars. In addition, the definition of a week was specified in the calculation: in 2022, it was calculated that there were 4 weeks per month, but this year, a more accurate figure of 4.3 was used.

Organisational boundaries

(Organisational boundaries)

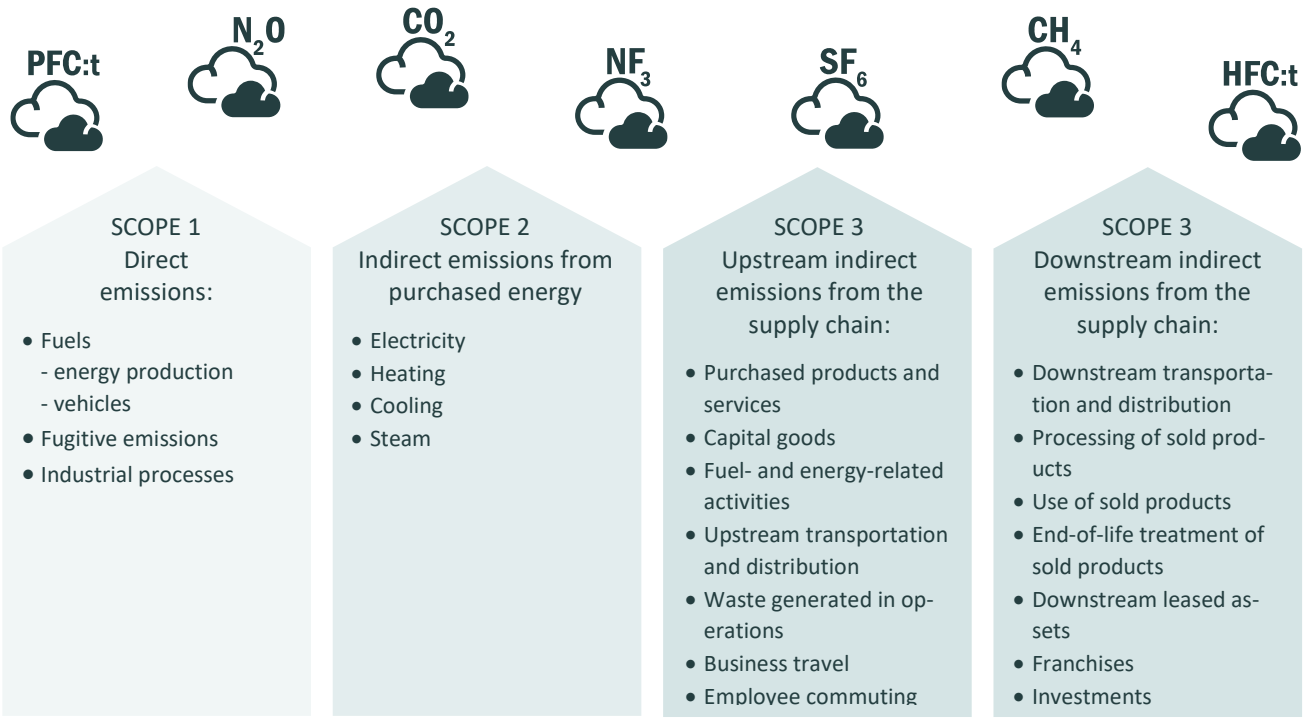
The calculation applies to the Finnvera Group. In 2023 the Finnvera Group included, in addition to the parent company Finnvera, one subsidiary, Finnish Export Credit Ltd.

Finnvera operates on 15 properties in Finland. The share of hedged drawn loans has been taken into account in the calculation of financed emissions, and their emissions have been calculated according to the PCAF standard (2022). In other respects, the operational control boundary of the GHG Protocol has been used in the calculation.

Operational boundaries

(Operational boundaries)

A company's emission sources are classified into three different categories (Scopes 1, 2 and 3). Scope 1 covers direct emissions, such as emissions caused by the company's own energy production, or the use of vehicles controlled by the company. Scope 2 covers indirect emissions from purchased energy, such as emissions from electricity and district heating purchased by the company. Scope 3 covers other indirect emissions, such as emissions caused by raw materials and transport purchased by the company. The GHG Protocol has 15 different categories for Scope 3 emissions. Of these, the categories relevant to the operations of the company under review are taken into account. Emissions sources are classified under different Scopes in order to understand which emissions are directly caused by the company's own operations and which are caused by the value chain.



Source: GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (GHG Protocol, 2011).

