Global Compact Network Germany

DISCUSSION PAPER

SCOPE 3.1

Practical guidelines for data collection and calculation of greenhouse gas emissions from purchased goods and services

1. INTRODUCTION

As part of their climate management strategy, a growing number of companies are also accounting for greenhouse gas (GHG) emissions originating outside their organisational boundaries within the value chain. Before actively reducing these emissions, companies collect data, calculate emissions and identify emission hotspots. The Greenhouse Gas (GHG) Protocol identifies 15 categories of so-called scope 3 emissions from upstream and downstream activities. In their corporate greenhouse gas balance sheet, most companies consider the first category (Scope 3.1), which covers GHG emissions from the production of purchased goods and services, as particularly relevant. This includes the manufacture or extraction of raw material, production, and transportation up to the tier 1 (direct) supplier. Emissions from transportation of goods between the tier 1 supplier and the reporting company, however, fall within emission category Scope 3.4, "upstream transportation and distribution."

Collecting and calculating data for GHG emissions that occur within a company's upstream chain is considered by practitioners to be particularly challenging. The Peer Learning Group Climate of the Global Compact Network Germany (DGCN) discussed the challenges of data collection and calculation of scope 3.1 emissions, applying the methodological basis of the GHG Protocol, and developed some initial solutions. This paper makes the key results of these discussions available to a broader audience, and opens them up for discussion.

The **Peer Learning Group Climate** was launched in 2015 by the Global Compact Network Germany (DGCN). It currently consists of 12 companies from chemical/pharmaceutical, energy, retail, service, transportation and technology industries. In webinars and face-to-face meetings, experts from large German companies exchange experiences relating to corporate climate management and collaborate on developing concrete solutions. sustainable AG supports the working group by providing expert knowledge. Past topics have included 2°C climate strategies, GHG reduction target-setting and science-based targets, data management, and scope 3 materiality and data collection.

PRACTICAL GUIDELINES:

1) **Selecting calculation methods:**
When collecting data from scope 3.1 emissions, companies should clearly define their goals. This allows them to decide whether a rough approximation of the emissions is adequate, or whether they will need to collect primary data from the suppliers.

2) **Working together with suppliers:**
Clear structures, precise instructions, and initiatives to standardise and bundle requests for emission data across companies can minimise the hurdles for suppliers.

3) **Selecting emission factors:**
Organisations such as the IPCC, GHG Protocol and DGCN offer helpful publications with references to sources for emission factors.

4) **Dealing with a broad range of purchases:**
With purchases involving a high level of diversity, the first step in estimating scope 3.1. emissions is to focus data collection on the purchased goods and services associated with the highest purchase expenditures and then grouping them into product categories.

5) **Dealing with data gaps:**
To fill existing data gaps, companies may use extrapolation or proxy data for similar products or processes to estimate scope 3.1 GHG emissions.

6) **Working with spend-based methods:**
Tools such as EIO-LCA and the Quantis Scope 3 Evaluator allow for fast and easy estimations of GHG emissions associated with purchase expenditure for particular product groups on the basis of environmentally extended input-output (EEIO) models.

