cogo

Business Carbon Model Methodology

Driving impact at scale

Introduction

This methodology document outlines the approach we take to develop and maintain the Business Carbon Model, which supports our small and medium enterprise (SME) business-focused products. These products help our banking and accounting system clients to become the trusted guide in climate change for their SME base, by measuring, tracking and helping to reduce their carbon emissions.

Table of contents

The case for spend-based carbon footprinting

Our planet is facing a global warming crisis due to the cumulative effects of human-made greenhouse gas emissions. Since the Industrial Revolution, these emissions have raised atmospheric carbon dioxide levels by 50%.[1] The scale of the challenge to decarbonise is massive, and will require engagement from all parts of society, including not only large corporations but also small and medium businesses.

The urgency to scale up engagement across society on climate change has never been higher, however many of the carbon footprinting tools at our disposal remain a poor fit for SMEs. SMEs face a number of challenges when measuring their carbon footprint. Compared to larger organisations they typically have fewer resources, less knowledge and smaller budgets available for sustainability initiatives. Cogo's business carbon model enables products that give businesses the insights they need to make informed carbon reduction decisions using their existing spending data whilst avoiding the need for significant additional resources.

We see spend-based carbon footprinting as an important part of the solution to the problem of too few SMEs taking action to understand and reduce their emissions. A spend-based approach is indicative and enables easy and rapid footprinting that provides the basis for making informed and effective carbon reduction actions.

A second important benefit of spend-based carbon footprinting is that it enables simple inclusion of scope 3 supply chain emissions. This is important because scope 3 emissions typically account for over 75% of a business' total scope 1+2+3 emissions[2], however most businesses struggle to account for these emissions – particularly SMEs.

Once SMEs are on their climate journey, our model enables supplementary data sources to be added onto the spend-based footprint foundation. Our products encourage users to add supplementary activity-based data for common material emission sources such as scope 1 fuel combustion and scope 2 electricity use which are incorporated into the footprint calculations. This increases footprint accuracy, and improves alignment with external stakeholder reporting and disclosure requirements such as the Greenhouse Gas Protocol (GHGP), Carbon Disclosure Project, Science Based Targets Initiative, SME Climate Hub and the International Sustainability Standards Board.

1. Nasa (https://climate.nasa.gov/causes/), accessed 22/08/2022

2. Carbon Disclosure Report (CDP), 2022. https://cdn.cdp.net/cdp-production/cms/guidance_docs/pdfs/000/003/504/original/CDP-technical-note-scope-3-relevance-by-sector.pdf

Methodology Core Principles

Cogo's business carbon model methodology is informed by leading academic research in the areas of environmental economics, carbon footprinting and impact measurement, and is aligned with the GHGP Corporate Accounting and Reporting Standard. We enable spend-based consumption-perspective SME carbon footprinting, which can then be supplemented with activity data.

Relevance

A business's carbon footprint should be representative of the emissions of its activities, and presented in a way that supports its ability to take informed and effective climate action to reduce these emissions. We use the most accurate, recent and relevant EEIO, LCA and statistical data for each country that we operate within.

Completeness

We believe that a focus on the emissions linked to business' consumption of products and services i.e. embodied emissions, is the most powerful way to engage and build understanding with users. We use EEIO as a foundation, supplemented by product lifecycle and other data to enable complete consumption carbon footprints based on financial transactions.

Consistency

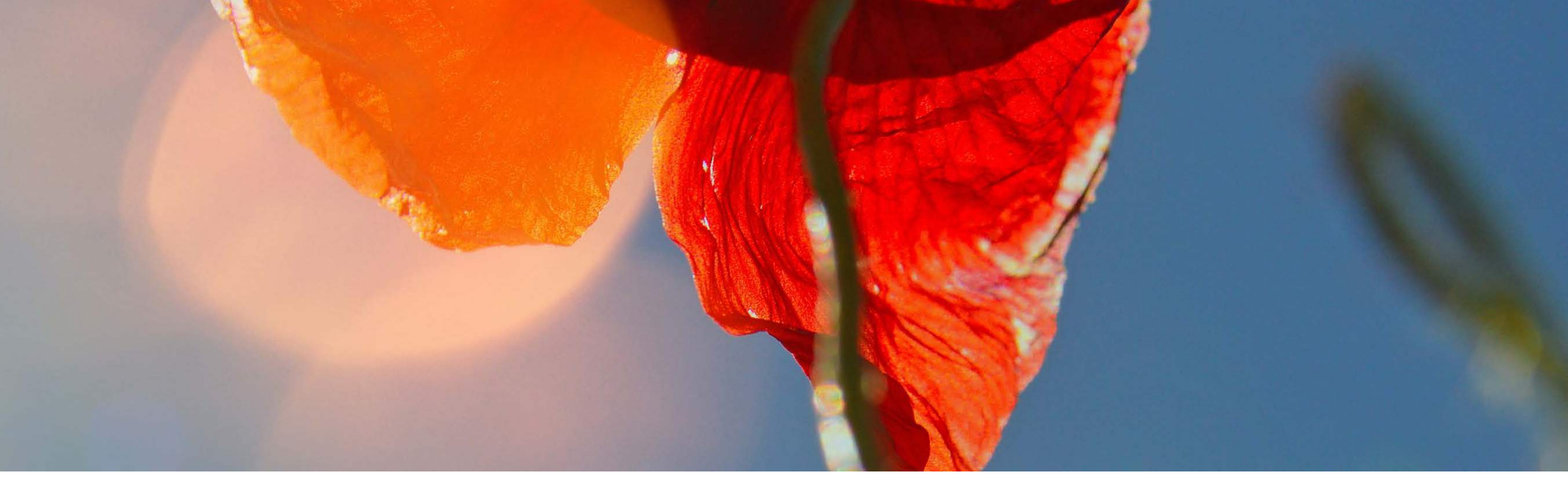
We build a data set for each country using the same approach. There are however differences that occur due to differing raw data availability and variations in local carbon accounting guidance that we align with.

