Triodos Bank Greenhouse Gas accounting methodology 2023

Triodos Bank

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1. Introduction

Background and objective

From the beginning, Triodos Bank has championed the conscious use of money and its direct impact on the world. We have always envisioned a world in which all people have the necessary tools and resources to live fulfilling lives, and in which the economy operates in harmony with nature. We do this by enabling individuals, institutions and businesses to use money more consciously to make money work for positive social, environmental and cultural change.

Our mission is deeply rooted in all our activities and how we operate. We only finance sustainable entrepreneurs and enterprises, or those transitioning to sustainable practices, and we only use the money entrusted to us by savers and investors in the real economy. This means that our financing is aimed at directly supporting the production of sustainable goods and services, as opposed to focusing primarily on buying and selling in the financial markets. This approach is supported by our business principles, minimum standards, and transparency. More information on these can be found in the "About Triodos Bank" section of the Integrated Annual Report. More information on how we work with our customers to realise impact can be found in the "Our customers" section of our Annual Report.

According to the International Panel on Climate Change's 2018 report, we need to keep the global increase in temperature from pre-industrial levels to under 1.5 degrees. To do that means urgently decarbonising our economy. It means generating renewable energy, increasing the efficiency of energy supply, improving the reliability of renewable energy systems, and involving society more closely in this transition. Together this represents an enormous challenge and it is one that we, and others, play a role in, helping by financing the kind of change that is needed. And we cannot act as an industry, alone. The scale of the challenge requires urgent action from governments, civil society, and business alike. It is both essential and possible.

Financial institutions, as investors in the economy, all have a crucial and constructive role to play in this transition; by no longer financing brown assets that emit greenhouse gas (GHG) emissions and contribute to global warming and instead, by focusing on assets that have a positive impact on people and the environment they depend on.

To understand if their contribution to the low or no carbon transition is on track, financial institutions first need to understand the impact of the decisions they make about where they choose to lend and invest. In particular, they need to know what impact their decisions will have on the environment. In this context, in 2015, at the landmark Paris Climate Conference, Triodos Bank co-signed the Dutch Carbon Pledge to measure and disclose its greenhouse gas emissions, and to ensure these emissions remained in line with the ambitions of the Paris Agreement.

The initiative launched the Partnership for Carbon Accounting Financials (PCAF), a collaboration between financial institutions which has evolved into the Global GHG Accounting and Reporting Standard for the financial industry. Widespread adoption of the global PCAF Standard will allow stakeholders to compare the GHG emissions of banks and other financial institutions. Triodos Bank played a catalytic role in these developments and is still actively taking part in the development and advocacy of the methodology. As one of the first banks to report in this way, we actively collaborate with our partners to encourage others to do the same.

The PCAF partnership is participative and aims to learn from, and contribute to, similar initiatives to be even more transparent about the GHG footprint of financial institutions' loans and investments.
At the end of 2023 over 450 institutions worldwide, many of them members of the Global Alliance for Banking on Values (GABV), were committed to disclose or are already disclosing their greenhouse gas emissions following the PCAF Standard.

As our main impact in the economy and society stems from our loans and investments, PCAF's harmonised approach focuses on measuring the carbon footprint of these asset classes. Triodos Bank implemented and reported on the PCAF methodology for the first time in 2018 and discloses the GHG emission accounting of 100% of our loans and investments. Guided by the PCAF Standard and in collaboration with the PCAF consulting team, our GHG accounting methodology has been applied for our emission reporting in the Integrated Annual Report 2023, and this methodology report describes how we are putting that work into practice.

Triodos Bank ambition is that the sum of all greenhouse gas emissions and emission removals of the operations of the Triodos Bank, loans and investments will reach net-zero by 2035. The remaining gross emissions will be balanced by investing significantly in nature-based solutions that protect and strengthen natural carbon sinks and remove GHG from the atmosphere. Our 'AsOneToZero' target was communicated at COP26 in November 2021. By following PCAFs' mapping of emissions per asset class, we identified current hotspots within our portfolio. This provided useful guidance when setting science-based targets following the Science Based Targets initiative (SBTi) and helps us navigate a long-term strategy that is in line with the Paris Agreement.

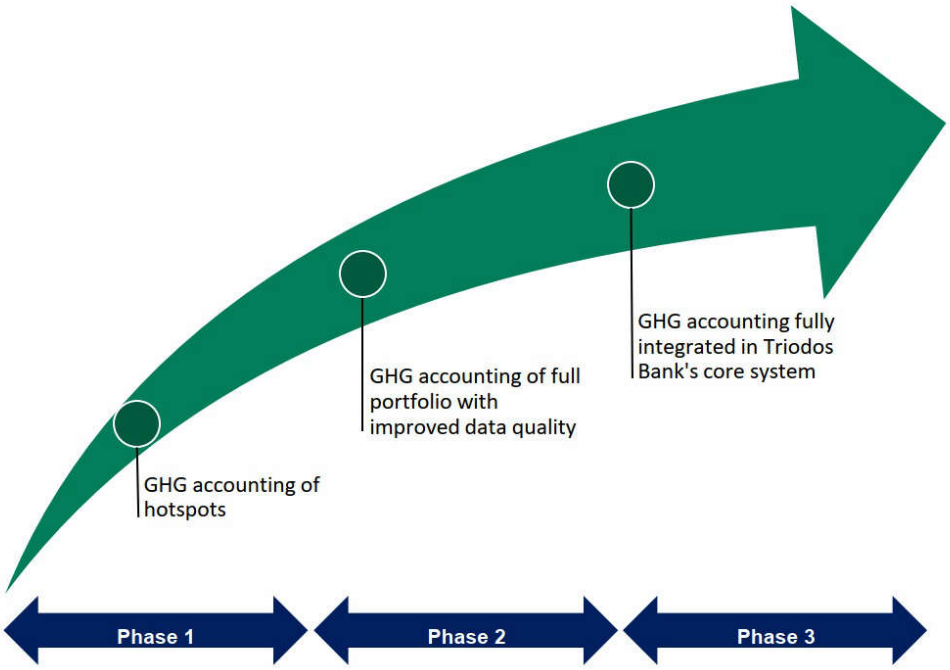
As a pan-European values-based bank, we also want to understand, monitor and help to steer on the basis of applying this approach internationally. We will share this experience inside and outside the PCAF group as part of a powerful, collective effort to demonstrate how a bank can keep its influence within a safe environmental ceiling, while playing a powerful role in keeping addressing the challenge of climate change.

Approach

In alignment with the PCAF methodology, Triodos Bank is further developing on a robust and comprehensive GHG accounting approach that suits its portfolio and business. This approach is built on principles of consistency, transparency, prudence, and accuracy with a focus on data quality. As a result, Guidehouse, a management consultancy with extensive expertise in this area, and serving as PCAF's secretariat, helped Triodos Bank develop an implementation plan for GHG accounting in May 2018 to detail the approach, priorities, timeline and resource required for the roll-out. We have applied a phased approach (see below) to implement GHG accounting, starting with hotspots that covered around 68% of our direct loans and investments in 2018.

In phase 2 as of 2019, all other loans and direct investments were also covered within the scope of PCAF. For these assets and where no emissions can be determined with detailed higher quality data, we made an estimate based on the outstanding amounts and the average emission per financed euro in that sector.
Since 2022, we have also included the financed emissions of all other loans and investments, for example those related to our Treasury activities. And related to our own operational emissions, we have added to the reporting scope the emissions from waste generated in operations and downstream leased assets.

As every year, the emission factors in 2023 have been updated with the most recently published source data. These emission factors are retrieved from the PCAF database, from PCAF Netherlands for Dutch mortgages, and from other data



sources. The correct application of the emission factors is reviewed by the external auditor responsible for the review of the reported emissions in our Annual Report.

As part of phase 3, since 2022 we have integrated the GHG accounting in our central enterprise data warehouse for the business banking part of our portfolio and for residential mortgages. This will help us to monitor and steer on our financed emissions more frequently. We are working on further automating the GHG accounting and reporting for the loans and investments of Triodos Investment Management.

Structure of this document

In this document, we will provide a comprehensive description of the GHG accounting methodology - based on PCAF. We follow the same structure as reported in Triodos Bank Integrated Annual Report. In each chapter, specific data quality scores are presented which enable Triodos Bank to identify opportunities to improve data quality over time.

Next to describing the guiding principles for GHG accounting, we present the GHG accounting of Triodos Bank own operations, such as employee commuting, business travel and paper use. These are all items that the organisation has footprinted for many years.

While much of this document is relatively technical, the purpose that underpins it is fundamental to the long-term health of the planet we depend on.

For the GHG reporting of Triodos Bank in 2023, please refer to the sections "Climate impact of our loans and investments" and "Environmental impact of our own operations" in Triodos Bank Annual Report at www.annual-report-triodos.com.

2. Definitions

Loans

In this report loans are defined as all loans and advances to customers and banks within Triodos Bank. Short term cash and bank loans are excluded in the PCAF reporting.

Investments

Investments are defined as all types of financial products managed by Triodos Investment Management, Triodos Regenerative Money Centre and Triodos Foundations. This includes equity, loans and bonds, but excludes liquidities and other assets held in the funds. Also included in our reporting scope are the debt and investment securities managed by the Treasury department and the participations of Triodos Bank.

Treasury securities

Part of our balance sheet consists of assets used for treasury purposes, e.g. cash and cash equivalents, short term cash loans, etc. These short term assets are not considered in scope of PCAF.

Greenhouse Gases (GHG)

Greenhouse gases are defined as gases in the atmosphere that absorb and emit radiation. This process is the fundamental cause of the greenhouse effect. The GHG Protocol[1] recognises seven greenhouse gases: Carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), per-fluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen tri-fluoride (NF_3). In our methodology all emissions are converted to CO_2 equivalents, or CO_2e, using the conversion ratios determined by the Intergovernmental Panel on Climate Change (IPCC). A carbon dioxide equivalent (CO_2e) is a quantity that describes, for a given mixture and amount of greenhouse gas, the amount of CO_2 that would have the same global warming potential (GWP), when measured over a specified timescale (generally, 100 years).

Generated emissions

We consider generated emissions as the GHG emissions as they arise from various economic activities. This refers to any of the seven, above mentioned, GHG's being emitted into the atmosphere.

Sequestered, or absorbed emissions

Sequestered, or absorbed, emissions refers to CO_2 that is removed from the atmosphere while being sequestered, or absorbed, by vegetation and then stored in carbon sinks, such as trees, plants and soils.

The GHG Protocol describes the natural process of carbon sequestration as the actual removal of GHG by plants and trees through the absorption of atmospheric carbon (as CO_2) via photosynthesis and storing it in plant tissue. In this solid form, carbon may reside in one of several "carbon pools". These pools include above ground biomass (e.g. vegetation) in forests and farmland, and other terrestrial environments, below ground biomass (e.g. roots), and biomass-based products (e.g. wood products) while in use or when stored in a landfill. Carbon can stay in these pools for long periods of time until it is either burned or decomposed. This means that an increase in the stock of sequestered carbon that is stored in these pools represent a net removal of carbon from the atmosphere.