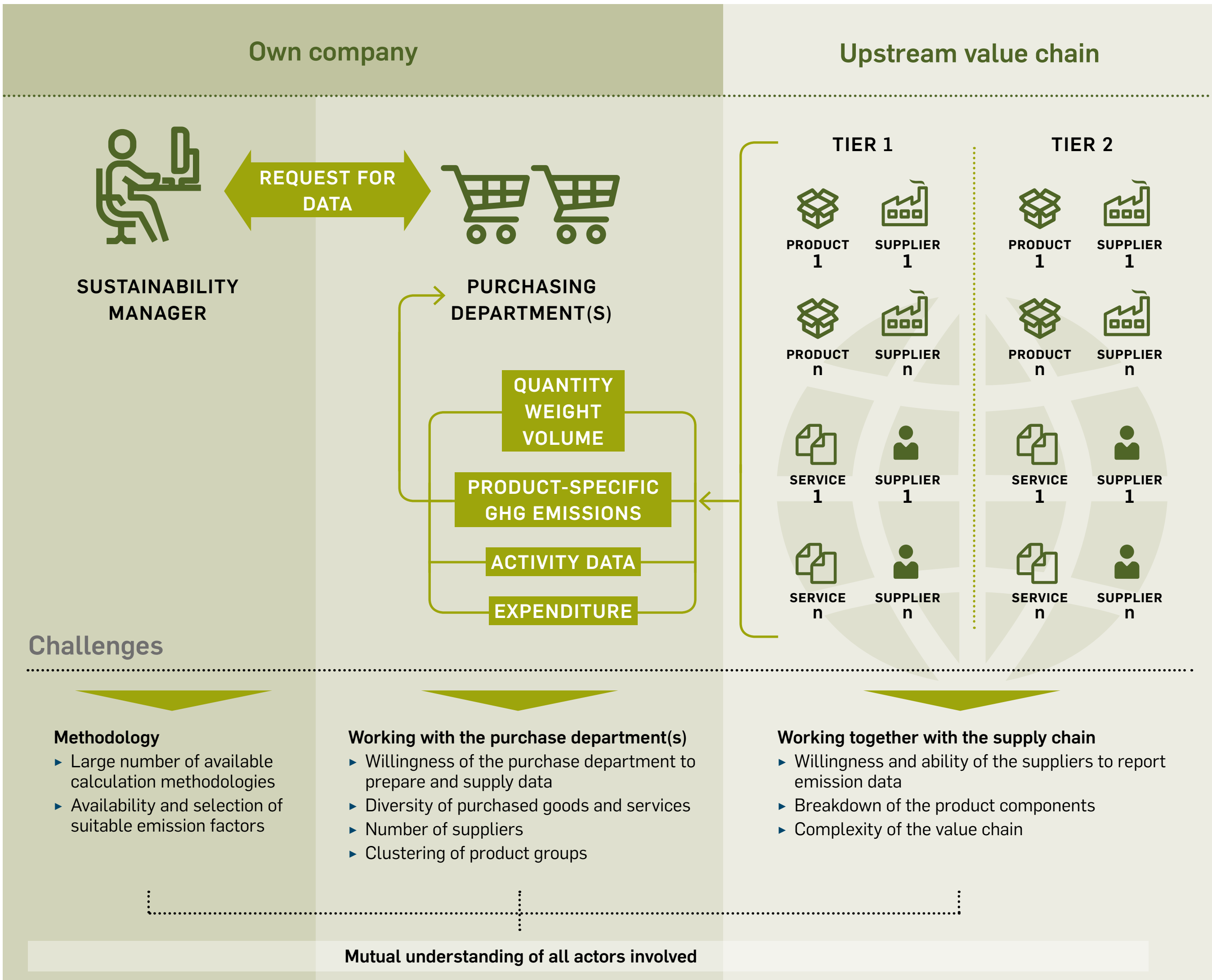

Figure 1: Challenges of data collection and calculation of scope 3.1 emissions from a sustainability manager's perspective

2. KEY CHALLENGES

Companies tend to face a series of challenges in the calculation of scope 3.1 emissions, and in acquiring the required data from both their own purchasing departments and the supply chain (see Figure 1). From a sustainability manager's perspective these typically revolve around choosing a suitable methodology for calculating emissions, interacting with the purchasing department and processing the data available, as well as cooperating with the supply chain. Selected challenges will be discussed in more detail below.

2.1. Selecting a calculation method and cooperating with the purchasing department

Any analysis of scope 3.1 emissions must begin with an understanding of the calculation methods available. Depending on the calculation method, the following information will need to be ascertained (also compare Figure 1):

- Product-specific GHG emissions, incurred at the direct supplier (tier 1) level as well as in the upstream chain (tier 2 to tier n)
- Information about the quantities purchased (number of units, weight, volume, etc.)
- Expenditure on purchased products and services
- Supplier-level activity data (proportional energy and fuel consumption, waste, etc.).

The range of calculation methods available and their associated data requirements is often perceived as being confusing. Moreover, for data collection and calculation, all calculation methods require the purchasing department to be both willing to and capable of preparing and providing the required data. This is often not the case without a clear commitment from the management.

2.2. Limited availability of primary data

Primary data refers to specific activities within a company's value chain and offers greater accuracy than secondary data, which only reflects industry average values or proxy values. However, specific primary data for product-related GHG emissions for tier 1 suppliers is often not available, or of an insufficient data quality.

