



Corporate Carbon Footprint 2020

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Executive Summary

In this project, a corporate carbon footprint analysis of gabocom's emissions in 2020 was carried out. The footprint analysis covers all of gabocom's internal activities for Scope 1, 2 & 3 according to the GHG Protocol Corporate Standard and GHG Protocol Value Chain Standard.

For 2020, **gabocom's gross footprint amounts to 44,555.0 tonnes of carbon dioxide equivalent (tCO₂e)** (location-based approach). Due to the use of **renewable electricity, 1,389.10 tCO₂e can be deducted** (market-based approach). Therefore, **gabocom's net emissions amount to 43,165.9 tCO₂e in 2020**.

The results of this analysis will be used to provide gabocom with transparency on its emissions, to enable the setup and implementation of specific carbon reduction measures, as well as the foundation to track its progress in reducing carbon emissions/the effectiveness of their reduction measures. It is planned to start **periodic reporting**.

About gabocom

gabocom is the leading provider of holistic microduct and cable management systems for the telecommunications industry. The name gabocom already describes the historical development of our enterprise with one word: Out of the plastics processing plant **G**ebrüder **A**nger GmbH & Co. – founded in 1956 in **Bo**gen, Germany, as manufacturer of drainage pipes – in 1970 emerged an independent division. This specialised in the demands of Tele **com** and started with laying ducts.

Today, gabocom is located in the German town Niederwinkling and is known as the leading partner of telecommunication enterprises and network operators in Germany as well as all over Europe. With the speed•pipe® system we established completely new possibilities for blowing in fibre optic cables and set standards which are valid all over the world. Several hundred thousands of kilometres have already been installed successfully since 2002 – and they become more every day. For more information, visit www.gabocom.de.

Results Overview

Overall result (2020)	
Scope 1	373.1 tCO ₂ e
Scope 2	1,994.4 tCO ₂ e
Scope 3	40,798.4 tCO ₂ e
Total*	43,165.9 tCO₂e

What does the result mean?

The annual corporate carbon footprint is equivalent to...



... the annual carbon footprint of **8,791** people (world average).
[MUNTEAN2018]



... travelling **257,706,746** km with a plane in economy class.
[DEFRA2020]



... producing **117,225,321** kWh in the coal power plant.
[DEFRA2020]



... drinking **856,465,873** cups of coffee.
[REINHARD2020]

Boundaries and scope

This report contains all information and results for gabocom's corporate carbon footprint analysis in 2020, using all available data from that year.

The main location of gabocom is in Niederwinkling (Bavaria, Germany), where all office and production activities take place. Furthermore, gabocom has a limited group of employees (3) working from home in France. The location in Niederwinkling is included in the scope of this analysis, as well as the home office emissions from the employees in France.

The operational boundaries were set to include the consumption of energy, waste, water in office buildings and operations, employee commuting and business trips, equipment (capital goods), consumables, external service providers, cloud based servers, online interaction, and postage. In addition, the production (cradle-to-gate), production waste and logistics (supplier-to-gate / inbound and gate-to-customer / outbound) emissions were also in the scope of the analysis.

gabocom's main product (speed•pipe®) has a long lifespan (50 years), and because of the high uncertainty of the available End-of-Life (EoL) scenarios, the EoL emissions (category 3.12) in this study are omitted. Following the cut-off approach, the impact of the omitted emissions in 50 years can be assumed to be marginal when recycling rates for plastics improve (in line with the envisioned transition to a circular economy). The categories 3.8 upstream leased assets, 3.9 downstream transportation and distribution, 3.10 processing of sold products, 3.13 downstream leased assets, 3.14 franchises, and 3.15 investments were found to be not relevant for gabocom. Furthermore, no other (up- and downstream) activities were identified. Therefore, all relevant Scope 1&2 activities and Scope 3 categories have been considered.

The cradle-to-gate emissions from production materials are based on the background processes available in Ecolnvent 3.6. The transportation distances of these materials from suppliers to the gates of gabocom were calculated based on the location of the suppliers and the address of gabocom in Niederwinkling. The mode of transport was assumed to be by truck for continental Europe. For the locations outside continental Europe (e.g. United Kingdom, United States, etc.) transportation was assumed to involve sea transportation in combination with road transportation. In the following carbon footprint analysis, it can be considered to reach out and contact suppliers and request primary data regarding the production and transportation of the materials to further improve the data quality of these activities.