The table below shows the emissions sources that have been included in and excluded from the calculation along with a breakdown. For a more detailed list, please see Appendix 2 at the end of the report.

In the calculation, Finnvera has taken into account all emission categories relevant to the organisation's operations, along with the emissions sources under them, and combined the calculation data with the emissions factors provided by Green Carbon. The emissions factors describe the amount of emissions from a specific activity, such as from one kWh of electricity. The result of the calculation will be presented as carbon dioxide equivalents (Co2e),$_2$e), which considers the varying warming effects that different greenhouse gases have. The following sections describe the calculation methods for emissions sources and the emissions factors selected in more detail.

Calculation methods and emissions factors

Scope 1

Scope 1 covers the emissions from the combustion of fuels during use of vehicles controlled by Finnvera. The vehicles used petrol and diesel. The Autokalkulaattori service maintained by the Finnish Climate Change Panel (2023) has been used in the calculation of emissions.

The calculations also take into account emissions from fuel production – for example, oil drilling – and transportation of fuel to refuelling stations, but those are covered by Scope 3.

Scope 2

Scope 2 covers the consumption of electricity, district heating and cooling in the premises. Scope 2 emissions are calculated in two different ways – either market-based or location based. The market-based emissions of purchased energy are calculated using the actual emissions factor reported by the energy provider, and location-based emissions are calculated based on emissions from regional energy production. Both figures should be reported, but only market-based emissions are counted as part of the company's emissions (GHG Protocol Scope 2 Guidance).

In the calculation of market-based emissions, the residual mix reported by the Energy Authority (2024) has been utilised in the calculation of the emissions of mixed electricity consumption. Electricity produced from renewable energy sources or nuclear power was used in 7 properties, and the electricity consumption of these properties therefore does not cause Scope 2 emissions.

The emissions factors reported by district heating providers were used in the calculation of district heating emissions (Helen, 2024; Kuopion Energia, 2024; Savon Voima, 2024; Seinäjoki Energy, 2024; Turku Energia, 2024). District heating produced from renewable energy sources was used in three properties, and the district heating consumption of these properties therefore does not cause Scope 2 emissions.

Purchased district cooling had been produced from renewable energy source and therefore did not cause Scope 2 emissions.

The volume-weighted average emissions factor of electricity produced in Finland in 2023 (Fingrid, 2024a) has been used in the location-based calculation of emissions. Similarly, district heating emissions were calculated using the average emissions factor of district heating produced in Finland (Statistics Finland, 2024a). No Finnish average factors were found for district cooling, so no location-based emissions were calculated for it.

Scope 3

For Finnvera, the relevant Scope 3 categories in 2023 were: 1) purchased products and services, 2) capital goods, 3) fuel- and energy-related activities, 4) waste generated in operations, 5) business travel, 6) employee commuting and 7) investments.

Purchased products and services

The purchased products include 115 smartphones and 327 laptops. Their emissions have been calculated using the emissions data reported by the manufacturers where available and general factors (Judl et al. 2020). Purchased services include the energy consumption of data centres and other procured services such as licence management. Emissions from the energy consumption of data centres were calculated using Fingrid's (2024a) average emissions factor for electricity consumed in Finland. Other procurements were calculated in accordance with El Geneidy et al. (2023) using inflation-adjusted industry-specific emissions factors (Exiobase, 2023; Statistics Finland, 2024b).

Capital goods

Finnvera procured nine passenger cars, of which five have combustion engines, two are hybrid cars and two are fully electric cars. The emissions from their manufacture have been calculated in accordance with the Finnish Climate Change Panel's (2023) Autokalkulaattori service.

Fuel- and energy-related activities

In addition to emissions from fuel and electricity use, the company's carbon footprint also includes emissions caused by other fuel- and energy-related activities, i.e. fuel and energy production and energy transmission loss. Emissions from energy production are related to emissions from the construction of power plants. In other words, the zero-emission production of renewable energy is also based on activities that cause emissions.

The emissions of fuel production covered by Scope 1 have been calculated using the emissions factors fuel production in the Finnish Climate Change Panel's Autokalkulaattori service (2023).

The emissions from the production of mixed electricity used by Finnvera have also been calculated using the Finnish Climate Change Panel's Autokalkulaattori service (2023). Emissions from production also include emissions from the production of transmission loss, assuming transmission losses of 2% (Fingrid, 2024b). Emissions from the "use" of transmission loss were calculated with the same factor that was used for Scope 2 (Energy Authority, 2024). Emissions from electricity produced from renewable energy sources and nuclear power, on the other hand, were calculated using IPCC factors (2014). There are no emissions from the "use" of transmission loss when electricity has been generated from renewable energy sources or nuclear power.