2.3. Selecting appropriate emission factors

Identifying appropriate secondary data sources and emission factors also tends to be associated with considerable effort and challenges. Using emission factors, GHG emissions can be calculated on the basis of the purchase expenditure (e.g., kg CO_2e per euro purchase value for a particular product group), unit (e.g., kg CO_2e per kg weight of a particular good) or activity data (e.g., kg CO_2e per kWh). The type of emission factors required in each case depends closely on the company's choice of an appropriate calculation method.

2.4. Dealing with a very broad range of purchased goods and services

In practice, the greater the range of goods and services purchased, the greater will be the challenges of collecting data and calculating emissions. If there are thousands of suppliers and purchased products, then the purchases should be clustered into product groups. This in turn raises questions as to the criteria used in deciding how these should be clustered.

2.5. Dealing with data gaps

Many companies can initially include only a proportion of their purchased goods and services in their scope 3.1 emission calculations, making them question the legitimacy of extrapolating the collected emission data for the rest of the purchases, for which there is no collected data. Similarly, for some specific processes, emission factors are not available, resulting in data gaps that need to be filled.

2.6. Complexity in the provision of spend-based methods

Emission calculation methods based on the purchase value can be a good option when first embarking on an analysis of scope 3.1 emissions and in a case of limited data availability. The range of potential methods and their specific advantages and disadvantages, however, results in them being perceived as particularly complex.

3. POSSIBLE SOLUTIONS

3.1. Methodology in the GHG Protocol

The → GHG Protocol[1] provides extensive information and examples about data collection and calculation of GHG emissions from purchased goods and services. It differentiates four calculation methods (Table 1):

SUPPLIER-SPECIFIC METHOD
Product-level cradle-to-gate GHG inventory data is requested from direct goods and services suppliers, covering emissions from manufacturing or extraction of raw materials, processing, and transportation to the tier 1 suppliers; also required is information concerning the context, such as the calculation methods used and the quality of the data.
AVERAGE-DATA METHOD
Emissions are estimated by collecting data on the quantity, mass or other unit of purchased goods and services and multiplying this with cradle-to-gate-emission factors (e.g., tonnes CO_2e per tonnes of product) from industry average data.
SPEND-BASED METHOD
Emissions are estimated by multiplying the economic value of purchased goods and services with relevant cradle-to-gate emission factors (e.g., kg CO_2e per euro purchase value) from environmentally-extended input output models (EEIO).
HYBRID METHOD
Combining the supplier-specific method (where data is available or has been requested) with the average-data or spend-based methods to fill data gaps: **Step 1:** Collecting data on product-specific upstream emissions or at least allocated scope 1 and scope 2 emissions from direct suppliers **Step 2:** Calculating upstream emissions on the basis of the suppliers' activity data (material input, upstream transportation, product-related waste) using the average-data or spend-based method **Step 3:** Calculating the scope 3.1 upstream emissions for purchased goods and services, for which the supplier has not provided any emissions data, using the average-data or spend-based method

Table 1: Scope 3.1 calculation methods according to GHG Protocol „Technical Guidance for Calculating Scope 3 Emissions"

1 http://www.bit.ly/ghgp-guidance

3.2. Practical solutions of the Peer Learning Group Climate

3.2.1. Selecting the calculation method

A crucial factor in selecting a suitable calculation method is first establishing what the company's goals are in collecting data and calculating the scope 3 emissions, in addition to considering the data that is already available. If the aim is to evaluate emission hotspots or obtain a rough approximation of emissions, then good options are the spend-based method or the average-data method. The final choice depends on which information – purchase expenditure or mass-based information for each product group (quantity, weight, or volume) – is more readily available.

If the aim is to actively control and reduce scope 3.1 emissions, then this requires solid data that genuinely reflects the effects of implemented measures. This is only possible by using primary data relating to specific activities within a company's value chain. Thus, companies need to request the relevant cradle-to-gate emission data from their suppliers, or assess the product carbon footprint themselves through working together with the supply chain. However, this is associated with a heavy time and cost burden in terms of data collection. Table 2 presents the advantages and disadvantages of the various calculation methods.

Kirsten Peter, Sustainability Management, Giesecke & Devrient GmbH

Experience from recent years has shown that larger suppliers usually have access to the required data. With smaller companies, however, you have to be a bit more 'hands on' if you want to increase the response rate. It is not enough here to merely pass on emission data questionnaires (however structured and standardised they may be). Ideally, information and data exchange must take place through the purchasing departments, although we are aware that this increases the overheads for internal resources.