Transparency

Trust in the methodology, and in spend-based carbon footprinting in general, is vital for building engagement and climate action within the SME audience over time. We are committed to being transparent about this approach, and working with others in the industry to improve the methodology, credibility and acceptance of the spend-based approach.

Accuracy

Our collective focus needs to be on taking action to reduce carbon emissions. We don't let perfect get in the way of good. Our methodology is sufficiently accurate for business users to understand their footprint, including hotspots, and to engage in actions to reduce it. We use the best available EEIO data per country, conduct quality assurance checks to support our products and seek to continuously improve the model. Users are able to increase the accuracy of their footprint estimate by supplementing the spend-based footprint calculation with activity data, and over time to work towards traditional third-party assurance if desired.



What is Cogo's Business Carbon Model?

Cogo's business carbon model is the core data set used by our business focussed products. An example is our Business Carbon Manager product. This is a business user-facing tool which gives users a quick and easy understanding of the carbon footprint associated with their business and the climate actions they can take to reduce this footprint.

The overall goal of our products, powered by the business carbon model, is to help SME users reduce their carbon emissions.
Using real-time financial data, accessed via either our banking or business accounting partners, our products provide business users with an up-to-date picture of their carbon footprint across different categories based on their spending.

The business carbon model is, in essence, a set of emissions factors for each market that are applied to transactions based on their spending category.

The footprint is calculated by analysing a business's transaction data and matching the transactions to specific Cogo Categories (electricity, insurance, etc.). Each of these categories has a corresponding emissions factor. Using the spend amount and the relevant emissions factor, the model calculates the carbon footprint (measured in kgs of CO_2 equivalent, or CO_2e) of each transaction.

Figure 1 below summarises Cogo's four key steps in using the business carbon model to calculate footprints. The following sections will cover these steps in further detail.

BUILD FOUNDATION DATA SET

Gather carbon emissions data from the best EEIO models per market

GENERATE APPLIED MODELS

Develop models to match emissions factors to spend categories

MAP TO SPENDING

Map transactions to categories and apply emissions factors to calculate footprint

ADD ACTIVITY DATA

Supplement key calculations with activity data

Figure 1: Key steps of footprint calculation using Cogo's Business Carbon Model

Footprint Calculation

1. Building the foundation dataset

All emissions factors that underpin the Cogo business carbon model across our active markets are compiled and managed in our Core Carbon Database. In general, the emissions factors included across our platforms are country-specific and take into account all emissions associated with the supply chain of an industry i.e. right from extraction, manufacture, transport, etc., through to the point of purchase by the business user.

These emissions factors are generated using a range of data sources. The foundation data set is generated using data from environmentally extended input-output (EEIO) models and is supplemented with additional data such as life cycle assessment (LCA) emissions data, economic and inflation data and emissions factors from both national statistical agencies, government agencies and partnerships with other specialist agencies.

Our preference is to use single region (SR)-EEIO models to support our market-specific business carbon models. These models generally offer higher sector-level detail that better suits a more granular and accurate transaction categorisation, and ultimately a better footprint calculation. However, it is important to note that there are different approaches to the same type of models, which result in different uncertainties and limitations. We review the characteristics of available EEIO models when scoping for a new market, and use the best-in-market and most suited to our approach.

In each of the markets we operate within we also incorporate the latest emissions factors provided by government agencies in accordance with their corporate emissions reporting guidelines.

Australia

In Australia we use data from Industrial Ecology Virtual Laboratory (IELab), which is a collective platform for input-output modelling and research. IELab was created by the University of Sydney, and is operated by the University of New South Wales. The IELab SR-EEIO model that we use was last updated in 2023.

The IELab input-output database uses national accounts data provided by the Australian Bureau of Statistics (ABS) and environmental data such as national carbon, water and energy accounts from a number of sources including Australia's National Greenhouse Accounts.

Additional activity-based emissions factors are taken from the National Greenhouse Accounts Factors publications produced by the Department of Climate Change, Energy, the Environment and Water.

New Zealand

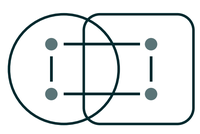
In New Zealand, we use data from Motu Research based on their SR-EEIO model which incorporates use emissions, alongside data from Small World Consulting (SWC) where appropriate. The Motu SR-EEIO model is based on 2020 National Accounts input-output tables (released in 2021) as well as 2019 National Production-Based Emissions by Industry (released in 2021).

Additional activity-based emissions factors are taken from the emissions measurement publications produced by the Ministry for the Environment.

United Kingdom

In the UK, we use annually-updated spend-based emissions factors provided by our partners at Small World Consulting which was established by Mike Berners-Lee (widely known for his expertise in carbon footprinting). These emissions factors were developed through a combination of the SWC SR-EEIO model combined with emissions factors from the UK Department for Energy Security and Net Zero, product LCA-based research and other sources.

Additional activity-based emissions factors are taken from the Government issued conversion factor publications.



2. Generating applied models

We develop 'Applied Models' to generate more applicable spend-based emissions factors that support a more accurate calculation of the footprint of particular spend areas beyond the initial limitations of the EEIO emissions factor data. The 'Transport Fuel Model' is a good example of this. EEIO data will typically include separate data for purchased petrol and diesel fuels. Our Transport Fuel model combines this data in a way that reflects how these products are purchased i.e. fuel service stations, and the fuel use mix of our SME users.

Cogo curates the Core Carbon Database in order to select the most appropriate emissions factor for each spend category, be it directly from EEIO data or using one of our applied models.