Emissions from the production of consumed district heating, on the other hand, were calculated using the average factor for Northern Europe (Jeandaux, Videau & Prieur-Vernat, 2021). As with electricity, this calculation also included emissions from the production of transmission loss, assuming a transmission loss of 10% (Energy Industry, 2023). Emissions from the "use" of transmission loss were calculated with the same factors that were used for Scope 2.

For purchased district cooling, emissions from transmission loss and production have not been calculated, because a transmission loss percentage or an emissions factor for production were not available.

Waste generated in operations

Waste management emissions include waste produced in the premises and wastewater. Waste management emissions have been calculated according to Dahlbo et al. (2011) and emissions from wastewater treatment according to Li et al. (2021).

Business travel

Business trips were made by train, car, ship and aeroplane. Emissions from train journeys have been calculated in accordance with VR's (2024) emissions data, while the average emissions factor of passenger cars used in Finland (Traficom, 2024) was used for business trips by car. The emissions data of flights were received directly from the service provider. The emissions of sea trips between Helsinki and Tallinn were calculated using Tallink's (2023) emissions factor, while the emissions of the Vaasa-Umeå route were calculated using the UK Government BEIS database (2023).

Employee commuting

Commuting or travel between the home and the workplace was done by passenger car, bus, train, tram, metro, bicycling and walking. The emission factors of the Finnish Climate Change Panel's (2023) Autokalkulaattori have been used for journeys by passenger car. Emissions from bus, metro and tram journeys have been calculated using the UK Government BEIS database (2023). Emissions from train travel were calculated according to VR's emissions factor (2024). Cycling and walking are emission-free.

Investments

Emissions financed by Finnvera include domestic and export financing. The calculation methodology, standards and assumptions applied, along with data quality, are described in more detail in the Financed Emissions section.

Emissions sources excluded from the calculation

The transportation of purchased products, i.e. inbound shipments, has been excluded from the calculation due to the difficulty of obtaining information related to it. Because this category would have made up a very small share of Finnvera's total emissions, excluding it is justified as per the GHG Protocol.

Financed Emissions

The company's emissions sources are sorted into three categories according to the GHG Protocol: Direct business emissions (Scope 1), indirect emissions from purchased energy (Scope 2) and other indirect emissions (Scope 3). Indirect emissions are sorted into 15 categories, where non-financed emissions are discussed in the Calculation methods and emissions factors starting on page 4. This section deals with the financed emissions of Finnvera's business, which are covered by Scope 3, category 15: Investments. Finnvera's company-specific calculation of emissions has been carried out in accordance with the calculation methodology specified in the GHG Protocol, and the more detailed guidelines of the PCAF standard (2022) have been followed for the emissions financed. The PCAF standard is in line with the GHG Protocol.

PCAF

The calculation of financed emissions was carried out in accordance with the Global GHG Accounting & Reporting Standard for the Financial Industry (PCAF, 2022). PCAF (Partnership for Carbon Accounting Financials) has developed the standard in cooperation with the GHG Protocol. The purpose of the standard is to steer the operations models of the financial industry to promote change and transition towards a low-carbon economy in line with the Paris Climate Agreement.

Use of the PCAF standard allows financial institutions to apply uniform methods in measuring financed emissions. It also provides the capacity to report under commonly used frameworks, such as the TCFD, set ambitious climate targets and create financial products that support a low-carbon economy.

The standard includes a calculation methodology for calculating greenhouse gas emissions from different asset and financing categories; listed shares and corporate loans, corporate loans and unlisted shares, project financing, commercial real estate, mortgages, motor vehicle loans and central government debt. In addition to the calculation of financed emissions, the standard also includes instructions on the facilitated and insurance-related emissions of capital markets.

In each loan category, the PCAF standard provides several options for calculating emissions, depending on the information available for the loans. This availability of data affects the calculation's accuracy, which is assessed in the standard on a scale of 1 to 5. The availability of data often forms the biggest obstacle when it comes to the calculation of financed emissions. The utilisation of assessed or borrowed data makes it possible to start calculating. Data quality must be reported as part of the results.