METHOD	ADVANTAGES	DISADVANTAGES
Supplier-specific method	▸ potentially most accurate ▸ allows tracking of emission reductions in the supply chain ▸ good basis for GHG management	▸ heavy burden required for data collection in the case of multiple suppliers
Average-data method	▸ manageable burden (with mass-based industry average values) ▸ potentially the most accurate when using own breakdown of upstream processes	▸ limited accuracy, poor basis for GHG management (exception: detailed breakdown of upstream processes). ▸ generally no regional differentiation
Spend-based method	▸ manageable burden (depending on the method/tool) ▸ good basis for identification of GHG emission hotspots and rough estimation of the Scope 3.1 footprint ▸ regional differentiation	▸ limited accuracy (depending on method used) ▸ poor basis for GHG management
Hybrid method	▸ pragmatic middle ground ▸ allows partial tracking of progress ▸ good basis for GHG management (limited to tier 1 with data availability)	▸ heavy burden required for data collection

Table 2: Advantages and disadvantages of different calculation methods

3.2.2. Support and guidance for suppliers in the provision of primary data

Large companies increasingly request emission data, activity data or even information on GHG management strategies from their suppliers. The response rate and the quality of the supplied data are often unsatisfactory, for a range of reasons. For one, it is due to the burden these requests places on the supplier, added to their possible lack of expertise and the company's failure to make the added value clear to them. For another, many companies lack the market power or level of purchasing volume that would allow them to actively motivate their suppliers to provide data.

It is, therefore, essential to remove as many of the hurdles as possible that stand in the way of suppliers responding to customer requests. This can be achieved by providing clear instructions and clarification when needed, as well as by initiatives across companies in standardising and bundling requests. These efforts can be supported by software or online systems that facilitate data entry. The → CDP Supply Chain Programm[2], for example, is a step in this direction. It standardises the request for climate data by offering suppliers the option of responding to multiple client requests through one single questionnaire, thus reducing the reporting burden.

To be able to assess data quality, companies should also request contextual information on data sources, calculation methods and the corresponding sources. If emission data of sufficient quality are not available, then activity data can be requested, on the basis of which the associated emissions can then be calculated. However, suppliers often have concerns about requests for confidential or commercial information. These concerns can be addressed through non-disclosure agreements, to help build trust. Alternatively, the suppliers can ensure the quality of their emission data by having their emission data verified externally, rather than providing detailed and confidential activity data to the customer.

Suppliers can also be supported by training courses on relevant themes or through specialist publications such as those prepared by the → DGCN[3]. In all instances, the business relevance of GHG emission accounting and management should be made apparent to the supplier, emphasising the benefits of providing data to offset the undeniable burden.

3.2.3. Selection of emission factors from secondary sources

The availability of suitable emission factors is a key factor in the ability to accurately calculate scope 3.1 GHG emissions. Popular databases for industry average emission factors are → ecoinvent[4] and → Gemis[5]. Further databases and data sources for life cycle emissions are listed in the → GHG Protocol.[6] The current practice of CDP A-list companies in calculating GHG emissions further ideas for the choice of emission factors (see Table 5).

3.2.4. Prioritising und clustering - dealing with a broad range of purchases

For a company aiming to calculate its scope 3.1 emissions when purchasing thousands of products and services, prioritising is recommended. As a guiding principle, it is helpful to rank the purchased raw materials, products and services according to purchase expenditure. According to the GHG Protocol, a standard approach is to initially concentrate on goods and services that in sum constitute 80% of the total purchase. There is not always a correlation between emission intensity und market value, however. For this reason, the GHG Protocol also recommends including, from the remaining 20%, goods that individually account for at least 1% of the sum of purchase, or for which there is another reason (such as specific risks and opportunities) for inclusion. In instances where there is a very long list of suppliers, this same logic can be applied in deciding how to prioritise them in relation to actively approaching them and requesting data.

When calculating scope 3.1 emissions on the basis of secondary data using the average-data method or the spend-based method, a further option to reduce complexity is to cluster the purchases into product groups. Nestlé, for example, uses this approach as a basis for the calculation of Scope 3.1 emissions with the average-data method (see Table 5). Companies are advised to first select a calculation method and check the level of aggregation of available emission factors, or, if using EEIO tools, to check the coverage and rationale used for clustering sectors and regions. It is then advisable to follow this rationale when clustering the company's own purchases into product groups to facilitate calculation.