Transport fuel

The fuel model takes into account both the emissions associated with the supply chain (from EEIO data) and the combustion of the fuel (from national statistical data) at the use stage. We combine the supply chain and combustion data with fuel price data to get a more complete picture of the carbon footprint of fuel emissions from the available transactions.

Gas

We calculate spend-based emissions associated with the purchase and use of gas similarly to transport fuel. The supply chain footprint is derived from EEIO data, and the combustion emissions are taken from national statistical data. We also use pricing data to estimate gas volumes from the transaction amount.

Energy model

The Energy Model takes market-specific emissions factors sourced from EEIO databases for the typical different sources of energy consumed, and applies this to bundled energy and utility transactions. The energy footprint takes into consideration the emissions throughout the supply chain (including transmission and distribution) as well as any combustion emissions at the use stage.

Air transport

Cogo uses a specific emissions factor for air transport. This was developed by our partner Small World Consulting. It takes into consideration the supply chain emissions of the air travel industry and both the combustion and radiative forcing effects of the in-flight emissions.

Clothing

Cogo uses a specific emissions factor for the manufacture of wearing apparel. This emissions factor was derived from an in-depth study of a UK high street fashion retailer. The emissions factor is adapted for use in other countries on the basis that the fashion industry and its supply chain is generally global in nature.

Alcoholic beverages

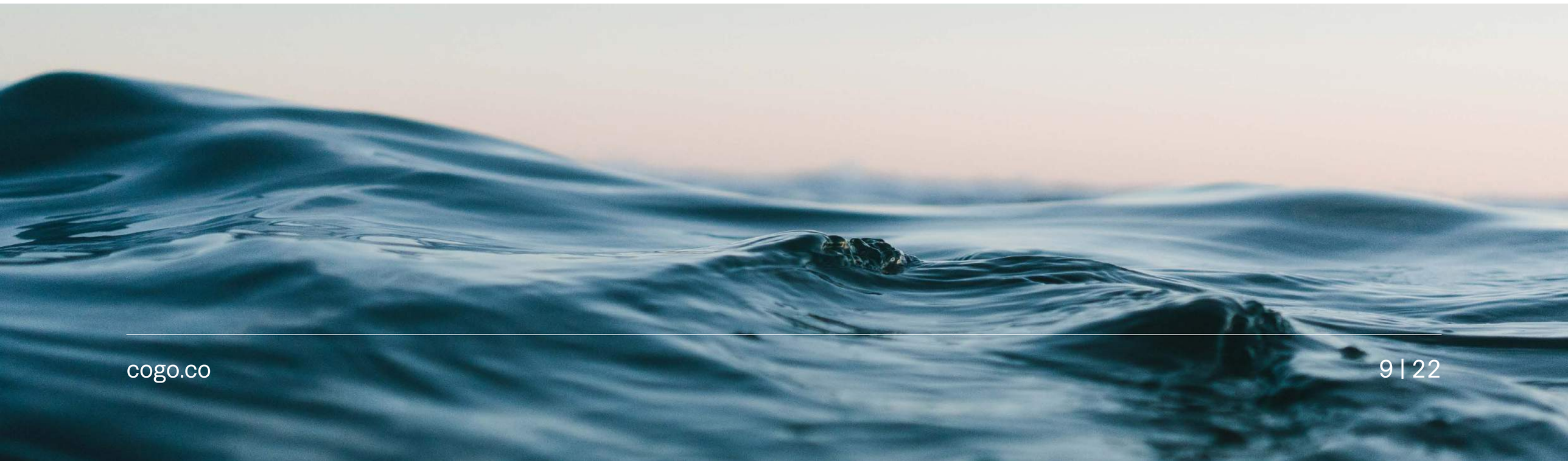
The EEIO data typically provides data for each type of alcoholic beverage. Using national statistical data in combination with the EEIO data we build up a weighted average emissions factor per spend.

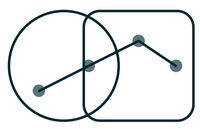
Grocery model

The Grocery Model uses market-specific emissions factors for food and beverage product categories to determine an average emissions factor per currency for a typical shopping basket as recorded in statistical data. The emissions factors are sourced from EEIO databases where possible, and in cases where the EEIO data lacks granularity or quality, the model incorporates LCA food and beverage category specific data for a market or a geographic region.

Eating out

We modify our grocery model emissions factors when the spend is in the context of eating out. This is to reflect the portion of spend that is attributable to the non-food operating costs of the supplier i.e. staff salaries, rent and premises energy use.





3. Mapping to spending categories

Having developed the full set of emissions factors from both the EEIO data and the applied models these are mapped to the spend categories in a two-step process:

1. The developed emissions factors are mapped to our internal taxonomy
2. We then map our internal taxonomy to the spending categories (or other client taxonomy)

The purpose of these two steps is to account for, and support, simultaneous independent client taxonomies within a market using the same underlying emissions factors.

Mapping emissions factors to the Cogo taxonomy

Cogo curates the Core Carbon Database in order to select the most appropriate emissions factor for each type of spend on products and services. The core function of our internal categorisation taxonomy is to enable mapping to all potential client-market spending category taxonomies. It is a standardised core taxonomy that is continually revised and improved, to support those client-market combinations.

At present, our taxonomy of 'Cogo Categories' includes over 600 different spend categories. Each spend category is mapped to the most appropriate emissions factor for each market that we are active in.

Not all transactions are assigned an emissions factor by Cogo – some are considered to be 'non-relevant' for the calculation of carbon footprints. These spend categories are then 'zero-rated'. Our approach for exclusions and inclusions is explained in more detail in the Transactions exclusions and inclusions section.

Mapping to client spending taxonomy

Typically we will then map our taxonomy of Cogo Categories with corresponding emissions factors to a spending taxonomy used by our banking and accountancy clients. In this way we're able to integrate directly into their platforms enabling them to support their SME customers with carbon emissions calculations.