[1] http://www.ghgprotocol.org/

Avoided emissions

Avoided emissions are emissions that are avoided outside of a company's scope 1, 2, and 3[1]inventories and require a project or product accounting methodology. Any estimates of avoided emissions must be reported separately from a company's scope 1, 2, and 3 emissions, rather than included or deducted from the scope 3 inventory.

For Triodos Bank, avoided emissions occur mainly when investing in renewable energy, it refers to GHG emissions that are avoided from fossil-fuel power generation due to renewable energy.

While avoided emissions play a very positive role, they do not remove existing carbon from the atmosphere. And it is important to note that our avoided emissions figures will, eventually, start to decline, even as the amount of energy generated by the renewable energy projects we finance increases. This is because the wider energy system is in the process of becoming less carbon-intensive overall. Energy from fossil-fuel sources will continue to decline while energy from renewable sources is increasing, creating a more sustainable energy system.

Carbon credits

Carbon credits are credits that represent the removal or avoidance of emissions. Carbon credits can either be generated by conducting activities that lead to carbon removal (for example restoration project in which carbon is stored in trees) or emission avoidance (for example a project in which cooking stoves are supplied to replace cooking on open fires, which reduced the burning of charcoal significantly).

A financial institution can retire carbon credits itself to compensate for its own emissions, but it can also finance projects that either generate carbon credits or retire credits. In each of these situations carbon credits must be reported on separately per origin and function, in accordance to the PCAF standard.

For Triodos Bank carbon credits are used for compensating the environmental impact of our own operations. These are carbon credits from projects using the Gold Standard[2] methodology.

[1] Scope 1, 2 and 3 are explained in chapter 3

[2] Gold Standard was established in 2003 by WWF and other international NGOs to ensure projects that reduced carbon emissions featured the highest levels of environmental integrity and also contributed to sustainable development. More info: www.goldstandard.org/

3. Guiding principles

In December 2022, PCAF launched the second version of the Global GHG Accounting and Reporting Standard for Financed Emissions. This version is an update of the Financed Emissions Standard published in 2020 and includes a new methodology for sovereign debt, and guidance on how to measure financed emissions related to GHG emission removals[3]. The Triodos Bank Greenhouse Gas Methodology describes the way we have implemented the PCAF Standard in practice.

In line with PCAF and GHG Protocol, the methodology per sector is constructed using the following basic accounting principles:

- Completeness
- Consistency
- Transparency
- Prudence
- Balance
- Accuracy

Each element ensures the methodology is robust and pragmatic for use now and for the future.

Completeness

In order to ensure completeness, the scope must be defined to determine the emissions accounted for in the value chain of the Triodos Bank. The GHG Protocol[4] standardises this by categorising direct and indirect emissions in three scopes (see Box 1 and Figure 1). Activities within the value chain of an organisation are direct or indirect depending on the consolidation approach chosen by an organisation.

GHG Protocol scopes 1, 2 and 3

- **Scope 1**: All direct GHG emissions by Triodos Bank (natural gas in offices and fuel use by our car fleet)
- **Scope 2:** Indirect GHG emissions by Triodos Bank (purchased electricity)
- **Scope 3:** Other indirect emissions not covered in scope 2; in total 15 categories within scope 3 are defined, such as purchased good and services, business travel, employee commuting, end of life treatment of sold products, or in the case of Triodos Bank mostly emissions associated with loans and investments (i.e. scope 3: category 15)

Box 1. GHG Protocol scopes 1, 2 and 3

[3] https://carbonaccountingfinancials.com/en/newsitem/pcaf-launches-the-2nd-version-of-the-global-ghg-accounting-and-reporting-standard-for-the-financial-industry

[4] The Greenhouse Gas (GHG) Protocol, developed by World Resources Institute (WRI) and World Business Council on Sustainable Development (WBCSD),sets the global standard for how to measure, manage, and report greenhouse gas emissions.

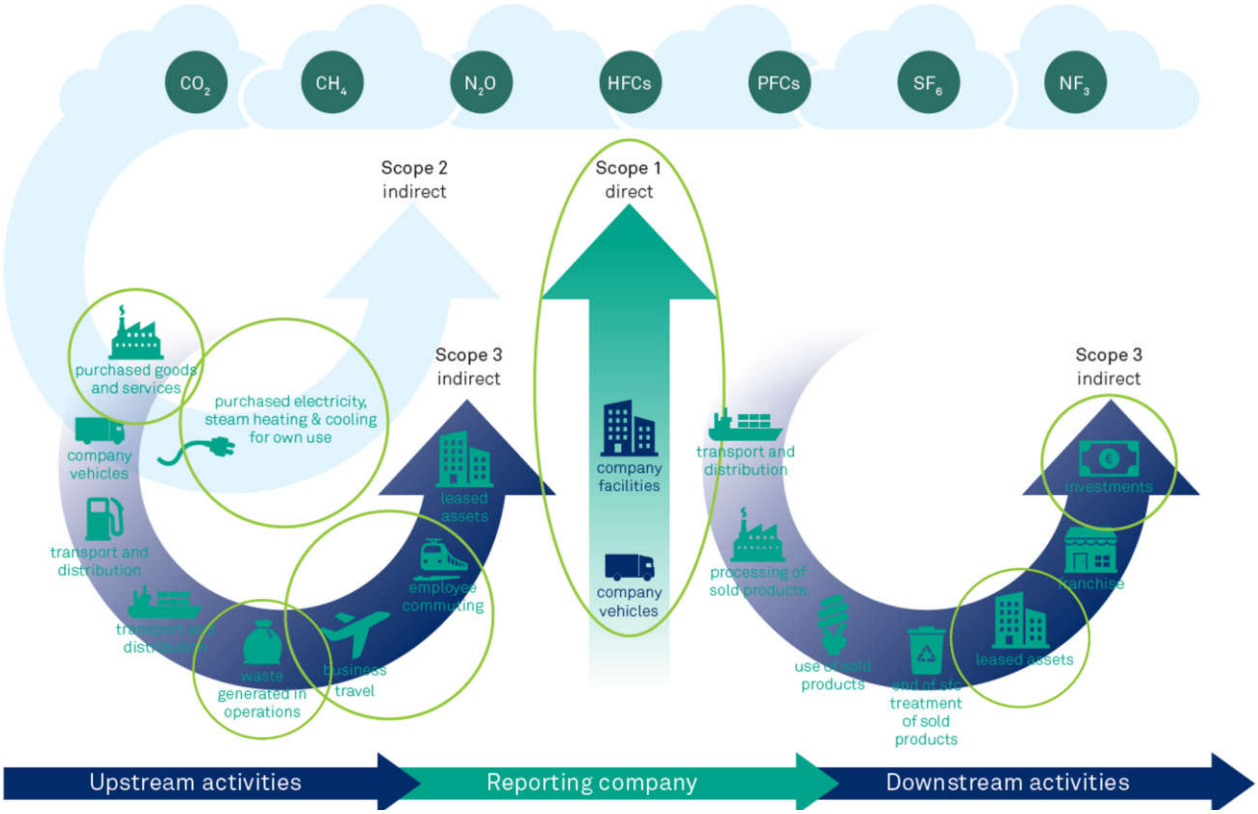


Figure 1. Covered (green) categories and scopes within GHG Protocol scopes

We aim to be as complete as possible in our GHG accounting, covering all scopes of the GHG Protocol that are material to our GHG inventory. Next to scope 1 and 2, we report on our emissions from employee commuting, business travel, paper use and waste (upstream scope 3) and downstream scope 3 emissions from leased assets. However, the main focus of this report is on our scope 3 category: 15 Investments. These are our financed emissions and relate to our loans and investments portfolio.

Consistency

The methodology for Triodos Bank is consistent with internationally recognised standards (i.e. GHG Protocol Corporate Value Chain Accounting and Reporting Standard, World Resources Institute, WRI and World Business Council for Sustainable Development, WBCSD; 2004), the sector-led harmonised GHG accounting approach developed by the Dutch Partnership Carbon Accounting Financials and the Global GHG Accounting and Reporting Standard for the Financial Industry from PCAF (the Standard). Next to consistency with international standards and approaches, our methodology is consistent within the selected sectors, i.e. covering the relevant emissions from scope 1 and 2 of our borrowing customer or investee in all cases.

Transparency

Being transparent is a core value and principle in everything we do. We aim to reflect this in our GHG accounting too, both with the applied methodology and its results in this report. In addition, we are committed to disclose our GHG footprint on an annual basis in our annual report.

Prudence

In our GHG accounting we strive to be prudent and use numbers that are conservative. If the methodology has limitations or good data is not available, we select the methodology or data that is most conservative to our knowledge. This means that when this situation occurs, we overestimate the generated emissions associated with our portfolio and underestimate the avoided or sequestered emissions. To improve the estimations of our financed emissions, we implement data quality scoring. Per sector, a data quality scorecard is applied. Knowing the potential of data quality improvement will enable us to take action to increase data quality and to improve the quality of our overall GHG footprint.

The data quality of the PCAF emission calculation is scored in 5 levels. Each score, starting with score 1 as the highest quality of data and ending with score 5 as the lowest, corresponds to a particular type of data source which will vary depending on the sector in question. As well as data quality and uncertainty associated with emission data, financial data on the revenue or total balance sheet of our clients also has different levels of quality, however these are not scored as these are already regularly improved due to legislative financial reporting requirements.

Balance

In line with the GHG Protocol and PCAF, Triodos Bank will account for its financed emissions based on proportional share. This means that we calculate the emissions as they relate to our share in the total financing of a project, building or company, it is called Attribution Factor. Attribution factors to attribute the emissions are defined per customer or project, or based on conservative averages per sector and country. For example, if we are responsible for half of a project's finance, we report half of the emissions generated or avoided by that project. This attribution approach is a more accurate reflection of Triodos Bank's responsibility for the GHG emissions it finances and is consistent with the PCAF methodology.

The PCAF Standard suggests different calculation methods for attribution factors for private and listed companies, using total balance sheet or EVIC (Enterprise Value Including Cash). Triodos Bank will use total balance sheet when EVIC is not available.

Accuracy

We aim to be as accurate as possible in our GHG accounting. On the one hand, the methodology ensures accuracy by attributing Triodos Bank's share of the GHG footprint of our clients. On the other, the use of data quality scoring linked to a level of uncertainty enables us to improve data quality and improve the accuracy of our GHG footprint. Results are included in our Annual Report and are subject to audit with limited assurance.

4. Emissions from own operations (scope 1 and 2)

Carbon accounting approaches for property-related sectors. Approaches are sorted on preference. So if multiple data points are available within the same data quality scoring method we select the one with the highest position in this table.

Scope

In line with the GHG Protocol Corporate Value Chain Accounting and Reporting Standard (WRI & WBCSD; 2004), Triodos Bank follows an operational approach to account for the emissions from our own operations, which means Triodos Bank accounts for all the emissions from operations in the various countries over which it has operational control. This includes:

- Scope 1 (direct): emissions arising from gas used to heat our offices and use of fossil fuel in our car fleet (company cars and lease cars).
- Scope 2 (indirect) emissions: emissions arising from purchased electricity and district heating.