Gerd Vollmer, Senior Environmental, Health & Safety Manager, Merck KGaA

If the 80/20 rule cannot be applied to individual expenditures for goods and services or to suppliers, since the volume of purchasing transactions is too large, it can be helpful to cluster goods and services into product groups. Thereby you generate a clearer picture of the purchasing situation, and, subsequently, identify possible approaches for estimating emissions.

2 www.bit.ly/CDP-SupplyChain
3 http://www.bit.ly/DGCNetzwerk
4 http://www.bit.ly/ecoinvent/
5 http://www.bit.ly/IINAS-Gemis
6 http://www.bit.ly/ghgp-databases

3.2.5. Using extrapolation and proxy techniques to fill data gaps

The GHG Protocol identifies extrapolation and proxy techniques as completely legitimate procedures in assessing scope 3.1 GHG emissions. To estimate total sum of scope 3.1 emissions, many companies extrapolate the emissions calculated for a particular part of their purchases to further purchased goods and services with comparable emissions intensity. Examples are LANXESS and Nestlé (see Table 5). If there is limited availability of suitable emission factors for a particular process or product, companies can also resort to industry proxy data, i.e., a generically comparable alternative for which emission data are available. BMW, for example, performs detailed lifecycle analyses based on material inventories of their main car models and assigns all other sold vehicles to the most comparable main models, which then serve as proxies in assessing lifecycle emissions (see Table 5).

3.2.6. Working with the spend-based method

The spend-based method is a good option for obtaining an initial estimate of scope 3.1 emissions when there is limited availability of primary data, or when there is a large range of purchased goods and services.

Estimating upstream emissions using EEIO models and tools

So-called environmentally extended input-output models (EEIO) provide a suitable starting point for an initial estimation of scope 3.1 emissions. Input-output tables show the financial and commodity flows between economic sectors and regions. With EEIO models, purchasing activity in a given sector the region can be used to assess the corresponding "shares" of the direct and indirect environmental impact of the sector associated with this purchasing activity. Well-known EEIO models

	EXIOBASE 2[10]	Eora Multi-Regional Input-Output Database[11]	Global Trade Analysis Project (GTAP)[12]	World Input Output Database (WIOD)[13]
Coverage	▸ 34 countries ▸ 5 'rest-of-the-world' regions ▸ 200 products ▸ 163 industries ▸ 15 forms of land use ▸ 48 raw materials	▸ 187 countries ▸ 26 sectors ▸ 35 environmental indicators	▸ 140 regions ▸ 120 countries ▸ 57 sectors	▸ 43 countries & a rest-of-the-world model ▸ 56 sectors ▸ environmental data for 27 EU countries und 13 other larger countries
Timeframe	2007	1990-2012	2004, 2007, 2011	1995-2009
Cost	Free of charge after registration	Cost of a licence available upon request; free for academic users	> 5,000 € for GTAP data base 9 and GTAP-E extension with emission data	Accessible free of charge
Evaluation	▸ Accessible free of charge ▸ Most comprehensive multi-regional input-output model (according to own information) ▸ Difficult to access for newcomers to EEIO ▸ Can be accessed only via a professional database solution	▸ Difficult to access for beginners with EEIO models ▸ Can be accessed only via MS Access (MATlab Workspace variables data)	▸ Difficult to access for beginners with EEIO models ▸ Requires specialist software GTAP Agg ▸ Basis for the PwC Escher tool	▸ Difficult to access for beginners with EEIO models ▸ Data basis for the Quantis Scope 3 Evaluator

Table 3: Comparison of multi-regional input-output models with environmental data

are → Exiobase,[7] → Eora,[8] → GTAP[9] and → WIOD[10] (see Table 3). These differ with respect to coverage of country and region, timeframes covered, and (licence) costs. The information provided can generally only be accessed through special software and professional databases such as MS Access, and in addition can be difficult to interpret.

Help can be found in the form of tools based on the multi-regional EEIO models, which make them easily accessible for sustainability management in practice. Table 4 provides a comparison of various EEIO tools. The GHG Protocol's → Scope 3 Evaluator[11] and Quantis, in addition to the → EIO-LCA-Tool[12] provided by Carnegie Mellon University, are two free web-based tools, which despite considerable constraints vis-à-vis the accuracy of the calculation, are suitable for obtaining a first rough approximation of scope 3.1 emissions.