Poseidon Principles

The Poseidon Principles are a global framework for responsible ship financing. These principles consist of four key pillars: assessment of climate alignment, accountability, enforcement and transparency. The aim is to incorporate the climate perspective in loan decisions and thus reduce carbon dioxide emissions from international shipping while striving to achieve net-zero emissions by 2050. The Poseidon Principles are in line with the objectives of the International Maritime Organization (IMO), and lenders, lessors and guarantors can commit to complying with them. Finnvera committed to the international Poseidon Principles in 2021.

Calculation implementation

Finnvera's financed emissions consist of two entities: Domestic and export financing. The calculation targets 2023 and considers the outstanding commitments on 31 December 2023, i.e. the amount that target companies have drawn from liabilities granted. In total, these commitments cover 19,127 companies in Finland and 441 companies in foreign countries.

The calculation of financed emissions began with the collection of emissions data published by companies for the target year. Companies were also asked to provide emissions data, ensuring the most accurate calculation result possible insofar as the available primary data are concerned. For companies that did not provide information, the emissions level was estimated based on the industry, business, location and amount of funding. Emissions from ship financing have been calculated according to the Poseidon Principles. Emissions are calculated for each ship by examining annual consumption of fuel and according to emissions factors indicated by the initiative. The Poseidon Principles cover 6 companies, which account for 47% of hedged and drawn export loans.

Some projects included in the outstanding commitments are still in the building phase during the calculation period, and they are not yet a part of operational activities. Nevertheless, it is neither compliant with the calculation framework nor feasible for monitoring the evolution of calculation results to calculate the emissions from these projects with factors related to the construction industry. This is because, at the end of the building phase, the emissions factor required for calculating the same project's impact would need to be changed, which would distort the results of the calculation. It would be particularly misleading in terms of monitoring calculation results in cases where a project's climatic effects are more intensive during operational activities than during construction; the carbon footprint of the subsequent year would be larger even if the amount of current liabilities is smaller. The calculation of financed emissions considers the amount of current liabilities, and liabilities cannot be spread out over different project phases. Actual emissions have been taken into account for projects that have reported project-specific emissions, which means that industries related to different phases of the project are not a relevant concern in this context.

Data Quality

PCAF uses a 5-tier hierarchy to sort data quality, where a lower value indicates better data quality and less uncertainty. The goal is to have financial institutions gradually improve data quality over time.

- **Tier 1** – the best grade is only given to results where verified emissions data from the target company have been used as the source.
- **Tier 2** – the emissions data used are reported by the target company but unverified.
- **Tier 3** – emissions have been estimated based on primary physical activity data (e.g. energy consumption) and exact emissions factors.
- **Tier 4** – emissions factors based on financial activity are used in the calculation.
- **Tier 5** – emissions have been estimated using industry averages or other indirect evaluation methods, with the highest level of uncertainty.

Actual emissions data have been used for exports in the calculation, where available. However, there are variations in the level of emissions reporting done by companies. The emissions content under Scope 1 and Scope 2 is the same for all companies in principle, because emissions sources in these categories are more limited and easier to measure than many Scope 3 emissions. Many companies claim to report Scope 3 emissions, but the extent of the reporting varies greatly. It is very common for only business travel to be reported under Scope 3, for example. So far, this calculation has primarily used the Scope 1 and Scope 2 emissions of companies. The emissions reported by each company have been allocated according to the attribution factor defined by PCAF. The factor reflects the portion of the project's balance sheet or market value taken up by drawn loans.

For exports, companies that have reported actual emissions cover 77% of drawn export hedging. This consists of 47% Poseidon, 19% reported public emissions and 11% surveyed emissions data. However, actual emissions data only cover 9% of export rows, where Poseidon covers 1%, reported public emissions 4% and surveyed emissions data 4%. For Finland, companies that have reported actual emissions make up 12% of liabilities and 0.1% of companies in the domestic portfolio. Data quality receives a score of 2 for both export and actual domestic emissions data.

The rest of the emissions, i.e. 23% of export liabilities and 88% of domestic liabilities have been calculated using country-specific, inflation-adjusted and cost-based emissions factors for different industries. In PCAF's data quality hierarchy, these data receive a score of 4. Cost-based calculation uses consumption-based emissions factors. The unit is kg CO_2e/€. The costs of different purchases are combined with inflation-adjusted emissions factors based on the Exiobase 3.4 database (El Geneidy et al., 2023; Statistics Finland, 2024b). Emissions factors are linked to industries according to Statistics Finland's industrial classification (2008). The emissions of different industries and operations are based on emissions data allocated from each country’s gross domestic product. Emissions factors represent country-specific averages.