Accounting approach and emission factors

For our reporting, we conform to the internationally recognised reporting guidelines of the Global Reporting Initiative (GRI). Triodos Bank partners with the Climate Neutral Group (CNG) to calculate and compensate our GHG emissions from our own operations. The SmartTrackers tool is used to calculate our scope 1 and 2 emissions, for which the methodology is described in 'Climate Neutral Group's methodology on carbon footprinting[1]. CNG determines on an annual basis the emission factors for the calculation of the amount of GHG emissions caused by Triodos Bank. These emission factors are taken from a Dutch GHG accounting initiative called 'CO_2-emissiefactoren', and are publicly available[2].

In order to calculate our scope 1 and 2 emissions, we measure the use of natural gas and electricity for our offices and the energy use for our car fleet. This includes the total amount of natural gas (m^3) split up into natural gas and green gas by offsetting (biogas, heating oil and district heating are not used currently). The total amount of electricity (kWh) is split up into grey, wind, hydro, sun, biomass, or a mix of green electricity. For the energy use for our car fleet, we measure consumption of diesel, petrol and electricity (LPG and biodiesel are not used).

Data quality scorecard, assumptions and limitations

Scope 1 and 2 emission data is collected by Local Environmental Managers in the various countries. They complete all data, including underlying evidence, in SmartTrackers. The Group Environmental Manager checks if the input of all data and evidence has been done correctly. After the completion of this phase all data is consolidated by the Finance department (using a four eyes principle). Finally, an external auditor reviews if all relevant data has been entered accurately and approves the outcome.

As we use mostly actual and primary data (i.e. actual data on our energy use in our offices, car fleet, and purchased electricity) to account for our scope 1 and 2 emissions, this calculation is performed to the highest data quality level. If no actual data is available we use estimates.

Emissions of CO_2 (equivalents) [in tonnes CO_2]	Calculating formula (Link to 'Function' and 'CO_2e emissions' in Management System)	Reference to Global Reporting Initiative
Scope 1		
Gas consumption (heating)	Σ CO_2e (Buildings > Heating)	305-1
Fossil-fuelled company cars & lease cars	Σ CO_2e (Carfleet + Business Travel > Lease Cars (scope 1) + Commuting > Lease Cars (scope 1))	305-1
Scope 2		
Electricity	Σ CO_2e (Buildings > Electricity)	305-2
Electric company cars & lease cars	Σ CO_2e (Carfleet)	305-2

Table 1. Overview of calculated emissions in scope 1 and scope 2 and corresponding formulas

[1] Climate Neutral Group's methodology on carbon footprinting, January 2023
[2] www.co2emissiefactoren.nl/lijst-emissiefactoren/

5. Emissions from our upstream and downstream activities (scope 3 category 1-14)

In this chapter we explain the scope and methodology that we apply to account for emissions from our activities upstream and downstream.

Scope

In line with the GHG Protocol Corporate Value Chain Accounting and Reporting Standard (WRI & WBCSD; 2004), Triodos Bank has also annually accounted for the following emissions:

- Procurement of paper (scope 3 category 1),
- Waste (scope 3 category 5),
- Business travel (scope 3 category 6),
- Emissions related to our employee commuting (scope 3 category 7) and
- Emissions related to downstream leased assets (scope category 13).

Accounting approach and emission factors upstream activities

As with our scope 1 and 2 emission calculations, Triodos Bank partners with Climate Neutral Group (CNG) to calculate and compensate for its emissions from above upstream activities (category 1-7). The SmartTrackers tool is used to calculate these scope 3 upstream emissions. CNG uses emission factors for the calculation of the amount of GHG emissions caused by these upstream activities on an annual basis. This methodology is described in more detail in the 'Climate Neutral Group's methodology on carbon footprinting (January, 2023)'[3]

For paper procurement, we measure office paper and the paper we consume for printed materials (brochures, envelopes, etc). This data is specific to the countries where we operate and tracked by total use (kg).

The category waste generation in operations has been added to the reporting scope retroactively from 2020. This includes different types of waste, such as plastics, paper and cardboard, swill and industrial waste.

Regarding business travel, air travel is based on an emission factor per kilometre and measured based on routes indicated as linked between visited airports, determined by the IATA code. Travel by commuting and road transport are divided because environmental pollution associated with each is different. Cars are split up between diesel, petrol, LPG, unknown and electric. Public transport is divided between bus, train and underground. Data on employee commuting is collected through detailed internal reporting systems and surveys.

Data quality scorecard, assumptions and limitations upstream activities

As we use mostly actual and primary data (i.e. km travelled, transport type, paper) to account for these scope 3 emissions, this calculation is performed using high levels of data quality, aiming to be as accurate as possible. If no actual data is available we use estimates.

Downstream activities
As of the 2022 reporting we have added the emissions related to our downstream leased assets (scope 3 category 13). These are emissions related to the asset types investment property and repossessed property held-for-sale. Triodos Bank sometimes repossesses assets which come from acquisition in public auctions. These assets are collaterals of an executed loan. A part of the repossessed assets however will not be sold immediately because Triodos Bank has opted to add value by renting out these assets and are therefore presented as investment property. The GHG emissions related to these properties are accounted for by following the same approach, emission factors and data quality as for other financed property in our loan and investment portfolio (scope 3 category 15), see next chapters.

[3] Climate Neutral Group's methodology on carbon footprinting, January 2023

6. Introduction scope 3 category 15: Investments

General introduction scope 3 category 15

As mentioned before, Triodos Bank has been a member and participator of PCAF since the beginning in 2015. We follow the carbon accounting approach of PCAF as is described in the document "The Global GHG Accounting and Reporting Standard Part A: Financed Emissions. Second Edition", published in 2022[1]. In the following sections is explained how the PCAF Standard is applied on the loans and investments portfolio of Triodos Bank.

Data collection and data management

As mentioned before, Triodos Bank has been a member and participator of PCAF since the beginning in 2015. We follow the carbon accounting approach of PCAF as is described in the document "The Global GHG Accounting and Reporting Standard Part A: Financed Emissions. Second Edition", published in 2022[1]. In the following sections is explained how the PCAF Standard is applied on the loans and investments portfolio of Triodos Bank.The emission calculations are performed based on data coming from multiple sources. These sources are:

Impact metric scorecards: These scorecards are filled out by the relation managers with primary or public data that relate to our customers and investees. Evidence for the data is stored, this could be for example an audited report, physical activity data of the client published in reports, or email conversations. The characteristics, of the financed company, building or project, such as activity, location, and sector, is used as input for the GHG calculations.

Data from external sources or data providers: This is data related to building characteristics, such as m^2 data and energy performance, and emission data for the listed equities and bonds provided by external data providers.

Financial portfolio data: We use the financial information of the company or project to determine the part of the emissions that can be attributed to Triodos Bank.

Emission factors: We use emission factors that are made available by PCAF to perform the calculations. Each Triodos sector is mapped and linked to the sectors published in the PCAF Emission factor database[2]. An overview of this mapping can be found in Appendix I - Sector mapping. In the few cases were emission factors are not available through PCAF, we use emission factors from alternative sources. A complete overview of the data sources is provided Appendix II - Data sources. Table 2 provides an overview of the main data sources used per sector or asset class.

Emission scopes

The financed scope 1 and scope 2 emissions are always reported aggregately, unless mentioned otherwise. Financed scope 3 emissions are reported for the first time in the Annual Report 2023. The approach for scope 3 emissions is described in chapter 13.

[1] PCAF (2022). The Global GHG Accounting and Reporting Standard Part A: Financed Emissions. Second Edition
[2] PCAF (2023). Emission factor database, September 2023

GHG type	Sector	PCAF asset class	Accounting approach	Main data sources for emission factors
Generated emissions	Organic farming	Business loans and unlisted equity	PCAF Global GHG Standard	See table 5
	Sustainable Property and other property-related sectors	Commercial real estate, business loans and unlisted equity	PCAF Global GHG Standard	European building emission factor database
				PCAF emission factor database - Exiobase assets
	Residential mortgages	Mortgages	PCAF Global GHG Standard	European building emission factor database
				Emission factors by PCAF NL working group for Dutch residential real estate - based on CBS
	Other loans and investments, including sub-sovereign bonds	Business loans and unlisted equity	PCAF Global GHG Standard	European building emission factor database
				PCAF emission factor database - Exiobase assets
	Listed equity and corporate bonds	Listed equity and corporate bonds	PCAF Global GHG Standard	N/A, emssion data provided by Sustainalytics
	Sovereign bonds	Sovereign bonds	Methodology developed by Guidehouse	Eurostat Input-Output Public administration and Energy (electricity, gas etc.)
Sequestered emissions	Nature development and Forestry	Business loans and unlisted equity	Methodology developed by Guidehouse	USAID AFOLU Carbon Calculator
Avoided emissions	Renewable energy	Project finance, business loans and unlisted equity	Methodology developed by Guidehouse	IFI dataset, IEA

Table 2. Overview GHG accounting approach per sector or asset class

7. Emissions from Organic farming (scope 3 category 15: Investments)

In this chapter, we present the methodology, scope, accounting approach and data quality scoring for our loans and investments to organic farming businesses. We follow the approach as described in the PCAF sector for business loans and unlisted equity[1].

Scope

The following Organic farming subsectors are categorised in this section:

Triodos Bank Organic farming subsector
Dairy
Horticulture
Meat
Arable
Mixed
Fruit growing/farming
Poultry/egg production
Aquaculture
Other organic farming

Table 3. Triodos Bank subsectors for organic farming

Accounting approach and emission factors

The generated emissions from our loans and investments in organic farming are assessed by applying the methodology for business loans and unlisted equity as described in the PCAF Standard for Financed Emissions.
After emissions have been calculated per company, these emissions are attributed to Triodos Bank based on the ratio between our outstanding loan or investment and the balance sheet total of the company recorded in our system. This is referred to as the attribution factor.

The table below provides an overview of the GHG accounting calculation options for the organic farming portfolio with the corresponding data quality scores.

[1] PCAF (2022). The Global GHG Accounting and Reporting Standard Part A: Financed Emissions. Second Edition.

Options	Description				Data quality score
	Financial data		Emission data		Highest (1) to lowest (5)
	Attribution		Emission factor		
a	Outstanding loan and investment amount	Total equity and debt of the client (Balance sheet total)	Verified GHG emissions data from the client in accordance with the GHG Protocol (tCO_2e)		Score 1
b			Unverified GHG emissions data from the client in accordance with the GHG Protocol (eg. Cool Farm Tool) (tCO_2e)		Score 2
c			Primary data on farm productivity and type of agricultural activity (eg. ton production of wheat in the UK)	Region-specific emission factors per produce, specific for the agricultural type (tCO_2e/kg produce/type/region)	Score 3
d			Primary data on farm area and type of agricultural activity (eg. hectares of land with wheat production in the UK)	Region-specific emission factors per area, specific for the agricultural type (tCO_2e/hectare/type/region)	
e			Unverified GHG emissions data from the client that is not verified to be in accordance with the GHG Protocol (tCO_2e)		
f		N/A	Sector average per region	Average GHG emission factors on EUR assets per sector and region (tCO_2e/EUR-assets/sector/region)	Score 5

Table 4. GHG accounting approaches for organic farming. Approaches are sorted on preference. So if multiple data points are available within the same data quality scoring method we select the one with the highest position in this table.