However, with ever-increasing professionalisation of corporate climate management, companies are advised to pursue more accurate calculations of their results. Here, Systain's tool → estell[13] and PricewaterhouseCoopers's tool ESCHER both offer solutions based on established EEIO models, which are subject to a charge. In comparison with the tools available free of charge, both allow for more detailed analyses and more up-to-date data.

7 http://www.bit.ly/exiobase
8 http://www.bit.ly/Eora-MRIO
9 http://www.bit.ly/GTAP-databases
10 http://www.bit.ly/WIODatabase
11 http://www.bit.ly/Scope3Evaluator
12 http://www.bit.ly/EIOLCA-Tool
13 http://www.bit.ly/systain-estell-en

	GHG Protocol Scope 3 Evaluator (Quantis)[11]	EIO-LCA (Carnegie Mellon University)[12]	estell (Systain)[13]	ESCHER (PwC)
Coverage	▸ 36 sectors ▸ no regional differentiation	USA (2002, 428 sectors); Germany (1995, 58 sectors); Canada (2002, 105 sectors); Spain (2000, 73 sectors); China (2002, 122 sectors)	▸ 48 countries/regions ▸ 82 economic sectors (with the option of expanding to 450) ▸ 100 sustainability indicators	▸ 140 regions ▸ 120 countries ▸ 57 sectors
Timeframe	1995-2009	1995-2002	—	—
Cost	Free of charge	Free of charge	€1500 for calculating scope 3.1 emissions on the basis of an Excel template	Price available on request
Databases	Based on the WIOD database and the Open IO database	USA: Bureau of Economic Analysis (BEA); EPA	Exiobase, WIOD, GTAP, BEA, FAO, World Bank, ILO, German Environment Agency	Based on the Global Trade & Analysis Project (GTAP)
Evaluation	▸ Suitable for a first rough approximation ▸ Accessible and user-friendly ▸ Adjusts automatically to inflation ▸ Limited number base transparency ▸ Rough sector grouping ▸ No regional differentiation	▸ Suitable for a first rough approximation ▸ Accessible and user-friendly ▸ Better sector-differentiation than the Scope 3 Evaluator ▸ Out-of-date data (needs to be adjusted to inflation) ▸ Focus on the USA, poor country-coverage	▸ Fee-based tool for detailed analysis ▸ Good country- and sector-differentiation ▸ Translates EEIO models into the simple logic of a tool	▸ Fee-based tool for detailed analysis ▸ Good country- and sector-differentiation ▸ Translates EEIO models into the simple logic of a tool

Table 4: Comparison of EEIO tools

Estimating upstream emissions with spend-based emission factors

Another pragmatic option for obtaining a rough approximation of upstream emissions is to use the spend-based emission factors provided by the Centre for Sustainability Accounting (CenSA) for a publication by → DEFRA[14] (see Annex E), the UK Department for Environment, Food and Rural Affairs. These provide conversion factors for UK pound sterling to kg CO_2 for 93 groups of products, materials and services in accordance with the Standard Industrial Classification (SIC). However, the emission factors were only updated until 2009. Companies can use these emission factors to obtain a rough approximation of the upstream emissions of purchased goods and services, through prioritising the purchases, and grouping them into product groups. When using the conversion factors, the following points must be taken into account:

- The factors provided include British VAT (20%), which would have to be deducted from each emission factor
- The purchase data must be discounted down to 2009 based on the inflation rate or price growth
- Conversion of EUR values to UK pound sterling must be done on the basis of the 2009 exchange rate

14 http://www.bit.ly/DEFRA-Guidelines

4. CORPORATE EXAMPLES

On their A list, the CDP names the companies that received the highest ratings for transparency and performance in dealing with climate change. The coverage of the A-list companies from the DACH region (Germany, Austria and Switzerland) and how they address scope 3.1 emissions gives good insight into current corporate practice concerning data collection and calculation. Table 5 shows their chosen approaches und calculation methods. From this overview, it is clear that most of the companies use the average-data method to assess their scope 3.1 emissions. In some instances, they also use a detailed lifecycle assessment (e.g. BMW and Deutsche Telekom). This approach is particularly suited to companies with a manageable product portfolio and a high level of public visibility, as is the case, e.g., in the automotive industry. Deutsche Telekom, Givaudan, Nestlé and LANXESS complement their calculations based on the average-data or supplier-specific method with a spend-based calculation for a part of their purchased goods and services. The supplier-specific method is hardly applied in practice so far (INDUS Holding, Givaudan).