Biological CO₂ sequestration is not relevant for gabocom's operation. Biological emissions have been included in a few categories (e.g. 7% share of biogenic diesel in vehicle fuel consumption), but a differentiation is not useful in this report, as these factors are not influenced by gabocom, but are a legislative standard.

Base year and recalculation policy

2020 was selected as the base year. A recalculation may be considered if there is significant methodological progress or an improved availability of emission factors.

Quality of Activity Data

The overall data quality is considered good and comprehensive, with common and statistically insignificant data quality issues. Appropriate and current emission factors are used in the calculation of the footprint. Activity data was collected by gabocom's team, whose responsibility was to ensure data completeness.

The most important activities (production and logistics) have been collected in this project and can be considered accurate. It has to be noted that emissions were not collected from suppliers. Furthermore, due to the high uncertainty of spend-based calculations, the accuracy for purchased services and capital expenses can be improved greatly with supplier engagement.

Scope 1 & 2 Footprint*

		CO ₂ e	CO ₂	CH ₄	N ₂ O	
Scope 1	Fleet	204.4	203.4	<0.1	<0.1	tonnes
	Heating	168.7	168.2	<0.1	<0.1	tonnes
Scope 2 (Location Based)	Electricity	3,383.5	3,366.1	0.1	0.1	tonnes
Scope 2 (Market Based)	Electricity	1,994.4	<i>Not available</i>			tonnes
Scope 1 + 2 (Location Based)	Total	3,756.5	3,737.8	0.1	0.1	tonnes
Scope 1 + 2 (Market Based)	Total**	2,367.4	<i>Not available</i>			tonnes

*Other greenhouse gases according to the Kyoto Protocol (HFCs, PFCs, SF6) are converted into CO₂ equivalents and included in the result, but cannot be specified individually because the emissions are not disclosed separately in the used sources.

** Deviations are due to rounding

Scope 1 Emissions

The company uses diesel fuel for its company cars and liquified petroleum gas for the forklifts at the production site. The direct emissions are accounted for in Scope 1. The fuel consumption of the cars and forklifts has been measured, and emission factors have been used from [GLEC2019] and [IPCC2006].

The location in Niederwinkling is heated with gas, causing direct emissions, which are accounted for in Scope 1. The heating consumption has been measured, and emission factors have been used from [UBA2019] for gas.

Fugitive emissions from air-conditioning are not relevant in gabocom's footprint, because no cooling liquid has been refilled during the reporting period.

Scope 2 Emissions

Electricity consumption has been taken from electricity bills for the location in Niederwinkling. For the Location-Based approach, emission factors have been used from [IEA2020]. Supplier- and tariff-specific emission factors have been used for the Market-Based approach. For the timeframe January-September 229 gCO₂e/kWh and for the timeframe October-December 281 gCO₂e/kWh.

Scope 3 Footprint

Category	Activity	tCO ₂ e
01 Purchased Goods & Services	Consumables	0.2
01 Purchased Goods & Services	External Servers	9.4
01 Purchased Goods & Services	External Service Providers	198.9
01 Purchased Goods & Services	Production materials	36,595.6
01 Purchased Goods & Services	Water	<0.1
01 Purchased Goods & Services	Total*	36,804.1
02 Capital Goods	Capex	827.5
02 Capital Goods	Total*	827.5
03 Fuel- & Energy related activities	Electricity T&D losses	145.3
03 Fuel- & Energy related activities	Fuel / Gas Production	78.4
03 Fuel- & Energy related activities	Total*	223.8
04 Upstream Transport & Distribution	Inbound Logistics	1,155.8
04 Upstream Transport & Distribution	Outbound Logistics	1,129.9
04 Upstream Transport & Distribution	Logistics to warehouses	7.1
04 Upstream Transport & Distribution	Postage	0.7
04 Upstream Transport & Distribution	Total*	2,293.5
05 Waste generated in Operations	Production	294.1
05 Waste generated in Operations	Office	0.6
05 Waste generated in Operations	Water Treatment	<0.1
05 Waste generated in Operations	Total*	294.7