Formulas

The following formulas are applied to calculate the financed GHG emissions for this category.

The formula for calculating CO_2e based on reported emissions data (option a, b or e) is as follows:

$$CO_2e \text{ reported} \times \frac{\text{Outstanding Triodos loans \& investments}}{\text{Balance sheet total}} = CO_2e$$

The formula for calculating CO_2e based on kilogram data (option c) is as follows:

$$\frac{CO_2e}{\text{kg of produce}} \times \text{Total kg of produce} \times \frac{\text{Outstanding Triodos loans \& investments}}{\text{Balance sheet total}} = CO_2e$$

The formula for calculating CO_2e based on hectare data (option d) is as follows:

$$\frac{CO_2e}{\text{Hectares}} \times \text{Total hectares} \times \frac{\text{Outstanding Triodos loans \& investments}}{\text{Balance sheet total}} = CO_2e$$

The formula for calculating CO_2e based on asset value data (option f) is as follows:

$$\frac{CO_2e}{€ \text{ Asset value}} \times \text{Outstanding Triodos loans \& investments} = CO_2e$$

Specifications and assumptions

Triodos Bank finances only agricultural business that are organically certified or in transition towards organic certification[1]. Therefore, we assume a general reduction of 57% in carbon emissions as reported by FAO[2]. If a farmer loses its organic certification the factor is not applied.

Triodos Bank additions to PCAF standard approach

We applied an adaptation to the PCAF methodology which enables us to use the land area on which the farm undertakes its activities (hectares of land) as alternative input data for the calculations (see option d, Table 4). A higher data quality score is reached by using the land area in stead of outstanding loans and investments (option f in Table 4). We do acknowledge that the data quality is not on par with farm-level productivity data or verified actual emission data from the client, which will be our next target for improvement. Table 5 provides an overview of the sources used to derive the emission factors per hectare.

The approach that leads to data quality score level 4 is not included, since revenue data is not available.

For fruit tree farming (olive, tree-nuts, citrus fruits, etc.) and for grassland we also calculate the carbon sequestration values. For this, we refer to carbon sequestration in chapter 14.

Furthermore, we distinguish the unverified emissions reports from clients into those that are in accordance with the GHG Protocol, for example by using a verified tool or calculation method, and those that are not verified to be. If it is not possible to verify whether appropriate methods are used, data could be of low quality and potentially lower quality then when approached through the consistent method of PCAF calculation methods.

[1] Triodos Bank Minimum standards
[2] Environment and Natural Resouces Series No. 4 (fao.org) - www.fao.org/3/y4137e/y4137e02b.htm#TopOfPage

Triodos Bank subsector	General approach	Sources to derive emission factor per hectare	Value retreived
Dairy	PCAF Business loans and unlisted equity	PCAF - FAOstat	tCO2 per kg produce
		FAOstat - Livestock patterns	Livestock Units per hectare
		Eurostat - Glossary:Livestock unit (LSU)	Number of animals per livestock unit
		FAOstat - Crops and livestock products	Yield per animal
		FAOstat - Crops and livestock products	Total sub-sector production per country
Horticulture	PCAF Business loans and unlisted equity	Halberg et al (2006)	tCO2e/kg greenhouse produce
Meat	PCAF Business loans and unlisted equity	PCAF - FAOstat	tCO2 per kg produce
		FAOstat - Livestock patterns	Livestock Units per hectare
		Eurostat - Glossary:Livestock unit (LSU)	Number of animals per livestock unit
		FAOstat - Crops and livestock products	Yield per animal
		FAOstat - Crops and livestock products	Total sub-sector production per country
Arable	PCAF Business loans and unlisted equity	PCAF - FAOstat	tCO_2e per kg produce
		FAOstat- Crop residual emissions	tCO2e crop residual emissions
		FAOstat - Crops and livestock products	Total crop area for production (hectares)
		FAOstat - Crops and livestock products	Total sub-sector production per country
Mixed	PCAF Business loans and unlisted equity	See arable and dairy/meat	
Fruit growing/farming	PCAF Business loans and unlisted equity	Aguilera, Guzmán & Alonso (2015) & Aguilera, Guzmán & Alonso (2014)	tCO_2e/ha
Poultry/egg production	PCAF Business loans and unlisted equity	PCAF - FAOstat	tCO_2e per kg produce
		FAOstat - Livestock patterns	Livestock Units per hectare
		Eurostat - Glossary:Livestock unit (LSU)	Number of animals per livestock unit
		FAOstat - Crops and livestock products	Yield per animal
		FAOstat - Crops and livestock products	Total sub-sector production per country
Aquaculture	PCAF Business loans and unlisted equity	MacLeod et al., 2020	tCO_2e/kg fish
Other organic farming	PCAF Business loans and unlisted equity	See others	

Table 5. Overview of sources that are used to define emission factors on hectare basis

8. Emissions from property-related sectors (scope 3 category 15: Investments)

In this chapter, we present the methodology, scope, accounting approach and data quality scoring for our loans and investments in the property-related sectors. We follow the approach as described in the PCAF sector for commercial real estate[1].

Scope

The sectors that follow the GHG calculation approach described in this chapters are Sustainable property, Care for the elderly, Social housing, and all other property-related sectors. For a complete overview see Appendix I.

Accounting approach and emission factors

The generated emissions from our loans and investments in these building-related sectors are assessed by applying the methodology for Commercial Real Estate as described in the PCAF Standard for Financed Emissions.
After emissions have been calculated per building or company, these emissions are attributed to Triodos Bank based on the ratio between our outstanding loan and investment, and the balance sheet total of the client recorded in our system. This is referred to as the attribution factor.

The table below provides an overview of the GHG accounting calculation options for the property-related sectors in our portfolio with the corresponding data quality scores.

It is important to note that the emission factors in the PCAF Building emission factor database refer to the use phase of the building only and includes scope 1 and 2 combined. The buildings construction or demolish phase and its emissions are not covered. On the other hand, a significant share of the emissions reported under scope 1 and 2 in the Sustainable property and the Social housing sectors are related to leased properties to which the lessor does not have financial or operational control. Although these emissions classify as financed scope 3 emissions, we were not yet able to distinguish these figures in our Annual Report 2023.

[1] PCAF (2022). The Global GHG Accounting and Reporting Standard Part A: Financed Emissions. Second Edition.

Options	Description				Data quality score
	Financial data		Emission data		Highest (1) to lowest (5)
	Attribution		Emission factor		
a	Outstanding loan and investment amount	Total equity and debt of the client (Balance sheet total)	Verified GHG emissions data of the property in accordance with the GHG Protocol (tCO_2e)		Score 1
b			Primary data on actual building energy consumption with known energy source (eg. kWh electricity or m^3 gas consumption)	Supplier-specific emission factors for the consumed energy (tCO_2e/energy-unit/market-based)	
c			Unverified GHG emissions data of the property in accordance with the GHG Protocol (tCO_2e)		Score 2
d			Primary data on actual building energy consumption with unknown energy source (eg. kWh electricity or m^3 gas consumption)	Region-specific emission factors for the consumed energy (tCO_2e/energy-unit/location-based)	
e			Primary data on floor area, building type and energy label/EPC (eg. m^2 office building label A+ in the Netherlands)	Region-specific emission factors for the floor area, specific for the building type and energy label/EPC (tCO_2e/m^2/type/EPC)	Score 3
f			Unverified GHG emissions data of the property that is not verified to be in accordance with the GHG Protocol (tCO_2e)		
g			Primary data on floor area and building type (eg. m^2 office building in the Netherlands)	Region-specific emission factors for the floor area, specific for the building type (tCO_2e/m^2/type)	Score 4
h			Average energy consumption statistics per building type and region	Region-specific emission factors per building and building type (tCO_2e/building/type)	Score 5
i		N/A	Sector average per region	Average GHG emission factors on EUR assets per sector and region (tCO_2e/EUR-assets/sector/region)	

Table 6. GHG accounting approaches for property-related sectors. Approaches are sorted on preference. So if multiple data points are available within the same data quality scoring method we select the one with the highest position in this table.

Formulas

The following formulas are applied to calculate the financed GHG emissions for this category.

The formula for calculating CO_2e based on reported emissions data (option a, c or f) is as follows:

$$CO_2e \text{ reported} \times \frac{\text{Outstanding Triodos loans \& investments}}{\text{Balance sheet total}} = CO_2e$$

The formula for calculating CO_2e based on actual energy consumption (option b or d) is as follows:

$$\frac{CO_2e}{\text{kWh/gas}} \times \text{kWh/gas consumed} \times \frac{\text{Outstanding Triodos loans \& investments}}{\text{Balance sheet total}} = CO_2e$$

The physical activity-based emission factors provided (tCO_2e/m^2) can be extracted per energy label (Energy Performance Certificate; EPC). Generated emissions calculated based on floor area are specified per country- and building type-specific emission factor. The formula for calculating CO_2e based on m^2 (option c, d or e), where in the formula *b* is building type, *c* is country and *e* is EPC label, is as follows:

$$\frac{CO_2e}{m^2}_{b,c,e} \text{ x } m^2 \text{ of building x } \frac{\text{Outstanding Triodos loans \& investments}}{\text{Balance sheet total}} = CO_2e$$

In some cases the Energy Performance Certificate is expressed in a an EPC energy intensity rate (kWh/m2/year). In that case the general emission factor per floor area is multiplied by the EPC energy intensity rate, as expressed in the following formula:

$$\text{EPC emission intensity [per m2]} = \text{ Emission intensity [per } m^2\text{]x EPC energy inensity [per } m^2\text{]}$$

The formula for calculating CO_2e based on asset value data (option i) is as follows:

$$\frac{CO_2e}{€ \text{ Asset value}} \text{x Outstanding Triodos loans \& investments} = CO_2e$$

Specifications and assumptions

A more detailed description of how country-specific EPC-ratings are defined can be found in the PCAF Building emission factor database methodology document[1].

In our approach we apply the following assumptions that are specific per sector:

- *Sustainable property:*
  - Triodos Bank has defined high sustainability standards for the properties financed in the sector Sustainable property. Therefore, if no energy label is reported in this sector, we assume an average baseline of label '
  - We apply an average m^2 figure provided by PCAF per home and type of home (single-family home, multi-family home, apartment) if no m^2 data is reported for the residential properties in the sector Sustainable property.
- *Care for the elderly*: When no square metre data of the elderly care homes financed is reported, we apply an average floor area per person of $75m^2$ to calculate the emission factor. The number of older people is a data point that is available for impact reporting. This average square metre number comes from the Dutch study 'Handreiking Kengetallen Benchmark Zorgvastgoed Bouwkostennota 2017'[2].
- *Social housing*: We assume an average of $84m^2$ per social house if no square metre data is reported to calculate the emission factors in this sector[3].
- When no emission or primary activity data is reported, we apply option i from Table 6 by using the Exiobase emission factors per sector and country from the PCAF emission factor database.