Company	Scope 3.1 emissions (in metric tons CO_2e)	Calculation method	Approach in calculating emissions
Basler Kantonalbank	109	Average-data	▸ **Coverage:** paper consumption and water consumption ▸ **Activity data:** quantity of paper and water consumption ▸ **Emission factors:** software SoFi ▸ **Calculation:** average-data based
Berner Kantonalbank	248	Average-data	▸ **Coverage:** purchased paper and treatment of drinking water before delivery ▸ **Activity data:** quantity of paper and water consumption ▸ **Emission factors:** Eco-Invent 3.1 (July 2014) / VfU indicators 2015 ▸ **Calculation:** average-data based
BMW	15,391,154	Average-data	▸ **Coverage:** detailed lifecycle assessment (LCA; ISO 14040/ISO 14044) for the material inventories of main car models (1, 3, 5, 7, X3, X5); main models as proxies for all other models ▸ **Activity data:** car model specific material inventories (containing weights and material compositions of all parts) and sales volumes of all vehicles/model types produced in 2016 ▸ **Emission factors:** GaBi4; global warming potentials (GWP) from the Institute of Environmental Sciences (CML) of the University of Leiden (Netherlands) ▸ **Data quality:** high; limitations: primary supplier data on their Scope 1 and 2 emissions not available yet, full-scale LCA limited to main models; data as well as the emission figure externally checked by in limited assurance ▸ **Calculation:** calculation based on LCA and sales figures for main models; calculation for all other vehicles sold based on assignment to most comparable main model
Coca Cola Hellenic Bottling Company	1,712,378	Average-data	▸ **Coverage:** ingredients and packing (including secondary packaging) purchased for all operations ▸ **Activity data:** quantity of materials purchased out of Entropy software and SAP ▸ **Emission factors:** Ecoinvent Database, IFEU LCA; supplier database for Tetrapak material emission factors ▸ **Calculation:** average-data based
Deutsche Telekom	2,763,200	Average-data & spend-based	▸ **Coverage:** procurement of end devices; other purchased goods and services ▸ **Activity data:** amount of procured end devices; purchasing volume per purchase category for other purchased goods and services ▸ **Emission factors:** internal and public PCF studies for procured end devices; input output database sector-specific emission factors for purchase categories ▸ **Data quality:** By using an input output database sector-specific emission factors were calculated based on the respective added value and GHG emissions. ▸ **Calculation:** average-data based and spend-based
Givaudan	1,245,230	Spend-based (materials) & supplier-specific (packaging)	▸ **Activity data:** financial values and country of origin for materials (raw materials and indirect materials & services) purchased during 2016; number of used units for each type of packaging for finished goods out of the Enterprise Resource Planning ▸ **Emission factors:** emission factors from EEIO models (ESCHER Tool); emissions factors for packaging from suppliers ▸ **Calculation:** combination of supplier-specific and spend-based method
INDUS Holding	11	Average-data & supplier-specific	▸ **Coverage:** paper products and services provided by lawyers, consultants and accountants ▸ **Activity data:** volumes of purchased goods and services ▸ **Emission factors:** DEFRA 2016 and supplier-specific emission factors derived from sustainability reporting of service providers ▸ **Calculation:** combination of supplier-specific and spend-based method