Automatic and manual categorisation of transactions

Working with our clients we assess the extent to which their transactions can be auto-categorised sufficiently accurately, and explore options to increase the levels of auto-categorisation. Auto-categorisation can be done by a combination of methods including:

- Working with leading providers of 'enrichment' services to help improve the levels of accurate auto-categorisation
- Mapping between client-side supplier coding and spend categories
- Supplier matching to a list of commonly used suppliers

Typically a proportion of a SME user's spend will remain un-categorised and needs to be categorised manually in order to calculate a corresponding footprint. This is typically the most robust mapping to spend categories but relies on SME user input.

4. Supplementing with activity data

In order to increase the accuracy of footprint calculations in some areas, our model supports SME users supplementing their spend-based carbon footprint calculation with activity-based usage data such as that found on energy bills. This activity data is usually linked to a corresponding transaction (e.g. electricity and/or gas payment). Activity-based data is more accurate than spend-based, but requires more effort by SMEs to supply.

Inclusion of activity-based data supports better alignment with the GHG protocol standards. Gas (primarily scope 1 and measured in kWh or MJ) and electricity (primarily scope 2 and measured in kWh) are often the most significant scope 1 & 2 emissions sources for an SME, in terms of exceeding a materiality threshold. By including activity-based calculations for these two sources, the model covers most of the necessary sources required to meet the GHG protocol standard for the SME industry sectors we support.

Our intent is to expand the scope of Activity Data entry to cover additional (less common) emission sources for SMEs; both those with and without corresponding financial transactions such as fugitive emissions and employee commuting.

Footprint Calculation

Transaction exclusions and inclusions

We have a defined process for ensuring that the spend-based business carbon footprints that we calculate are as complete and accurate as possible in terms of scope. It is important that all relevant transactions are included in the footprint, as well as ensuring that all non-relevant transactions are excluded from the footprint. Note that our approach can vary per client implementation in order to optimally map to categorisation and enrichment needs. The main elements of our approach are outlined below:

- We include all available categorised spend transactions for calculating a carbon footprint. Transactions that are recorded outside of the banking and accounting systems that we integrate into are not included.
- Transactions are categorised according to a spend taxonomy. This can be done in a variety of ways including auto-categorisation or enrichment and manual supplier-level categorisation. Uncategorised transactions aren't included in the footprint. We use the degree of categorisation to estimate the completeness of a footprint and include this figure in reporting.
- Each category entry in the spend taxonomy has an associated emissions factor. Some of these emissions factors are zero. A transaction is zero-rated and excluded from the footprint calculation, only if it:
    - Does not relate to a purchase of products or services and is therefore irrelevant to their carbon footprint e.g. internal bank transfers and salary payments; or
    - Can't be recognised and / or included consistently and fairly (transaction enrichment)
- The spend taxonomy and auto categorisation capability is continually reviewed and updated to ensure best available footprint completeness and accuracy whilst minimising manual user input.

Footprint Accounting & Reporting

The practice of business carbon footprinting has established norms and standards relating to how emissions are measured, and how they should be reported. We have developed the model to align with these accounting and reporting standards for SMEs. These include the GHGP Corporate Accounting and Reporting Standard, the Carbon Disclosure Project and to the government reporting guidance released within each of the markets we operate in.

We have also incorporated the current and likely foreseeable reporting needs of our banking and accounting clients to ensure these can be met through the use of our model.

In our model, emissions are recognised and accounted for as at the date of the corresponding transaction. This is not always the same date as when emissions actually occur. E.g. In the case of an SME purchase of fuel for its vehicle fleet, our methodology will recognise emissions as per the date of purchase, rather than the date of use.

Handling of scopes

Our methodology includes a practical approach to splitting emissions into different scopes in line with the widely accepted standards such as the GHGP.

Business footprint emissions are typically split into three:
Scopes 1, 2 and 3.

- Scope 1 emissions are direct operational emissions resulting from activities that a business has direct control over, such as fuel combustion in machinery and vehicles they operate.
- Scope 2 emissions refer to indirect emissions associated with electricity and heat purchased for their operations.
- Scope 3 emissions encompass a broader range of indirect emissions, including those linked to product and service procurement in the supply chain, employee commuting, business travel, and waste management.

Our methodology enables our products to calculate and allocate business emissions to the appropriate scope based on their spend categorisation and resulting emissions factors. In addition to other footprint analysis views available in our products, this approach allows businesses to identify emission hotspots, prioritise reduction efforts, and effectively drive sustainability initiatives across their entire value chain.

Most spend categories fall into scope 3. Some spend category emissions factors are split over multiple scopes. Two examples are shown in the table below.

Spend category	Scope 1 EF ($kgCO_2e/\$$)	Scope 2 EF ($kgCO_2e/\$$)	Scope 3 EF ($kgCO_2e/\$$)
Fuel	1.06		0.03
Electricity		0.33	0.02

Table 1: Examples of EF scope splitting for New Zealand

Scope 3 emissions sources will in general be further categorised into the scope 3 categories (e.g. Purchased goods and services and Business travel) to enable more detailed analysis, insights and reporting by the business.

Footprint Accounting & Reporting

Carbon intensity

Carbon intensity metrics play a crucial role for SME footprint monitoring as they provide normalised and potentially more meaningful measures relative to the business' output or activity. By calculating the carbon intensity, which is typically expressed as emissions per unit of production or revenue, SMEs can effectively assess and compare their emissions performance over time, regardless of changes in business size or scale. SMEs will also be able to make carbon performance comparisons across their sector.

Our model enables our products to calculate intensity based on operating revenue. Depending on the product implementation, SMEs can also incorporate their own metrics, and be able to set targets based on intensity metrics.