Average baseline

An average baseline from the PCAF Building emission factor database is added to the emission factor analysis. These baseline emission factors are a weighted average and are calculated based on EPC label distribution (%) per building type and country and the corresponding emission factor of those EPC labels.
The average baseline is used to compare the impact in terms of 'avoided' emissions for our sustainable property portfolio. The avoided emissions from buildings will only be used to disclose as a separate KPI for buildings in our Green Bond impact report and is not included in our Annual Report 2023.

[1] PCAF (2022) PCAF European Building Emission Factor Database Methodology, September 2022
[2] https://www.zorgkennis.net/downloads/kennisbank/ZK-kennisbank-AcvZ--Bouwkostennota-2017-5277.pdf
[3] https://zoek.officielebekendmakingen.nl/ah-tk-20172018-2199.html

Group	Building type	Description
Non-residential	Retail - High street	Retail properties located on the high street, such as terraced properties located in the city centre or other high-traffic pedestrian zones.
	Retail - Shopping centre	Enclosed centres for retail purposes consisting of multiple retail stores connected with internal walkways.
	Retail - Strip Mall	Unenclosed retail space, such as strip centre or strip mall, where buildings are usually stand-alone and situated side-by-side with their entrance facing a main street or car park.
	Office	Office properties including free-standing offices, office terraces, unattributed office buildings and office parks.
	Industrial distribution warehouse	Unenclosed industrial properties, such as large halls in the outskirts, used for the purpose of storing, processing, and distribution of goods.
	Hotel	Accommodation properties including hotels, motels, youth hostels, lodging, and resorts.
	Healthcare	Properties used for primary healthcare, such as hospitals, clinics, physical therapy centres, mental health centres, rehabilitation or restorative care centres.
	Leisure and sport facilities	Properties used for leisure and sports, such as sports club houses, gyms, sports stadia, indoor sports arenas, halls, swimming pools, theatre and auditoria.
	Non-residential total	Non-residential total does not distinguish between building types but takes the country average of all non-residential buildings. This type is only available for the average energy label (baseline).
Residential buildings	Single-family house	Residential properties occupied by one household or family.
	Multi-family house	Larger residential properties occupied by more than one household or family. Elderly care homes are also categorised in this building type
	Apartment	Smaller individual residential properties that are usually located in a apartment complex.

Table 7. Building classification for residential and non-residential buildings

9. Emissions from Residential mortgages (scope 3 category 15: Investments)

In this chapter, we present the developed methodology, including the scope, accounting approach and data quality scores, for the GHG accounting of the residential mortgages sector.

Scope

All outstanding residential mortgages that are recorded in our system are within scope.

Accounting approach and emission factors

For residential mortgages we follow the approach of the PCAF Standard, section 'Mortgages'.[1]

In order to calculate the GHG emissions attributed to the residential properties, emission factors are taken from the PCAF European building database[2] which is based on CRREM Global Pathways and last updated in 2023. For the residential real estate in The Netherlands we have applied the GHG emission lookup table developed by PCAF-NL working group which is based on information from Statistics Netherlands (CBS) and last updated in 2023.

To attribute the emissions to Triodos Bank, an attribution factor is applied based on the ratio outstanding mortgage loan on property value ('loan-to-value').

Options	Description				Data quality score
	Financial data		Emission data		Highest (1) to lowest (5)
	Attribution		Emission factor		
a	Outstanding loan amount	Property value at origination	Primary data on actual building energy consumption with known energy source (eg. kWh electricity or m^3 gas consumption)	Supplier-specific emission factors for the consumed energy (tCO_2e/energy-unit/market-based)	Score 1
b			Primary data on actual building energy consumption with unknown energy source (eg. kWh electricity or m^3 gas consumption)	Region-specific emission factors for the consumed energy (tCO_2e/energy-unit/location-based)	Score 2
c			Primary data on floor area, building type and energy label/EPC (eg. m^2 single-family house label B in Spain).	Region-specific emission factors for the floor area, specific for the building type and energy label/EPC (tCO_2e/m^2/type/EPC)	Score 3
d			Primary data on floor area and building type (eg. m^2 single-family house in Belgium).	Region-specific emission factors for the floor area, specific for the building type (tCO_2e/m^2/type)	Score 4
e			Average energy consumption statistics per building type and region	Region-specific emission factors per building and building type (tCO_2e/building/type)	Score 5

Table 8. GHG accounting approaches for the sector residential mortgages. Approaches are sorted on preference. So if multiple data points are available within the same data quality scoring method we select the one with the highest position in this table.

[1] PCAF (2022). The Global GHG Accounting and Reporting Standard Part A: Financed Emissions. Second Edition.
[2] PCAF European building emission factor database, August 2023

Formulas

The following formulas are applied to calculate the financed GHG emissions for this category.

The formula for calculating CO_2e based on actual energy consumption (option a, b) is as follows:

$$\frac{CO_2e}{kWh/gas} \text{ x kWh/gas consumed x} \frac{\text{Outstanding Triodos loans \& investments}}{\text{Balance sheet total}} = CO_2e$$

The physical activity-based emission factors provided (tCO_2e/m^2) can be extracted per energy label (Energy Performance Certificate; EPC). Generated emissions calculated based on floor area are specified per country- and building type-specific emission factor. The formula for calculating CO_2e based on m^2 (option c, d or e), where in the formula *b* is building type, *c* is country and *e* is EPC label, is as follows:

$$\frac{CO_2e}{m^2}_{b,c,e} \text{ x } m^2 \text{ of building x} \frac{\text{Outstanding Triodos loans \& investments}}{\text{Balance sheet total}} = CO_2e$$

In some cases the Energy Performance Certificate is expressed in a an EPC energy intensity rate (kWh/m2/year). In that case the general emission factor per floor area is multiplied by the EPC energy intensity rate, as expressed in the following formula:

$$\text{EPC emission intensity [per m2]} = \text{ Emission intensity [per } m^2\text{]x EPC energy inensity [per } m^2\text{]}$$

Specifications and assumptions

Following these emission factors of the PCAF European building database and the PCAF NL working group, we distinguish the following building types:

Building type	Description
Single-family house (SFH)	Residential properties occupied by one household or family.
Multi-family house (MFH)	Larger residential properties occupied by more than one household or family.
Apartments	Smaller individual residential properties that are usually located in a apartment complex.

Table 9. Residential building types by the PCAF EU building emission factor database and the PCAF NL residential real estate emission factor lookup table.

We account for the use phase of of each house or apartment and include the scope 1 and 2 emissions combined (i.e. the fossil fuel use to heat the house and purchased electricity and/or heat by the owner/user of the house = total energy consumption of the house). The construction or demolishment phase and its emissions are not covered. Tenant activities related to electricity, heating and cooling is also included in these factors.

Where no EPC-rating is available a Triodos Bank country weighted average is used.

The total emissions are then calculated by multiplying the EPC emission intensity per building type with the number of houses. To attribute the emissions to Triodos Bank, an attribution factor is applied based on the ratio outstanding mortgage loan on property value ('loan-to-value').

Average baseline
An average baseline from the PCAF Building emission factor database and the PCAF NL lookup table is added to the emission factor analysis. These baseline emission factors are a weighted average and are calculated based on EPC label distribution (%) per building type and country, and the corresponding emission factor of those EPC labels.
The average baseline will be used to compare the impact in terms of 'avoided' emissions for our residential mortgages. The avoided emissions from residential buildings will only be used to disclose as a separate KPI in our Green Bond impact report and is not used in our Annual Report 2023.

10. Emissions from Listed equity and Corporate bonds (scope 3 category 15: Investments)

Triodos Bank operates several Impact Equities and Bonds funds (IEB). These funds contain equity and bond holdings in listed companies and (sub-)sovereigns. In this chapter we present the methodology that has been applied to calculate the emissions from the equity and the corporate and sub-sovereign bond holdings in our funds.

Scope

All listed equities, corporate bonds and sub-sovereign bonds in the IEB funds are within scope. Sovereign bonds in the funds are included in the GHG methodology based upon the 'high-level sector approach' (see chapter 11). Consistent with PCAF, cash and cash equivalents in the funds are excluded from the PCAF scope determination.

Accounting approach and emission factors

In line with PCAF, Triodos Bank accounts for scope 1 and 2 emissions of the equity and bond holdings within the funds, attributed by the total enterprise value per holding.

Options	Description				Data quality score
	Financial data		Emission data		Highest (1) to lowest (5)
	Attribution		Emission factor		
a	Market value of equity and debt investment	Enterprise value (EVIC)	Verified GHG emissions data of the company in accordance with the GHG Protocol (tCO_2e)		Score 1
b			Primary data on actual energy consumption with known energy source (eg. kWh electricity or m^3 gas consumption)	Supplier-specific emission factors for the consumed energy (tCO_2e/energy-unit/market-based)	
c			Unverified GHG emissions data of the company in accordance with the GHG Protocol (tCO_2e)		Score 2
d			Primary data on actual energy consumption with unknown energy source (eg. kWh electricity or m^3 gas consumption)	Region-specific emission factors for the consumed energy (tCO_2e/energy-unit/location-based)	
e			Primary physical activity data on the companies products and product type	Region-specific emission factors specific for the activity and product type (tCO_2e/product-unit/type/region)	Score 3
f			Unverified GHG emissions data of the company that is not verified to be in accordance with the GHG Protocol (tCO_2e)		
g		N/A	Sector average per region	Average GHG emission factors on EUR revenue per sector and region (tCO_2e/EUR-revenue/sector/region)	Score 4
h				Average GHG emission factors on EUR assets per sector and region (tCO_2e/EUR-assets/sector/region)	Score 5

Table 10. GHG accounting approaches for Listed equity and Corporate bonds. Approaches are sorted on preference. So if multiple data points are available within the same data quality scoring method we select the one with the highest position in this table.

Formulas

The following formulas are applied to calculate GHG emissions for this category.

The formula for calculating CO_2e based on reported emissions data (option a, c or f) in which is as follows:

$$CO_2e \text{ reported} \times \frac{\text{Outstanding Triodos loans \& investments}}{\text{Balance sheet total or EVIC}} = CO_2e$$

The formula for calculating CO_2e based on actual energy consumption (option b d) is as follows:

$$\frac{CO_2e}{\text{kWh/gas}} \times \text{kWh/gas consumed} \times \frac{\text{Outstanding Triodos loans \& investments}}{\text{Balance sheet total or EVIC}} = CO_2e$$

The formula for calculating CO_2e based on asset value data (option g and h) is as follows:

$$\frac{CO_2e}{€ \text{ Asset value}} \times \text{Outstanding Triodos loans \& investments} = CO_2e$$

Specifications and assumptions

Emissions that represent scope 1 and 2 of a given company can be taken from their reports if available to obtain reported emissions option a, c or d. For large portfolios external data providers are often used such as CDP, Bloomberg Terminal, MSCI, Trucost and ISS-ESG. For 2023 annual reporting Triodos Bank has received the data from Sustainalytics.