Category	Activity	tCO₂e
06 Business Travel	Business Travel Flight	17.9
06 Business Travel	Business Travel Hotels	0.3
06 Business Travel	Business Travel Car	7.3
06 Business Travel	Business Travel Rail	<0.1
06 Business Travel	Total*	25.5
07 Employee Commuting	Commute	322.4
07 Employee Commuting	Tele-Working	6.8
07 Employee Commuting	Total*	329.2
11 Use of sold Products	Online Interaction	0.1
11 Use of sold Products	Total*	0.1
Scope 3	Total*	40,798.4

* Deviations are due to rounding

Category 1 - Purchased Goods and Services

Consumables

Consumables are all items needed for operations that are not depreciated. These are commodities, food / beverages for events, print materials, etc.

Data has been collected for the purchases in 2020, which have then been assessed with spend-based emission factors from [EXIOBASE2018], which contain EEIO emission factors for most countries until 2011. As the emissions from consumables are relatively small compared to the main emission drivers, it is considered sufficient to take this approach.

External Servers

The energy consumption and infrastructure of cloud based servers is a relevant factor in overall worldwide emissions. A spend-based model to calculate cloud emissions based on different publicly available information like data centre efficiency and electricity emission factors was used. This model has a moderate degree of uncertainty because most data centres do not disclose detailed information on their emission performance. The calculation is based on total server expenses and [PLANETLY2020-2].

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External Service Providers

Several external service providers have been contracted. The expenses for these service providers have been assessed with spend-based emission factors from [EXIOBASE2018]. These factors are based on macroeconomic models and include complete activities of service providers (including their business travel, electricity consumption at customers' offices, office emissions, etc.). This method is recommended by the European Environment Agency.

The accuracy of the calculation can be increased enormously with more primary data, if in the future subcontractors have to provide information on their own carbon footprint and that of their products. A stricter sustainability policy on the selection of subcontractors can also lead to a reduction in the resulting emissions.

Production materials

All incoming goods have been collected with an export of the ERP-system. Hereby, all incoming goods including packaging (wooden drums, cardboard, plastic packaging) have been taken into account. A model for assessing the cradle-to-gate emissions for the materials used in the production process was used. To assess the environmental impact of the production materials, quantities per material type were connected with the emission factor database from [ECOINVENT2019].

Water

Actual water consumption has been measured for the location in Niederwinkling. For the calculation of the effects of the water supply and treatment [DEFRA2019] has been used.

Category 2 - Capital Goods

Capital expenses

The capital expenses have been assessed with spend-based emission factors from [EXIOBASE2018]. For more information on the spend based methodology, see Category 1 - External Service Providers.

Category 3 - Fuel & Energy related Activities

Electricity transmission & losses and fuels

Upstream emissions for transmission & distribution losses of electricity have been calculated based on the most up-to-date emission factors from the International Energy Agency [IEA 2020]. The emissions factors from [IEA2020] do not account for upstream emissions resulting from the resources used for the generation of electricity. These emissions will be added in an

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updated model that can be used in following reports. Fuel production has been calculated with [GLEC2019], and for heating gas production [UBA2019] has been used.

Category 4 - Upstream Transport & Distribution

Inbound Transportation

Inbound transportation over land has been calculated based on the following assumption: All transport in continental Europe was by road transport. The available information was used to calculate the distances between the supplier and Niederwinkling. In addition to transport emissions, the transshipment emissions in warehouse operations have been considered. Street distances have been calculated with *Here Maps*. Appropriate emission factors from [GLEC2019] have been used in consideration of mode and location.

All shipments from outside continental Europe were assumed to contain transport over water. The nearest port to the Supplier and Niederwinkling were used as an assumption. In addition to transport emissions, the transshipment emissions in the port have been considered. Sea distances have been calculated with *Searates*. Appropriate emission factors from [GLEC2019] have been used in consideration of mode and location / sea trade-lane.

Outbound Transportation

Outbound transportation includes the transport from Niederwinkling to end-customers by truck. The location from gabocom in Niederwinkling and the destination of the end-customers were used to calculate the distances. All distances have been calculated with *Here Maps*, and emission factors have been used from [GLEC2019].