Footprint Accounting & Reporting

Baseline Definition

The Cogo SME carbon manager product will offer businesses the ability to establish a baseline year and track their historic carbon footprint over time. This will enable more detailed target setting and tracking functionality in line with climate science. SMEs will also be able to evaluate the effectiveness of their reduction actions against their stated targets. This will enable SMEs to more easily achieve footprint assurance and verification by third parties.

Our products will generate a comprehensive carbon audit trail to allow businesses to maintain accurate records of their emissions data, facilitating transparency, accountability, and credibility in their sustainability reporting. This will also support the SME's internal decision-making, help businesses to meet regulatory requirements and demonstrate their commitment to the sustainability imperative.

Footprint Accounting & Reporting

Industry benchmarking

Our model is able to calculate a benchmark footprint for an SME user based on their industry sub-sector and their operating revenue. In this way the user has a benchmark footprint against which they can compare their footprint that is specific to their industry sub-sector and scaled to their business size. This is provided as a useful check to provide context, typically when they obtain their first complete footprint.

Footprint Accounting & Reporting

Reporting

Our model provides the underlying data for products to offer SME users the ability to produce and download carbon reports. These include details of their organisation, their footprint and reduction actions they are taking. Typically these are designed as a generic report for business stakeholders and include details such as a footprint breakdown by scope, footprint measurement over time, reduction targets set, key exclusions and footprint completeness. Additional reporting templates can use this underlying data to generate reports tailored to specific disclosure requirements.

Model Limitations

Guiding our methodology and business carbon model is our desire to balance three important needs:

- To increase user engagement by minimising demands placed on the SME users;
- To maintain sufficient accuracy to inform their decision making; and
- To retain credibility with regard to accounting standards and footprint verification.

We consider that for the purposes of compiling a complete carbon footprint and highlighting key hotspots of emissions in real-time, our hybridised spend and activity-based approach provides a much more complete footprint in terms of scope and granularity compared to many of the traditional carbon footprinting tools in the market (i.e. those that rely on business users inputting their own data/ information).

As with all models, there are limitations which are explored in more detail in this section. These limitations should be seen within the context of what the spend-based approach enables, which is scaled engagement with SMEs on their climate journey.

Model limitations

Non-transaction-linked emissions

We are expanding the scope of our model to include footprint components that aren't accompanied by financial transactions. This includes fugitive and process emissions, commuting and working from home and downstream emissions.

This will allow us to expand the scope of footprints we calculate for SME users. It will also expand the industry sectors to which we can offer our SME products to include those sectors where fugitive and non-transaction-linked emissions are material.

Model limitations

Demand-based pricing

The spend amount may not accurately reflect the actual emissions due to varying pricing such as demand-based pricing methods. These are commonly used in aviation and rail transport (particularly in Europe). This could result in an underestimation of the footprint for that transaction if the business user purchases a ticket when demand is low, and an overestimation when demand is high. In general we estimate that these inaccuracies will be inconsistent and may even out over time. To mitigate this we aim to offer increased accuracy through supplemental activity data calculations where this component of a footprint is significant.

Model limitations

EEIO modelling

EEIO modelling involves compiling and transforming large amounts of macroeconomic data into one place. Consequently, the accuracy of this approach depends on not just the data available but how this data is compiled across different time periods, currencies, industrial classifications, and levels of disaggregation (and the assumptions and/ or proxies used to make the data compatible). Data within the tables is also likely to be more accurate for some sectors than others.

Average emissions factors

One of the problems in compiling such large amounts of data is that it requires many generic assumptions to be made. One of the big assumptions for carbon footprinting is that every unit of expenditure in each industry sector has the same emissions intensity. However, in general, the average emissions per spend do not take into account the differences in products or the fluctuation of prices of products over time or at different shops (e.g. a product on sale will artificially have lower emissions associated with it than if it wasn't on sale). In addition, the degree of fit to which different emissions factors align to Cogo Categories does vary.

Converted emissions factors

In some cases we have used emissions factors from another market in place of a local equivalent which is either not available or considered inaccurate or not appropriate for our use case. On balance, we consider this to be appropriate, as there are big differences in available data and modelling across the markets that we operate within. Over time we expect that the reliance on such emissions factors will reduce as better data becomes available.

Tax

The treatment of tax is another challenge which exists due to the multitude of datasets and sources used to create an emissions database for a market. The majority of our EEIO datasets include tax, as the emissions intensity is calculated on 'purchaser prices'. This includes trade and transport margins and GST (goods and services tax) / VAT (value added tax).

Product category footprint accuracy

The application of EEIO is a top-down approach, and while it is beneficial for capturing the emissions embodied throughout supply chains at the whole-of-economy level, it lacks the ability to provide emissions factors at the product, brand and company level. This is because the emissions factors used are average emissions factors per unit of currency spent across an industry.

There are also limitations in the application to the product category level, however, we can address this by applying a hybrid approach. The hybrid approach incorporates LCA emissions data which can be applied to the product category level.

Despite the limitations, studies have shown that in general input-output models provide a good approximation for emissions across an economy and can help to resolve some of the problems of "bottom-up" process-based LCA studies (that trace emissions across a supply chain of individual products and services in much greater granularity).

In particular, input-output models are much less likely to underestimate emissions than bottom-up studies (which can have difficulty tracing and obtaining data across all aspects of a supply chain), as well as being much less resource intensive, making analyses of the scope we are doing here possible.

Model limitations

Post-purchase emissions

Post-purchase emissions that have an associated spend transaction (e.g. fuel purchases and waste disposal costs) are included in the model. However, some post-purchase emissions have no associated transaction, and are not currently captured. As we expand the scope and role of activity data the model will be able to cover more of these emissions.

Model limitations

Service bundling & superstores

In some countries, there is a strong tendency to innovate through the bundling of services for the end user. An example is where previously a traditional phone company may now also offer mobile phone, fibre internet, electricity and natural gas services in various bundled options. While the effect of this varies per market, we manage this by developing applied emissions factors that support these types of bundled services.