The scope 1 and 2 emissions of a company or sub-sovereign in our fund are attributed to Triodos Bank based on the market value of our equity and debt divided by the enterprise value including cash (EVIC). This EVIC data has also been provided by Sustainalytics.

For the part of the equity and bond portfolio that is not covered by the data received from Sustainalytics, we apply an average emission factor per fund. We expect the data coverage to improve over time as more companies will publish their emission reports.

11. Emissions from Sovereign bonds (scope 3 category 15: Investments)

In this chapter we present the methodology, scope, accounting approach and data quality scoring for Sovereign bonds.

Scope

In this approach we only include sovereign bonds. Sub-sovereign bonds are treated as corporate bonds and explained in chapter 12.

Accounting approach and emission factors

Triodos Bank will report sovereign borrowers absolute scope 1 and scope 2 emissions.

In December 2022, PCAF launched a Standard for reporting on sovereign bonds. Under this approach, a sovereign is seen primarily as a national territory, and its direct (scope 1) GHG emissions are attributable to emissions generated within its boundaries. The scope 2 emissions are seen as emissions attributable to the import of electricity, steam, heat and cooling from outside the country territory. Triodos Bank intends to apply these methodological changes in conjunction with phasing-in scope 3 financed emissions, and continues to follow the calculation approach for public administrations, developed within PCAF Netherlands, in the current reporting.

Options	Description				Data quality score
	Financial data		Emission data		Highest (1) to lowest (5)
	Attribution		Emission factor		
a	Outstanding loan and investment amount to the sovereign	ppp adjusted Gross Domestic Product (GDP)	Verified GHG emissions data of the country, reported by the country to UNFCCC (tCO_2e)		Score 1
b			Unverified GHG emissions data of the country (tCO_2e)		Score 2
c			Primary data on actual energy consumption per energy source (eg. kWh electricity or m^3 gas consumption) plus any process emissions	Country-specific emission factors for the consumed energy (tCO_2e/energy-unit/location-based)	Score 3
d		N/A	Sector average per country	Average GHG emission factors on EUR revenue per sector and country (tCO_2e/EUR-revenue/sector/country)	Score 4
e				Average GHG emission factors on EUR PPP-adjusted GDP per country (tCO_2e/EUR-assets/country)	Score 5

Table 11. GHG accounting approaches for Sovereign bonds. Approaches are sorted on preference. So if multiple data points are available within the same data quality scoring method we select the one with the highest position in this table.

Formulas

The following formulas are applied to calculate the financed GHG emissions for this category.

The formula for calculating CO_2e based on reported emissions data (option a, c or f) in which is as follows:

$$CO_2e \text{ reported} \times \frac{\text{Outstanding Triodos loans \& investments}}{\text{Balance sheet total or EVIC}} = CO_2e$$

The formula for calculating CO_2e based on actual energy consumption (option b d) is as follows:

$$\frac{CO_2e}{\text{kWh/gas}} \times \text{kWh/gas consumed} \times \frac{\text{Outstanding Triodos loans \& investments}}{\text{Balance sheet total or EVIC}} = CO_2e$$

The formula for calculating CO_2e based on asset value data (option g and h) is as follows:

$$\frac{CO_2e}{\text{€ Asset value}} \times \text{Outstanding Triodos loans \& investments} = CO_2e$$

Specifications and assumptions

While the new PCAF Standard integrates all countries' emissions in the emission intensity factor, for our Annual Report 2023 we continued to apply the methodology as developed by Guidehouse based on the countries public administration emissions and energy emissions Input-Output databases of Eurostat.

12. Emissions from other loans and investments (scope 3 category 15: Investments)

In this chapter we present the methodology, scope, accounting approach and data quality scoring for other loans and investments.

Scope

As of 2022 reporting we have included in our reporting scope the debt and investment securities managed by the Treasury department and the participations of Triodos Bank. The asset classes are debt securities including (sub-)sovereign bonds, loans and advances to banks, and investment securities such as participating interests. For sovereign bonds we refer to chapter 11.
Consistent with PCAF, cash and cash equivalents and short term loans are excluded from the scope determination.

Accounting approach and emission factors

Triodos Bank accounts for scope 1 and 2 emissions of the positions divided by the balance sheet total or the total enterprise value of each. The enterprise value (EVIC) is applicable for loans and investments in listed companies, but can be proxied by using the balance sheet total of the company.

Options	Description				Data quality score
	Financial data		Emission data		Highest (1) to lowest (5)
	Attribution		Emission factor		
a	Outstanding loan and investment amount	Total equity and debt of the company (Balance sheet total) or EVIC	Verified received GHG emissions data in accordance with the GHG Protocol (tCO_2e)		Score 1
b			Primary data on actual energy consumption with known energy source (eg. kWh electricity or m^3 gas consumption)	Supplier-specific emission factors for the consumed energy (tCO_2e/energy-unit/market-based)	
c			Unverified received GHG emissions data in accordance with the GHG Protocol (tCO_2e)		Score 2
d			Primary data on actual energy consumption with unknown energy source (eg. kWh electricity or m^3 gas consumption)	Region-specific emission factors for the consumed energy (tCO_2e/energy-unit/location-based)	
e			Primary physical activity data on the companies products and product type	Region-specific emission factors specific for the activity and product type (tCO_2e/product-unit/type/region)	Score 3
f			Unverified received GHG emissions data that is not verified to be in accordance with the GHG Protocol (tCO_2e)		
g		N/A	Sector average per region	Average GHG emission factors on EUR revenue per sector and region (tCO_2e/EUR-revenue/sector/region)	Score 4
h				Average GHG emission factors on EUR assets per sector and region (tCO_2e/EUR-assets/sector/region)	Score 5

Table 13. GHG accounting approaches for other loans and investments. Approaches are sorted on preference. So if multiple data points are available within the same data quality scoring method we select the one with the highest position in this table.

Formulas

The following formulas are applied to calculate the financed GHG emissions for this category.

The formula for calculating CO_2e based on reported emissions data (option a, c or f) is as follows:

$$CO_2e \text{ reported} \times \frac{\text{Outstanding Triodos loans \& investments}}{\text{Balance sheet total or EVIC}} = CO_2e$$

The formula for calculating CO_2e based on actual energy consumption (option b d) is as follows:

$$\frac{CO_2e}{\text{kWh/gas}} \times \text{kWh/gas consumed} \times \frac{\text{Outstanding Triodos loans \& investments}}{\text{Balance sheet total or EVIC}} = CO_2e$$

The formula for calculating CO_2e based on asset value data (option g and h) is as follows:

$$\frac{CO_2e}{\text{€ Asset value}} \times \text{Outstanding Triodos loans \& investments} = CO_2e$$

Specifications and assumptions

Only option a, c and h (Table 13) are currently applied for this approach. When option h is applied we use the Exiobase Asset value emission factors per sector and country from the PCAF emission factor database.

Emissions that represent scope 1 and 2 of a given company or organisation can be taken from their reports if available to obtain reported emissions option a or c.

Sub-sovereigns are not explicitly mentioned in the PCAF Standard. Triodos Bank treats these as corporate bonds.

13. Financed scope 3 emissions (scope 3 category 15: Investments)

Scope

Using a phased-in approach, as of 2023 the following sectors should be included to align with the the PCAF Standard: Transportation, Construction, Buildings, Materials, and Industrial activities (i.e., NACE L2: 10-18, 21-33, 41-43, 49-53, 81). Triodos Bank translated this to the following sectors to be included:

Triodos sector	Triodos Bank subsector
Organic food	Food processing companies
Renewable energy	Biomass
Environmental technology	Recycling
	Transport
	Other environmental technology
Production	Other
Professional services	Architects / Building contractors
Health Care	Medicine / Wholesome food

Table 14. Triodos Bank sectors that are included for financed scope 3 emission calculations

Accounting approach and emission factors

The financed scope 3 emissions are always calculated using the approach with the lowest data quality score. This corresponds to emission calculation based on outstanding value multiplied by the emission factor per sector and asset value. Therefore, we use the Exiobase emission factors that are published in the PCAF Emission factor database.

Appendix I, provides an overview with linkage between the Triodos Bank sectors and the Exiobase sectors.

14. Sequestered carbon from Nature development and Forestry (scope 3 category 15: Investments)

In this chapter we present our methodology to account for the sequestered carbon from our loans and investments in the nature development and forestry sector. As this carbon sequestration follows a different accounting approach, we will account and report on it separately. The PCAF standard does not provide a methodology for calculating sequestered carbon and therefore Triodos has asked Guidehouse to develop a methodology, which is presented here.

Scope

The Triodos Bank sector nature development and forestry is within the scope of sequestered carbon. Additionally we also calculate sequestered carbon for tree fruit production (olives, tree-nuts, citrus fruits, etc.) and for grassland.

Accounting approach and emission factors

Options	Description				Data quality score
	Financial data		Emission data		Highest (1) to lowest (5)
	Attribution		Emission factor		
a	Outstanding loan and investment amount	Total equity and debt of the client (Balance sheet total)	Verified carbon sequestration data from the client or project in accordance with the GHG Protocol (eg. verified by third party or certified carbon credit) (tC)		Score 1
b			Unverified carbon sequestration data from the client or project in accordance with the GHG Protocol or based on actual incremental growth (tC)		Score 2
c			Primary data on nature or forestry area and species of land/trees (eg. hectares of pine trees in Belgium)	Region-specific carbon sequestration factors per area, specific for species of land/trees (tC/hectare/species/region)	Score 3
d			Unverified carbon sequestration data from the client or project not known to be calculated in accordance to GHG Protocol (tC)		
e			Primary data on nature or forestry area (eg. hectares of nature development in Belgium)	Region-specific carbon sequestration factors per area for unknown species of land/trees (tC/hectare/region)	Score 4
f		N/A	Sector average per region	Average carbon sequestration factors on EUR assets per sector and region (tC/EUR-assets/sector/region)	Score 5

Table 15. Carbon sequestration accounting approaches for nature and forestry. Approaches are sorted on preference. So if multiple data points are available within the same data quality scoring method we select the one with the highest position in this table.

Sequestered carbon for forestry is calculated by using data in the AFOLU USAID Carbon Calculator on emissions per hectares of different species and stages of forestry development including harvesting, thinning, and fertilizer usage. The emission factors used include scope 1 and 2 combined.
For nature development the sequestered carbon is calculated by taking a sample mix of species found in cooler temperate climates. All rotational period emissions per hectare are averaged per species over a period of 30 years. Then, an average of these emission factors is calculated to approximate the mixed varieties of species found in nature development. The attribution factor (our financed share) is then multiplied by this figure in order to attribute the carbon emissions to Triodos Bank's activity.

$$\text{Average}\ \frac{CO_2e}{\text{Hectare (ha)}}_{\text{per species of tree}} \times \text{Total hectares (ha)} \times \frac{\text{Outstanding Triodos loans \& investments}}{\text{Project Equity + Debt}} = CO_2e_{\text{sequestered}}$$

Sequestered carbon of grassland (incl. heathland) are also calculated using AFOLU USAID data and using a similar calculation:

$$\text{Average } \frac{CO_2e}{\text{Hectare (ha)}} \text{ x Total hectares (ha) x } \frac{\text{Outstanding Triodos loans \& investments}}{\text{Project Equity + Debt}} = CO_2e_{\text{sequestered}}$$

15. Avoided emissions from Renewable energy (scope 3 category 15: Investments)

In this chapter we present our methodology to assess the avoided emissions of our loans and investments in the renewable energy sector. In contrast to the other chapters, avoided emissions are calculated based on a different methodology which compares to a baseline. According to the GHG Protocol, avoided emissions are not part of scope 3 but should be reported separately.