Logistics to warehouses

Logistics to warehouses includes the transport from Niederwinkling to the external warehouses (Spedition Josef Wiesinger & Ullmann Logistik) by truck. The location from gabocom in Niederwinkling and the destination of the warehouses were used to calculate the distances. All distances have been calculated with *Here Maps*, and emission factors have been used from [GLEC2019].

Postage

The number of letters and parcels was collected with the Climate Impact Manager. The emission factors from [IPC2019] are used to assess the impact.

Category 5 - Waste generated in Operations

Production

Information about the actual amount of waste was available for the production location in Niederwinkling. The emissions were then calculated with emission factors from [DEFRA2020].

Office

Information about the actual amount of office waste was missing. Therefore, the amount of waste per employee was estimated based on [PLANETLY2020-3]. The emissions were then calculated with emission factors from [DEFRA2020] and scaled with the total number of employees.

Waste Water

Waste water is based on the actual or estimated water consumption (see purchased goods and services). Emissions factors are taken from [DEFRA2020].

Category 6 - Business Travel

Flights, Hotels, Rental Cars & Trains

In the calculation of gabocom's corporate carbon footprint, it is important to account for business travel, because especially the mode of transport can be a main driver of carbon emissions.

All flights, train rides, rental cars as well as the hotel nights have been collected by gabocom.

To calculate the emissions, gabocom provided us with the number of total train rides and flights for 2020, divided into the booking class and into the 3 categories short-, medium- and long-distance. For flights, the category "short" includes flights under 1 hour of flight time, "medium" 1-3h flight time and "long" includes flights with a travel time of more than 3 hours. The categories for trains are divided by the distance travelled: "Medium" accounts for train rides between 100 and 300 km. Everything below or above then counts to the corresponding category "short" or "long".

For Rental Cars, the distance driven and fuel consumption have been estimated based on costs and [KORDS2019]. Emissions factors have been used from [DEFRA2019], [GLEC2019] and [UBA2018]. For hotels, the number of nights per country was extracted from travel management systems. Emission factors per hotel night were then used from [CORNELL2019].

Category 7 - Employee Commuting and Teleworking

Data for commuting and teleworking has been collected with an employee survey, which was answered by 145 employees (142 in Germany and 3 in France, respectively 58% and 100% response rate). In the survey, the employees are asked for the number of workdays, home-office hours, and kilometers travelled each day per mode of transportation. With this information, the total kilometers commuted per year and mode of transportation, and total hours spent in home-office are calculated. Commute emissions have then been calculated with [UBA2020].

For home-office, the [PLANETLY2020-11] model is used to assess the impact of one hour of remote working. In the model, the energy consumption is based on the average electricity consumption needed for the use of a laptop, lighting and cooling- and gas consumption for the heating of the house.

Category 8 - Upstream Leased Assets

gabocom does not own any upstream leased assets.

Category 9 - Downstream Transportation and Distribution

gabocom's products are permanently installed. Thus, no downstream transports take place.

Category 10 - Processing of Sold Products

gabocom's products do not require any further processing.

Category 11 - Use of sold Products

Online interaction

An important and unavoidable point for carbon accounting nowadays is online interactions by clients and other Internet users. By spending time on gabocom's website, viewers use electrical energy with their end devices, which in turn generate emissions. Energy consumption emissions have been estimated based on an average energy consumption of cell phone or laptop chargers, and the electricity mix of the respective customers' countries were taken from [IEA2019]. The exact consumption data, including the residence country, the number of sessions and the average session length, has been provided by the analytics tool of gabocom's website.

Category 12 - End-of-life treatment of sold products

gabocom's main product (speed•pipe®) has a long lifespan (50 years), and because of the high uncertainty of the available End-of-Life (EoL) scenarios, the EoL emissions in this study are omitted. Following the cut-off approach, the impact of the omitted emissions in 50 years can be

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assumed to be marginal when recycling rates for plastics improve (in line with the envisioned transition to a circular economy).

Category 13 - Downstream Leased Assets

gabocom does not own any downstream leased assets.

Category 14 - Franchises

gabocom does not own any franchises.

Category 15 - Investments

gabocom does not have any investments.