A similar challenge arises when looking at spending categories that include businesses offering multiple products of significantly varying emissions intensities e.g. hardware stores that sell a wide range of products from outdoor patio heaters to timber framing. Here we use the best emissions factor available based on the transaction categorisation to represent the cross-section of products. We plan to offer users the ability to recategorise at the transaction level to more accurately reflect their purchases.

Model limitations

Payments to financial intermediaries

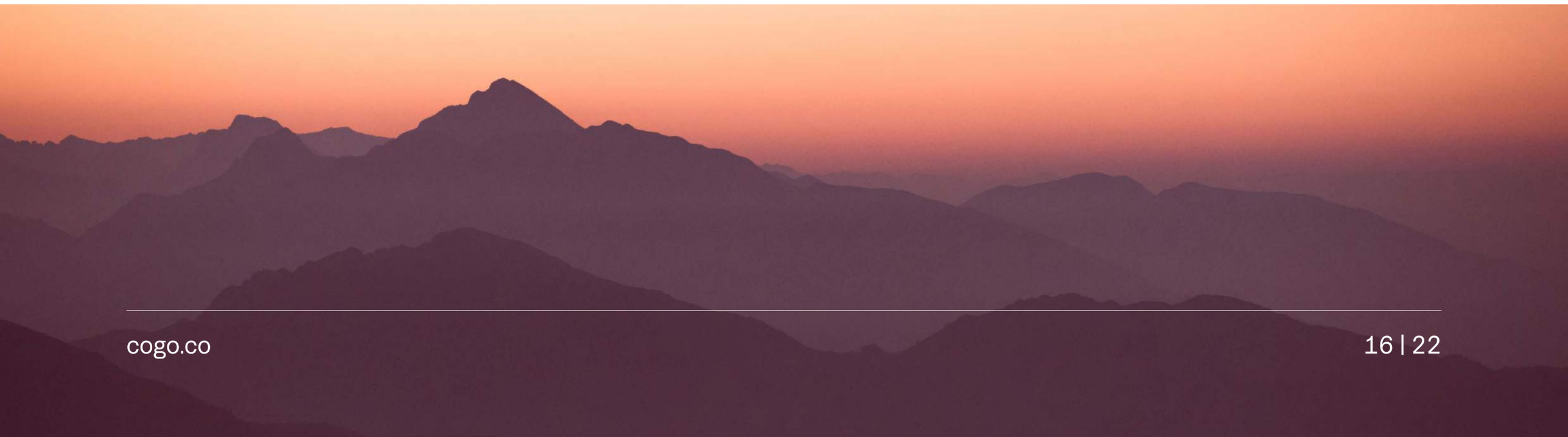
In some instances transactions are paid to a financial intermediary e.g. repayment of a loan. In these instances our model relies on the business user selecting the appropriate spend category, that is the one that most closely matches the use of the loan finance. In such instances the emissions associated with the purchase will be recognised over the term of the loan (rather than at point of purchase) and will be inflated by the additional cost of the associated interest.

Model limitations

Transaction categorisation

Our ability to apply the appropriate emissions factor relies in large part on the automatic and manual processes of the business user selecting the appropriate spend category for a supplier and/or transaction.

We work to maximise accurate auto-categorisation and to make the process of manually categorising suppliers and transactions as intuitive as possible and to provide appropriate assistance and guidance to business users to maximise the portion of correctly categorised transactions. This is an area we continually seek to improve through testing and feedback from our expanding business user base.



Model limitations

Industry sectors supported by the model

Some elements of a business footprint are not well-reflected in corresponding financial transactions, and sometimes not at all (e.g. fugitive emissions from refrigerant equipment and enteric emissions from livestock). As a result, our business carbon model does not yet support footprint calculation for non-transaction-based emissions and our products are not presently made available to organisations working in sectors where these emissions are significant e.g. agriculture. We are expanding the model to appropriately capture these emission sources to increase the scope of measured footprints, so that these sectors can be included. The sectors the model currently supports are listed in Appendix 2.

Validation, Continuous Improvement & Collaboration

Our ambition is to continue to improve the scope and accuracy of the model. We work with our key partners to further build the case for investing in improvements to underlying data models. We are also working with independent experts to assess and improve our methodology, and to gain accreditation where relevant and possible.

We note that spend-based carbon footprinting is a relatively new development, made possible at scale only recently due to technological innovation. Cogo believes strongly in the role of this approach to carbon footprinting as an enabler of building business-user knowledge and action at scale, and is an advocate in all markets in which we operate.

In this way we seek to work with our partners to build higher levels of trust with our clients and business users.

Validation, Continuous Improvement and Collaboration

New markets

When establishing an emissions factor dataset for a new market, we consult closely with our in-market partners to confirm that sufficient data validation and verification are built into the approach. Within each market, we work with the leaders in carbon emissions accounting and EEIO modelling, as well as leveraging the most reputable national emissions factor datasets inline with national corporate carbon accounting guidance. Cogo then incorporates partner data into our dataset, including our applied models.

Validation, Continuous Improvement and Collaboration

Regular updates

Each of our market datasets is reviewed and updated on at least an annual frequency (updates may also be made more frequently as necessary e.g. as a result of high inflation or changes in regulation). The update process includes not only the updating of emissions factors including inflation effects but also a critical review role to further confirm that our application of partner data and hybrid models are aligned with acceptable use. We also review and update our approaches, particularly in applied models, to ensure we are using the best possible data.

Inflation

By impacting the price of goods, inflation has an impact on the emissions factors that we use. In most cases, the EEIO emissions factors that we are able to obtain need to be updated with respect to inflation. In some cases, EEIO data providers release inflation-adjusted emissions factors which we incorporate as and when they are available.