Scope
All subsectors categorised under renewable energy are within scope. These include:

Triodos Bank subsector
Wind
Solar
Hydro energy
Biomass
Heat and cold storage
Other renewable energy

Table 16. Triodos Bank subsectors for renewable energy

For the biomass, heat and cold storage, and other renewable energy subsectors, Triodos Bank has collected CO_2e or energy savings calculations from the project. These calculations are used in our accounting approach.
For the wind, solar, and hydro energy subsectors, avoided emissions are calculated using the accounting approach below.

Accounting approach and emission factors

Options	Description				Data quality score
	Financial data		Emission data		Highest (1) to lowest (5)
	Attribution		Emission factor		
a.	Outstanding loan and investment amount	Total equity and debt of project (Balance sheet total)	Verified GHG emissions avoidance data of the project in accordance with the GHG Protocol and/or UNFCC or another credible certification scheme (tCO_2e-		Score 1
b.			Primary data on actual renewable energy production (eg. kWh, MJ, kWhth)	Region-speciic avoided emission factors for the produced renewable energy (tCO_2e-avoided/energy-unit/location-based)	
c.			Primary data on electricity production from wind projects, estimated by a third party based on P50/P90 assessment and adjusted with the actual NL Windex factor		
d.			Primary data on renewable energy production based on older reporting year(s) (eg. kWh, MJ, kWhth)	Region-speciic avoided emission factors for the produced renewable energy (tCO_2e-avoided/energy-unit/location-based)	Score 2
e.			Primary data on renewable energy production estimated by a third party based on P50/P90 assessment		
f.			Unverified GHG emissions avoidance data of the project that is not verfied to be in accordance with the GHG Protocol and/or UNFCC or another credible certification scheme (tCO_2e-avoided)		Score 3
g.			Primary data on renewable energy production estimated based on capacity of the project (MW) combined with average load factors per region	Region-speciic avoided emission factors for the produced renewable energy (tCO_2e-avoided/energy-unit/location-based)	Score 4
h.		N/A	Technology average per region	Average avoided emission factors on EUR assets per technology and region (tCO_2e/EUR-assets/technology/region)	Score 5

Table 17. GHG avoided emission approaches for Renewable energy. Approaches are sorted on preference. So if multiple data points are available within the same data quality scoring method we select the one with the highest position in this table.

Avoided emissions of renewable energy are calculated by combining primary data collected by Triodos Bank with established emission factors based on the energy facilities that are pushed out of the grid mix by introducing a new renewable energy facility. The methodology for calculating the financed avoided emissions is as follows:

$$\frac{CO_2e}{\text{kWh (production)}} \text{ x Total production (kWh) of project x } \frac{\text{Outstanding Triodos loan \& investments}}{\text{Project Equity + Debt}} = CO_2e_{\text{avoided}}$$

The emission factors (CO_2e per kWh production) are derived from the Operating Margin emission factor of the International Financial Institutions (IFI) dataset[1]. The Operating Margin is based on emission factors from the power plants with the highest variable operating costs. These are the power plants that will be replaced first when utilising new renewable power sources. Hence, this factor provides a more realistic insight in the contribution of new renewable power sources and is consistent with PCAF and aligns with the Science Based Targets initiative (SBTi).

[1] https://unfccc.int/climate-action/sectoral-engagement/ifis-harmonization-of-standards-for-ghg-accounting

After the avoided emissions have been calculated per project, these are attributed to Triodos Bank based on the ratio between our outstanding loans and investments and the total project equity and debt or total balance sheet of the company). If no data is available on the current total project equity and debt, assumptions are made based on the project administration at the time of loan or investment origination.

As suggested by PCAF, for renewable energy projects, it is customary to have outside experts calculate predictions in production by percentiles based on historic data. This may include wind measurements or hydraulic flows. The P50 value serves as a prediction of when production may exceed a probability of 50% in a given year; for P90 it is 90%[1]. In line with PCAF, emission calculations based on P50 are preferred to P90, if no figures on the actual electricity production are available. Otherwise, emission calculations on a project basis, or other, factors such as capacity or a monetary sum, will support assumptions for the emission calculation.

[1] See PCAF (2017) report.

Appendix I - Sector mapping

Triodos Bank GHG methodology chapter	Triodos Bank sector	Triodos Bank sector code	Triodos Banksubsector	Exiobase sector code	Exiobase sector
7. Organic farming	Organic farming	A0	Other	p01.b	Wheat
7. Organic farming	Organic farming	A1	Dairy	p01.n	Raw milk
7. Organic farming	Organic farming	A2	Meat	p01.l	Meat animals nec
7. Organic farming	Organic farming	A3	Poultry and egg production	p01.k	Poultry
7. Organic farming	Organic farming	A4	Forestry	p02	Products of forestry, logging and related services (02)
7. Organic farming	Organic farming	A5	Arable	p01.h	Crops nec
7. Organic farming	Organic farming	A6	Horticulture	p01.d	Vegetables, fruit, nuts
7. Organic farming	Organic farming	A7	Mixed	p01.b	Wheat
7. Organic farming	Organic farming	A8	Fruit growing / farming	p01.d	Vegetables, fruit, nuts
8. Property-related sectors	Organic food	B0	Other	p52	Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods (52)
8. Property-related sectors	Organic food	B1	Organic / Natural / Health food shops	p52	Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods (52)
8. Property-related sectors	Organic food	B2	Organic butchery	p15.d	Meat products nec
8. Property-related sectors	Organic food	B3	Food processing companies	p15.i	Food products nec
8. Property-related sectors	Organic food	B4	Restaurants / Cafes	p55	Hotel and restaurant services (55)
8. Property-related sectors	Organic food	B5	Wholesale	p51	Wholesale trade and commission trade services, except of motor vehicles and motorcycles (51)
15. Avoided emissions	Renewable energy	C0	Other	p40.11.l	Electricity nec
15. Avoided emissions	Renewable energy	C1	Wind	p40.11.e	Electricity by wind
15. Avoided emissions	Renewable energy	C2	Solar	p40.11.h	Electricity by solar photovoltaic
15. Avoided emissions	Renewable energy	C3	Hydro energy	p40.11.d	Electricity by hydro
8. Property-related sectors	Renewable energy	C4	Biomass	p40.11.g	Electricity by biomass and waste
8. Property-related sectors	Renewable energy	C5	H&C storage	p40.12	Transmission services of electricity
8. Property-related sectors	Renewable energy	C7	Energy efficiency	p40.11.l	Electricity nec
8. Property-related sectors	Renewable energy	C8	Battery storage	p40.11.l	Electricity nec

Table continues on next page

Triodos Bank GHG methodology chapter	Triodos Bank sector	Triodos Bank sector code	Triodos Bank subsector	Exiobase sector code	Exiobase sector
8. Property-related sectors	Sustainable property	D0	Other	p45	Construction work (45)
8. Property-related sectors	Sustainable property	D1	Private	p45	Construction work (45)
8. Property-related sectors	Sustainable property	D2	Shared workspace / Offices	p74	Other business services (74)
8. Property-related sectors	Sustainable property	D3	Property Investment Finance	p70	Real estate services (70)
14. Sequestered carbon	Sustainable property	D4	Nature development	p02	Products of forestry, logging and related services (02)
8. Property-related sectors	Environmental technology	E0	Other	p32/p36-37/ p50-p55	Secondary raw materials
8. Property-related sectors	Environmental technology	E1	Recycling	p25/p60.2	MIXED SECTOR - client specific
8. Property-related sectors	Environmental technology	E2	Transport	p31/p50-55/ p60-p63	MIXED SECTOR - client specific
8. Property-related sectors	Retail non-food	F0	Other	p52	Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods (52)
8. Property-related sectors	Retail non-food	F1	Toy Stores	p52	Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods (52)
8. Property-related sectors	Retail non-food	F2	Book Stores	p52	Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods (52)
8. Property-related sectors	Retail non-food	F3	Clothing Stores	p52	Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods (52)
8. Property-related sectors	Production	G0	Other	p22	Printed matter and recorded media (22)
8. Property-related sectors	Production	G1	Printers	p30	Office machinery and computers (30)
8. Property-related sectors	Production	G2	Publishers	p22	Printed matter and recorded media (22)
8. Property-related sectors	Production	G3	Artisans / Handicrafts	p36	Furniture; other manufactured goods n.e.c. (36)
8. Property-related sectors	Professional services	H0	Other	p74	Other business services (74)
8. Property-related sectors	Professional services	H1	Consultancy	p74	Other business services (74)
8. Property-related sectors	Professional services	H2	Research	p73	Research and development services (73)
8. Property-related sectors	Professional services	H3	Funeral contractors / Undertakers	p91	Membership organisation services n.e.c. (91)
8. Property-related sectors	Professional services	H4	Architects / Building contractors	p70	Real estate services (70)
8. Property-related sectors	Professional services	H5	Personal services	p74	Other business services (74)

Table continues on next page

Triodos Bank GHG methodology chapter	Triodos Bank sector	Triodos Bank sector code	Triodos Banksubsector	Exiobase sector code	Exiobase sector
8. Property-related sectors	Recreation	I0	Other	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Recreation	I1	Parks	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Recreation	I2	Camping sites	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Recreation	I3	Eco-Tourism	p55	Hotel and restaurant services (55)
8. Property-related sectors	Social housing	J0	Other	p70	Real estate services (70)
8. Property-related sectors	Social housing	J1	Housing associations	p70	Real estate services (70)
8. Property-related sectors	Education	K0	Other	p80	Education services (80)
8. Property-related sectors	Education	K1	Schools	p80	Education services (80)
8. Property-related sectors	Education	K2	Training & Conference centres	p80	Education services (80)
8. Property-related sectors	Education	K3	Day-care centres	p80	Education services (80)
8. Property-related sectors	Child care	L0	Other	p80	Education services (80)
8. Property-related sectors	Child care	L1	Kindergartens	p80	Education services (80)
8. Property-related sectors	Health care	M0	Other	p85	Health and social work services (85)
8. Property-related sectors	Health care	M1	Sole practitioners	p85	Health and social work services (85)
8. Property-related sectors	Health care	M2	Medical centres	p85	Health and social work services (85)
8. Property-related sectors	Health care	M3	Therapeutic farms	p85	Health and social work services (85)
8. Property-related sectors	Health care	M4	Special Needs	p85	Health and social work services (85)
8. Property-related sectors	Health care	M5	Care for the elderly	p85	Health and social work services (85)
8. Property-related sectors	Health care	M6	Hospices	p85	Health and social work services (85)
8. Property-related sectors	Health care	M7	Medicine / Wholesome food	p85	Health and social work services (85)