Company	Scope 3.1 emissions (in metric tons CO_2e)	Calculation method	Approach in calculating emissions
LANXESS	10,343,000	Average-data & spend-based	▸ **Coverage:** 58.7 % of total spend; extrapolation to all purchased goods and services ▸ **Activity data:** qualitative and monetary amounts of purchased goods and services based on the LANXESS business data management system ▸ **Emission factors:** mass-based and spend-based emission factors from Ecoinvent V3.3 database ▸ **Calculation:** combination of average-data- and spend-based method
Nestlé	68,739,495	Average-data (materials, goods, packaging) & spend-based (services)	▸ **Coverage:** raw materials, packaging materials, finished/semi-finished goods and services; in the case of packaging materials application of an extrapolation factor of 27% to account for the total purchases ▸ **Activity data:** amounts of purchased raw materials, packaging materials, finished/semi-finished goods; financial amount spent on types of services ▸ **Emission factors:** representative dataset and its GHG emission factor were assigned to each input sub-category; emission factors from World Food LCA Database (v.3.1), ecoinvent v.2.2 and v.3.2, Agribalyse, Agrifootprint, IPCC 2007 GWP 100 and Nestlé internal LCA databases ▸ **Data quality:** quality of the primary data used is high; overall intermediate quality. ▸ **Calculation:** average-data method based on clustering of purchased goods and services into sub-categories (158 for raw materials; 52 for packaging materials; 17 for finished goods; 5 for services); spend-based method for services
Swisscom	320,900	Average-data	▸ **Coverage:** representative hotspots of customer products considered and analysed; total amount of emissions derived from hot spots ▸ **Activity data:** purchasing data warehouse of Swisscom ▸ **Emission factors:** LCA data from Ecoinvent version 3.1 (2013) / Mobitool; GWP from IPCC 5th assessment report 2013
Symrise	2,398,013	not specified	▸ **Coverage:** data gaps are extrapolated; calculations for some processes based on proxies ▸ **Emission factors:** publicly available data bases and literature
thyssenkrupp	34,000,000	Hybrid method	▸ **Activity data:** components and materials used in products ▸ **Emission factors:** supplier and industry data ▸ **Calculation:** hybrid method
UBS	11,413	Average-data	▸ **Coverage:** paper consumption ▸ **Activity data:** quantity of purchased paper ▸ **Emission factors:** based on a study on emissions from paper lifecycle ▸ **Data quality:** high data qualit; external verification according to ISO 14064 ▸ **Calculation:** average-data

Table 5: Application of methods to calculate scope 3.1 emissions as reported by companies in DACH countries on the CDP A List (2017; own evaluation)

5. CONCLUSION AND RECOMMENDATIONS

Demands for corporate transparency and responsibility with respect to the value chain are steadily increasing. At the same time, for most companies, GHG emissions from the purchase of goods and services account for the largest proportion of their greenhouse gas balance sheet. When engaging with scope 3.1 emissions, clearly defined goals form the basis for selecting a suitable calculation method. They also help resolve the conflict between the desire for accuracy and the need to maintain the burden presented by data collection at a manageable level.

Even among the companies of the DACH region (Germany/Austria/Switzerland) mentioned on the CDP A list, hardly any are in a position to assess their scope 3.1 emissions on the basis of primary data. Estimates are predominantly made on the basis of industry average data obtained from databases. This usually allows for a figure to be estimated for the scope 3 GHG emissions balance sheet, however, without providing a reliable basis for an active GHG emission management.

Improving data quality and expanding coverage to all purchases are mostly iterative processes. Companies should, therefore, not be deterred by the complexity of data collection and calculation, but should instead take a first step through a pragmatic initial estimation of scope 3.1 emissions. This could bring about gradual improvement of the primary data basis for upstream emissions, working together with the supply chain, and ultimately an effective reduction in GHG emissions.

RECOMMENDED READING

World Resources Institute und WBCSD (2011):
Corporate Value Chain (Scope 3) Accounting and Reporting Standard.
Available online at:
http://www.ghgprotocol.org/standards/scope-3-standard

World Resources Institute und WBCSD (2013):
Greenhouse Gas Protocol – Technical Guidance for Calculating Scope 3 Emissions.
Available online at:
http://www.ghgprotocol.org/scope-3-technical-calculation-guidance

IMPRINT

Published by:

Global Compact
Network Germany

Original German text drafted and edited by
Johannes Erhard | sustainable AG
Markus Götz | sustainable AG
Jan-Marten Krebs | sustainable AG
Sophie von Gagern | Global Compact Network Germany

Corporate examples
The case studies used in this publication are based on publicly available information. An independent examination of the presented results has not been carried out.

Design and typesetting
www.dermarkstein.de

Paper
Printed on 100% recycled, FSC-certified paper

December 2017

On behalf of

Federal Ministry
for Economic Cooperation
and Development

JOIN THE DISCUSSION!

Through a series of discussion papers, the German Global Compact Network invites you to take part in a professional exchange of ideas covering the topics of climate management.

If you have any suggestions or additions to make to this paper, or would like to be an active participant in further discussions of the topics covered by the Peer Learning Group Climate, then please get in touch with

→ sophie.gagern@giz.de