In all instances, where there is deemed to be a material impact on the value of the emissions factors, Cogo performs inflation updates to the underlying emissions factors. This is done using published inflation indices for the relevant market and categories over the period in question and then applying this inflation in the price of goods to the published emissions factor. In this way, we maintain the accuracy of the emissions factors within an inflationary economic environment using market and sector-specific data.

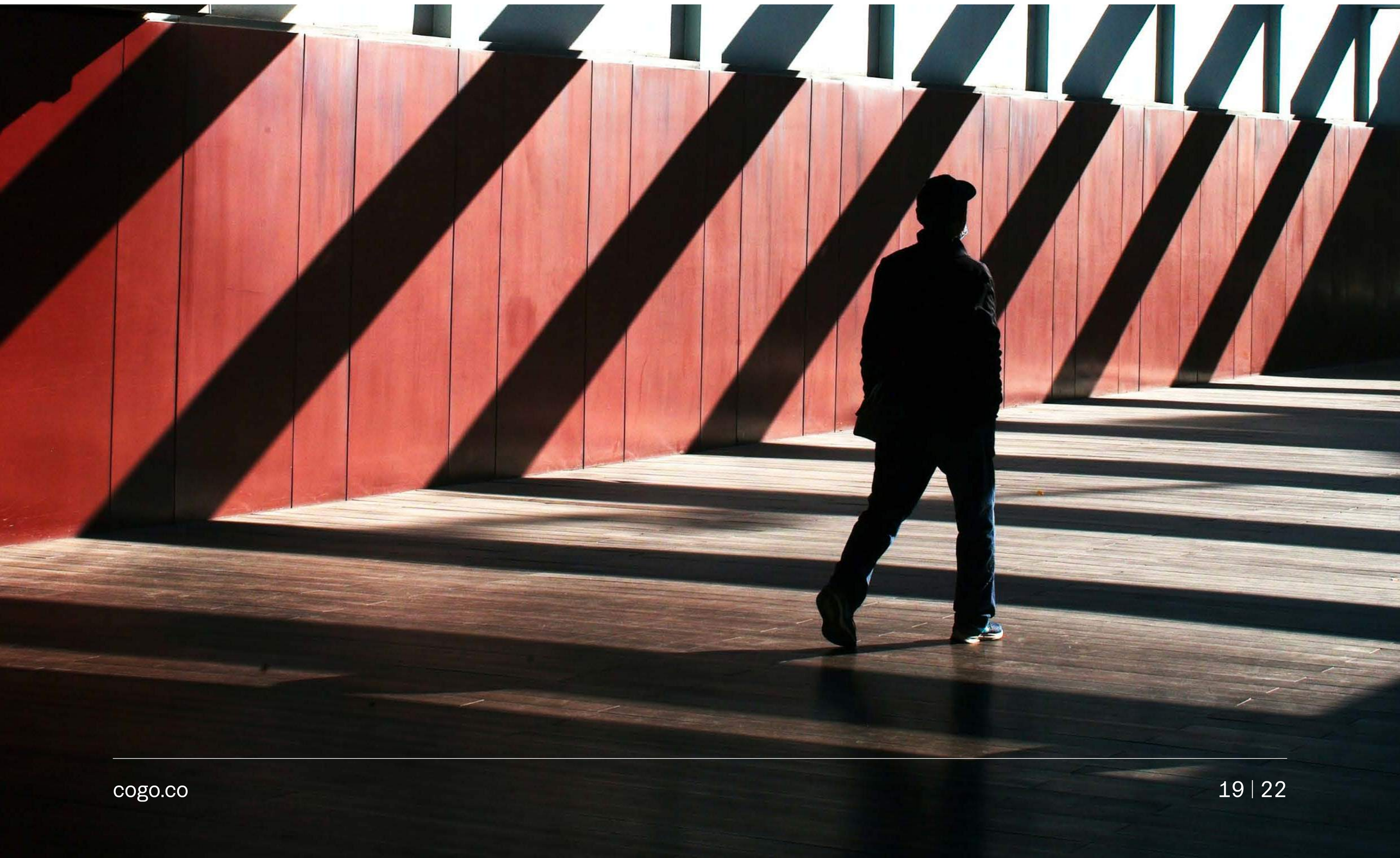
Validation, Continuous Improvement and Collaboration

Future areas for collaboration & continuous improvement

We welcome the ongoing data improvements on consumption-based carbon emissions occurring at the government level and are keen to collaborate with others to create and maintain a transparent, open-source data set in the future for each market we are operating in.

There are a few main areas where we are looking to improve the model:

- **Accuracy & Precision:** Our approach is based, per market, on the best available EEIO model. Cogo is keen to work with other organisations and agencies to improve the frequency of model updating, as well as the sophistication and accuracy of the dataset. Together we can create a single source of truth for emissions factors, which can be leveraged for good.
- **Additional data providers:** Where possible we work to seamlessly integrate relevant data from additional sources. E.g. smart meter energy data providers.
- **Inclusion of non-transaction-linked emissions:** We are working to provide our business users with the functionality to easily enter data which we can use to calculate non-transaction-linked emissions. With this additional functionality, we will be able to increase the sectors we can offer our products to, and increase the scope of the footprints we measure and help reduce.
- **Specificity:** Where individual businesses have made their own assessments, Cogo wants to provide the opportunity for them to submit their own emissions factors. Business users clearly want to access information on supplier and product-level carbon footprints, and Cogo will be seeking to collect this type of data in future. Carbon footprint assessment rules and guidance will need to be developed to support this. In this way Cogo can support both businesses that are reducing the carbon footprint of their products and services and those that choose to support them.