Data quality has improved compared to 2022. At that time, the data quality score for export liabilities was 2.7, compared to 2.5 in 2023. For domestic liabilities, the score was 3.9 in 2022 and 3.8 in 2023. For example, the emissions data report commissioned by Finnvera for its target companies and the proliferation of emissions calculation have contributed to the improvement in data quality.

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Appendix 1, Emissions Factors

Emissions source	Source of emissions factor	Emissions factors retrieved
Scope 1: Fuels – vehicles	Finnish Climate Change Panel (2023)	07/2024–08/2024
Scope 2: Purchased energy	Energy Authority (2024) Fingrid (2024a) Helen (2024) Kuopion Energia (2024) Savon Voima (2024) Seinäjoen Energia (2024) Turku Energia (2024) Statistics Finland (2024a)	07/2024–08/2024
Scope 3: Purchased products and services	El Geneidy et al. (2023) Exiobase (2023) Fingrid (2024a) Judl et al. (2020) Statistics Finland (2024b)	07/2024–08/2024
Scope 3: Capital goods	Finnish Climate Change Panel (2023)	07/2024–08/2024
Scope 3: Fuel- and energy-related activities	Finnish Energy (2023) Energy Authority (2024) Fingrid (2024b) Helen (2024) IPCC (2014) Jeandaux, Videau & Prieur-Vernat (2021) Kuopion Energia (2024) Savon Voima (2024) Seinäjoen Energia (2024) Finnish Climate Change Panel (2023) Turku Energia (2024)	07/2024–08/2024
Scope 3: Waste generated in operations	Dahlbo et al. (2011) Li et al. (2021)	07/2024–08/2024
Scope 3: Business travel	UK Government BEIS (2023) Tallink (2023) Traficom (2024) VR (2024)	07/2024–08/2024
Scope 3: Employee commuting	Finnish Climate Change Panel (2023) UK Government BEIS (2023) VR (2024)	07/2024–08/2024

Scope 3: Investments (for which actual emissions data are unavailable)	El Geneidy et al. (2023) Exiobase (2023) Poseidon Principles (n.d.) Statistics Finland (2008) Statistics Finland (2024b)	07/2024–08/2024

Appendix 2, Boundaries

Scope 1

Category	Emissions source	Boundary
Stationary fuel combustion	Direct emissions from the burning of fossil fuels to power heat sources or stationary combustion engines.	Not applicable
Fuel combustion on the move	Emissions from the use of vehicles controlled by the company.	Included
Fugitive emissions	Emissions from the use of refrigerating devices and air conditioning equipment.	Not applicable
Industrial processes	Emissions from industrial processes.	Not applicable

Scope 2

Category	Emissions source	Boundary
Electricity	Purchased electricity	Included
Heating	Purchased heating	Included
Cooling	Purchased cooling	Included
Steam	Purchased steam	Not applicable

Scope 3

Category	Emissions source	Boundary
Purchased products and services	Emissions from the production of all products and services purchased by the company.	Included
Capital goods	Emissions from the production of capital goods.	Included
Fuel- and energy-related activities not covered by Scope 1 and Scope 2	The upstream life cycle emissions (mining, manufacture, transport) of fuels, heating and electricity, including transmission loss.	Included
Upstream transportation and distribution	Emissions from the transportation and distribution of products and services purchased by the company.	Not included
Waste generated in operations	Emissions from the treatment and disposal of waste generated in the company's operations by third parties.	Included
Business travel	Emissions from employee business travel by vehicles not controlled by the company.	Included
Employee commuting	Emissions from employee travel between the home and the workplace.	Included
Upstream leased assets	Emissions from the use of assets leased by the company that are not covered by Scope 1 or Scope 2.	Not applicable
Downstream transportation and distribution	Emissions from the transportation and distribution of products and services sold by the company.	Not applicable
Processing of sold products	Emissions from the processing of semi-processed products by third parties (e.g. manufacturers) after the reporting company has sold the semi-processed products.	Not applicable

Use of sold products	Emissions from the use of products and services sold by the company.	Not applicable
End-of-life treatment of sold products	Emissions from the destruction and processing of sold products at the end of the products' life cycle.	Not applicable
Downstream leased assets	Emissions from leasing the company's assets to other companies, not covered by Scope 1 or Scope 2.	Not applicable
Franchises	Emissions from franchising not covered by Scope 1 or Scope 2.	Not applicable
Investments	Emissions from investment activities not covered by Scope 1 or Scope 2.	Included

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