Table continues on next page

Triodos Bank GHG methodology chapter	Triodos Bank sector	Triodos Bank sector code	Triodos Banksubsector	Exiobase sector code	Exiobase sector
8. Property-related sectors	Arts and culture	N0	Other	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Arts and culture	N1	Performing arts	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Arts and culture	N2	Arts	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Arts and culture	N3	Cultural centres	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Arts and culture	N4	Workshop spaces	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Arts and culture	N5	Film & Media	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Philosophy of life	O0	Other	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Philosophy of life	O1	Meditation centres	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Philosophy of life	O2	Religious and spiritual groups	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Philosophy of life	O3	Buildings	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Social projects	P0	Other	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Social projects	P1	Social services	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Social projects	P2	(Re) employment programmes	p80	Education services (80)
8. Property-related sectors	Social projects	P3	Migrant integration	p80	Education services (80)
8. Property-related sectors	Social projects	P4	Youth help centres	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Social projects	P5	Community centres	p92	Recreational, cultural and sporting services (92)
8. Property-related sectors	Fair trade	Q0	Other	p52	Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods (52)
8. Property-related sectors	Fair trade	Q1	Fair trade shops	p52	Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods (52)
8. Property-related sectors	Fair trade	Q2	Wholesale / Import	p52	Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods (52)

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Triodos Bank GHG methodology chapter	Triodos Bank sector	Triodos Bank sector code	Triodos Banksubsector	Exiobase sector code	Exiobase sector
8. Property-related sectors	Development cooperation	R0	Other	p67	Services auxiliary to financial intermediation (67)
8. Property-related sectors	Development cooperation	R1	Microfinance	p67	Services auxiliary to financial intermediation (67)
8. Property-related sectors	Development cooperation	R2	Certified FLO producers	p65	Financial intermediation services, except insurance and pension funding services (65)
8. Property-related sectors	Development cooperation	R3	Certified organic producers	p65	Financial intermediation services, except insurance and pension funding services (65)
8. Property-related sectors	Development cooperation	R4	SME finance	p65	Financial intermediation services, except insurance and pension funding services (65)
8. Property-related sectors	Development cooperation	R5	Leasing	p65	Financial intermediation services, except insurance and pension funding services (65)
8. Property-related sectors	Development cooperation	R6	Housing finance	p65	Financial intermediation services, except insurance and pension funding services (65)
8. Property-related sectors	Development cooperation	R7	Education finance	p65	Financial intermediation services, except insurance and pension funding services (65)
8. Property-related sectors	Development cooperation	R8	Agricultural finance	p65	Financial intermediation services, except insurance and pension funding services (65)
8. Property-related sectors	Development cooperation	R9	Fintech / Embedded Finance	p65	Financial intermediation services, except insurance and pension funding services (65)
11. Sovereign bonds and 12. Other loans and investments	Other	S0	Other	p93	Other services (93)
12. Other loans and investments	Banks	T1	Banks	p65	Financial intermediation services, except insurance and pension funding services (65)
10. Listed equity and corporate bonds and 12. Other loans and investments	Investments	U1	Investments	p65	Financial intermediation services, except insurance and pension funding services (65)
9. Residential mortgages	Mortgages	W9	Private mortgages	p65	Financial intermediation services, except insurance and pension funding services (65)
8. Property-related sectors	Self promotor	X9	Self promotor	p93	Other services (93)
11. Sovereign bonds and 12. Other loans and investments	Regions	Z0	Regions	p65	Financial intermediation services, except insurance and pension funding services (65)

Appendix II - Data sources

Triodos Bank's sector	External Sources
(Sustainable) property/ Residential mortgages/	• PCAF European building emission factor database (August, 2023) • PCAF European building emission factor database methodology: https://building-db.carbonaccountingfinancials.com/docs/PCAF%20European%20building%20emission%20factor%20database_Methodology.pdf CRREM Global Pathways: www.CRREM.eu • National EPCs / National EPC registers/ databases (Electricity, derived heat, gas, solid fossil fuels, oil & petroleum products plus renewables & wastes) • Global Real Estate Sustainability Benchmark (GRESB): www.gresb.com • PCAF NL emission factor look-up table for residential real estate, 2023
Organic farming	• FAO Database: http://www.fao.org/faostat/en/#data • FAO definition of emission intensities: https://fenixservices.fao.org/faostat/static/documents/EI/EI_e.pdf • Knudsen et al. (2011): https://www.semanticscholar.org/paper/Environmental-assessment-of-organic-juice-imported-Knudsen-Almeida/2f97b923aabc8532ad17caeedc4bed23c2cfcc53 • DEFRA 2005: http://library.uniteddiversity.coop/Food/DEFRA_Food_Miles_Report.pdf • Carlsson (1997): https://rosap.ntl.bts.gov/view/dot/4919 • FAO (2011): http://www.fao.org/fileadmin/templates/organicag/pdf/11_12_2_RTOACC_23_webfiles.pdf • Eurostat LSU Coefficients: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Livestock_unit_(LSU) • Aguilera, E., Guzmán, G., & Alonso, A. (2015). Greenhouse gas emissions from conventional and organic cropping systems in Spain. I. Herbaceous crops. Agronomy for Sustainable Development, 35(2), 713-724: https://link.springer.com/article/10.1007/s13593-014-0267-9 • FAO Forestry paper (2010), Impact of the global forest industry on atmospheric greenhouse gas, Paper 159: http://www.fao.org/docrep/012/i1580e/i1580e00.pdf • DEFRA UK 2019: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/865769/structure-jun2019final-uk-22jan20-rev_v2.pdf • DeStatis (2022): https://www.destatis.de/EN/Themes/Economic-Sectors-Enterprises/Agriculture-Forestry-Fisheries/Field-Crops-Grassland/Tables/arable-land-after-the-main-groups-and-crops.html • DeStatis (2022): https://www.destatis.de/EN/Themes/Economic-Sectors-Enterprises/Agriculture-Forestry-Fisheries/Fruit-Vegetables-Horticulture/Tables/2-4-areas-quantities-harvested.html • DeStatis (2019): https://www.destatis.de/EN/Themes/Economic-Sectors-Enterprises/Agriculture-Forestry-Fisheries/Land-Use/Tables/areas-new.html • FAO report (2002), Organic agriculture, environment, and food security. FAO UN, Rome. • FAO definition of crop residual emissions: http://fenixservices.fao.org/faostat/static/documents/GA/GA_e.pdf

Triodos Bank's sector	External Sources
Organic farming	• Differences in conventional and organic: http://www.fao.org/docrep/005/y4137e/y4137e02b.htm#TopOfPage • From FAO report (2011)/Horticulture - Halberg et al. (2006): http://orgprints.org/13085/1/13085.pdf • From FAO report (2011)/Fruit- Knudsen et al. (2011): https://link.springer.com/article/10.1007/s13165-011-0014-3 • Swedish Environmental Protection Agency (2012), Land management meeting several environmental objectives, Stockholm: https://www.diva-portal.org/smash/get/diva2:1612264/FULLTEXT01.pdf • Statistics Netherlands (CBS): https://opendata.cbs.nl/statline/#/CBS/en/dataset/80783eng/table?ts=1541504784938 • MacLeod, M., Hasan, M., Robb, D. & Mamum-Ur-Rashid, M. (2020). Quantifying greenhouse gas emissions from global aquaculture. Nature, Sci Rep 10 (11679) • EUMOFA (2022): https://www.eumofa.eu/documents/20178/432372/Organic+aquaculture+in+the+EU_final+report_ONLINE.pdf Pelletier, N., Tyedmers, P. (2007). Feeding Farmed Salmon: Is Organic Better? Aquaculture, 272(1-4), 399-416 • Le News (2018). Swiss Organic Farming Continues to Grow But With Big Cantonal Differences: https://lenews.ch/2018/05/09/swiss-organic-farming-continues-to-grow-but-with-big-cantonal-differences/ • IEA (2019). Emission Factors, IEA/OECD 2019 Edition: • http://data.iea.org/payment/products/122-emissions-factors-2017-edition.aspx
Renewable energy	• CO2 intensity factors for fossil fuel generation 2017: https://webstore.iea.org/co2-emissions-from-fuel-combustion • IFI Operating Margin data for CO_2 emission per country: https://unfccc.int/climate-action/sectoral-engagement/ifis-harmonization-of-standards-for-ghg-accounting • Source IEA (2019). World energy balances. Calculated based on the methodology outlined in the report International comparison of fossil power efficiency • DEFRA 2022 (UK government): https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022 • Emissions factors heating for mortgages and buildings: https://www.co2emissiefactoren.nl/lijst-emissiefactoren/
Forestry and nature development	• USAID AFOLU Carbon Calculator: http://afolucarbon.org/dashboard/ • AFOLU Tool manual from USAID: http://afolucarbon.org/static/documents/AFOLU-C-Calculator-Series_AR.pdf • FAO Forestry paper (2010), Impact of the global forest industry on atmospheric greenhouse gas, Paper 159: http://www.fao.org/docrep/012/i1580e/i1580e00.pdf • Swedish Environmental Protection Agency (2012), Land management • meeting several environmental objectives, Stockholm: https://www.diva-portal.org/smash/get/diva2:1612264/FULLTEXT01.pdf
Elderly Care and Social Housing	• Handreiking Kengetallen Benchmark Zorgvastgoed Bouwkostennota 2017: • https://www.stichtingacvz.nl/uploads/media/files/Handreiking%20kengetallen%20Benchmark%20Zorgvastgoed%20Bouwkostennota%202017%20van%20Stichting%20AcvZ.pdf • PCAF European building emission factor database (September, 2023): • https://building-db.carbonaccountingfinancials.com/PCAF_emission_factor_database.php?partitionpage=Mortgages
High-level sector approach & Sovereign bonds	• Eurostat Government deficit/surplus, debt and associated data: https://ec.europa.eu/eurostat/en/web/products-datasets/-/GOV_10DD_EDPT1

Appendix III - Glossary

AFD Agence Française du Développement

CNG Climate Neutral Group

CO_2e Carbon dioxide equivalent

GRESB Global Real Estate Sustainability Benchmark

CRREM Carbon Risk Real Estate Monitor

EEIO Extended Environmental Input Output

EF Emission factor

EPC Energy Performance Certificate

FAO Food and Agriculture Organisation of the United Nations

GHG Greenhouse gas

IEA International Energy Agency

IEB Triodos Impact Equities and Bonds funds

IFI International Financial Institutions

IFC-CEET IFC Carbon Emissions Estimation Tool

LEM Local Environmental Managers

LSU Live Stock Unit

LTV Loan-to-Value ratio

PCAF Partnership for Carbon Accounting Financials

SBTi Science Based Targets initiative

WBCSD World Business Council for Sustainable Development

WRI World Resources Institute

Triodos Bank Greenhouse Gas accounting methodology

Date: March 2024