Appendix 1

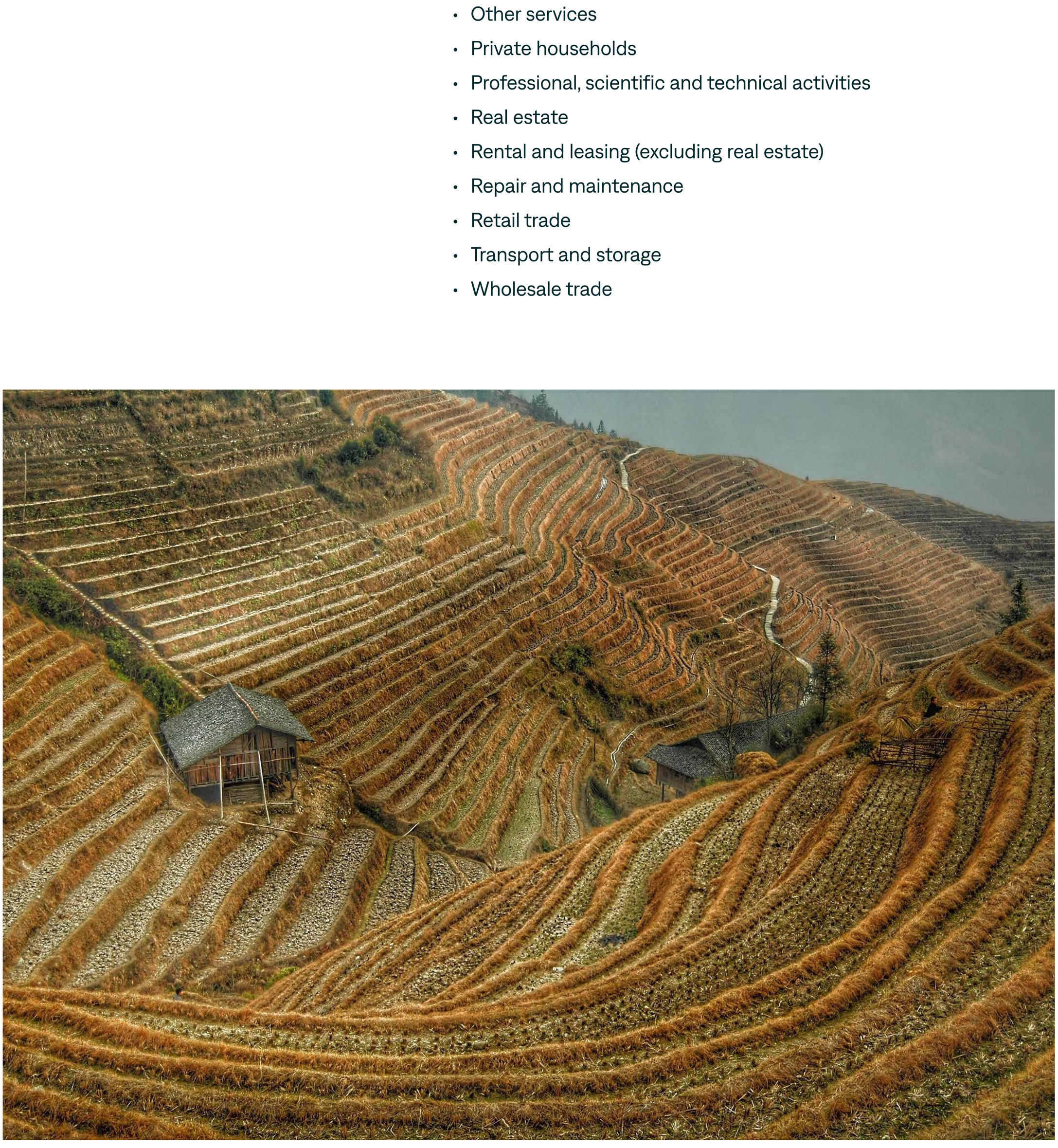
Glossary of Terms

- **Business carbon model** – the data model developed by Cogo and used by our products for SMEs.
- **Business user** – the end business user of one of our products.
- **Carbon footprint** – the carbon emissions associated with an activity, process, or organisation.
- **Client** – typically our clients are banks that offer our footprinting products and services to their personal and business customers.
- **Core carbon database** – Cogo's internal database for managing emissions factors and categorisation taxonomies.
- **EEIO** – Environmentally extended input–output model.
- **Emissions factor or EF** – a figure used to convert a $/£/€ spend to a $kgCO_2e$ footprint.
- **Fugitive emissions** – emissions as a result of escaping gas. Typically refrigerant from heating and cooling equipment.
- **GHGP** – The greenhouse gas protocol sets the most widely adopted standards for measuring and managing emissions.
- **LCA** – Life cycle analysis.
- **Personal carbon model** – the data model used by our products for individuals.
- **Radiative forcing effect** – the radiation energy flux differential created – in this case due to the combustion of aviation fuel at altitude.
- **Scope 1, 2 & 3** – Emissions are typically categorised into three scopes across a business's operations and supply chain.
- **SME** – Small or medium enterprise.
- **SWC** – Small World Consulting – a subject matter expert supplier of advice to Cogo in developing and maintaining our business carbon model.
- **Taxonomy** – a categorisation system to group transactions typically.
- **Transaction** – a record of a spend amount for a business to a supplier.

Appendix 2

SME Sectors Currently Supported by the Business Carbon Model

- Administrative and support services
- Arts, entertainment and recreation
- Central and local government
- Construction
- Education and training
- Finance and insurance
- Health and social assistance
- Hospitality
- Information, media and communications
- Manufacturing
- Other services
- Private households
- Professional, scientific and technical activities
- Real estate
- Rental and leasing (excluding real estate)
- Repair and maintenance
- Retail trade
- Transport and storage
- Wholesale trade



cogo

If you want to support SMEs on their journey to net zero, get in touch.

Contact Cogo