Conclusion & Next Steps

With this first Corporate Carbon Footprint Report, gabocom gains transparency on its emissions. Scope 1 accounts for 373.1 tCO₂e (0.9%), while scope 2 emissions account for 1,994.4 tCO₂e (4.6%), and the scope 3 emissions have an impact of 40,798.4 tCO₂e (94.5%). It is planned to build a reduction strategy based on the results in this report to reduce all avoidable emissions and to implement a reduction roadmap. Key reduction actions can be the additional implementation of green electricity, the use of electric vehicles and supplier engagement for purchased services.

References

Reference	Author	Year	Title
CORNELL2019	Cornell	2019	Greenview - Cornell Hotel Sustainability Benchmarking Index
DEFRA2019	Defra	2019	Greenhouse gas reporting: conversion factors 2019 - full set
DEFRA2020	Defra	2020	Greenhouse gas reporting: conversion factors 2020 - full set
DIN2013	Deutsche Institut für Normung e.V.	2013	DIN EN 16258 - Methode zur Berechnung und Deklaration des Energieverbrauchs und der Treibhausgasemissionen bei Transportdienstleistungen (Güter- und Personenverkehr)
ECOINVENT2019	EcoInvent	2019	EcoInvent Version 3.6
EC2002	European Communities	2002	European Communities
EXIOBASE2018	Exiobase 3.4 - Stadler et al.	2018	Exiobase 3.4
GLEC2019	Global Logistics Emissions Council	2019	Framework for Logistics Emissions Accounting and Reporting, version 2.0
IEA2020	International Energy Agency	2020	Emission Factors
IPCC2006	Intergovernmental Panel on Climate Change – Metz et. al.	2006	Safeguarding the Ozone Layer and the Global Climate System
IPC2019	International Post Corporation	2019	Delivery Efficiency
KORDS2019	Kords, Martin	2019	Durchschnittliche Preise für Mietwagen pro Tag in ausgewählten Ländern weltweit im Jahr 2018
KORDS2020	Kords, Martin	2020	Durchschnittlicher Kraftstoffverbrauch der in Deutschland zugelassenen Pkw in den Jahren von 2007 bis 2018
LOCK2020	Lock, S.	2020	Monthly average daily rate of United States hotels from 2011 to 2020
MELVIN2015	Melvin, Joshua	2015	What's the Carbon Footprint of an Email?
MUNTEAN2018	Muntean et al.	2018	Fossil CO2 emissions of all world countries - 2018 Report, EUR 29433 EN, Publications Office of the European Union

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PLANETLY2020-2	Planetly	2020	Modelled spend-based emission factors for different cloud providers
PLANETLY2020-3	Planetly	2020	Modelled waste generation by average office employees
PLANETLY2020-11	Planetly	2020	Modelled emission factor for home-office per hour
PLANTELY2020-14	Planetly	2020	Modelled online-interaction based on IEA2019
REINHARD2020	Reinhard et al.	2020	Ökologische Fußabdrücke von Lebensmitteln und Gerichten in Deutschland
SCANDIC2019	Scandic Hotels Group	2019	Annual & Sustainability Report 2019
SCARBOROUGH2014	Scarborough et al.	2014	Dietary greenhouse gas emissions of eat-eaters, fish-eaters, vegetarians and vegans in the UK
TRIVAGO2020	TRIVAGO	2020	TRIVAGO Hotel Price Index
UBA2019	Umweltbundesamt	2019	Emissionsbilanz erneuerbarer Energieträger
UBA2020	Umweltbundesamt	2020	Vergleich der durchschnittlichen Emissionen einzelner Verkehrsträger im Personenverkehr in Deutschland - Bezugsjahr 2018

About Planetly

Planetly is a technology start-up on a mission to help build a carbon neutral economy. Our Software helps you to introduce and automate carbon management, from data collection to reduction strategies and offsetting measures.

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gabo Systemtechnik GmbH
A member of HellermannTyton

Am Schaidweg 7
94559 Niederwinkling

Filipe.Santos@gabosys.de
www.gabocom.de

Contractor

Planetly GmbH

Gormannstraße 14
10119 Berlin

hello@planetly.com
www.planetly.com

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