

A full-page background image of a dense, green forest. In the foreground, there are large, vibrant green trees. In the middle ground, a thick layer of white mist or smoke rises from the forest floor, partially obscuring the trees behind it. The background shows more forested hills under a hazy sky.

# Corporate Carbon Footprint 2019

**Exasol**.planetly



## Exasol - Corporate Carbon Footprint - Documentation

### Executive Summary

In this project, Planetly carried out a corporate carbon footprint analysis of Exasol's emissions in 2019. The footprint analysis covers all internal activities of Template for Scope 1, 2 & 3 according to the GHG Protocol Corporate Standard and Corporate Value Chain Standard.

For 2019 **Exasol's gross footprint amounts to 1,019.9 tons of carbon dioxide equivalents** (location-based approach). Exasol did not have access to market-based emission factors and did not use services that were already covered by external offsetting programs. Therefore no carbon emissions can be deducted and **Exasol's net emissions amount to 1,019.9 tons of carbon dioxide equivalents in 2019.**

The results of this analysis will be used to provide Exasol with transparency on its emissions and to enable the setup, implementation and tracking of specific reduction measures. It is planned to start **periodic reporting**. Exasol also offsets all non-avoidable emissions with high-quality carbon offsetting projects for 2019.

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. The data completeness was considered good by the team of Exasol who provided the activity data to Planetly, and Planetly couldn't anticipate missing processes in the defined scope.

### About Exasol

Exasol is passionate about helping companies run their businesses smarter and drive profits by analyzing data and information at unprecedented speeds. Exasol developed the world's fastest database for analytics and data warehousing, and offers first-class know-how and expertise in data insights and analytics.

The economic predecessor of the Company was Exasol GmbH, a German limited liability company with its registered office in Nuremberg, Germany, that had been established on 1 September 2000 and was registered in the commercial register (Handelsregister) of the local court (Amtsgericht) of Nuremberg under registration number HRB 20262.

## Results Overview

Overall result (2019)	
Scope 1	72.1 tCO <sub>2</sub> e
Scope 2	59.0 tCO <sub>2</sub> e
Scope 3	888.9 tCO <sub>2</sub> e
<b>Total</b>	<b>1019.9 tCO<sub>2</sub>e</b>

What does the result mean?

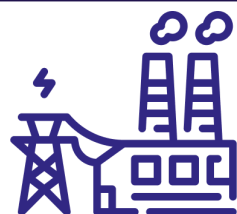
**The annual corporate carbon footprint is equivalent to...**



... the annual carbon footprint of 208 people (world average).  
[MUNTEAN2018]



... travelling 6,557,877 km with a plane in economy class.  
[DEFRA2019]



... producing 2,959,627 kWh in the coal power plant.  
[DEFRA2019]



... drinking 20,237,037 cups of Kenyan coffee.  
[REINHARD2020]

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### Boundaries and scope

This report contains all information and results for the corporate carbon footprint analysis for Exasol in 2019, using all available data from that year. The organizational boundaries include the main office in Nuremberg and the offices in the United States (Atlanta), Great-Britain (London), France (Courbevoie) and Germany (Berlin and Hannover).

All relevant Scope 1&2 activities and Scope 3 categories have been considered. The operational boundaries include the consumption of energy, waste, water in office buildings, employee commuting and business trips, equipment (capital goods), and consumables have been included in the calculation. In addition, the external service providers, cloud based servers, online interaction, events and postage are included in the scope.

Biological CO<sub>2</sub> sequestration is not relevant for the operation of Exasol. In a few categories biological emissions have been included (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 Exasol, but are a legislative standard.

### Base year and recalculation policy

2019 has been 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

Overall data quality was considered sufficient to calculate meaningful results for most activities. For the main office activity data is used to assess the energy consumption, for all other offices the energy consumptions were based on activity estimates.

The most important activities (e.g. commuting, business travel, external services and capital goods) have been collected in this project and can be considered accurate.

It has to be noted that emissions haven't been collected from suppliers. Due to the high uncertainty of spend-based calculations, the accuracy for purchased services can be improved greatly with supplier engagement.



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### Scope 1 & 2 Footprint

		CO2e	CO2	CH4	N2O	
Scope 1	Fleet	71.99	-	-	-	tonnes
	Cooling	0.11	-	-	-	tonnes
Scope 2	Heating	21.44	20.67	0.02	0.00	tonnes
Scope 2 (Location Based)	Office Electricity	37.53	37.34	0.00	0.00	tonnes
Scope 2 (Market Based)	Office Electricity	37.53	37.34	0.00	0.00	tonnes
<b>Scope 1 + 2 (Location Based)</b>	<b>Total</b>	<b>131.06</b>	<b>58.01</b>	<b>0.02</b>	<b>0.00</b>	<b>tonnes</b>
<b>Scope 1 + 2 (Market Based)</b>	<b>Total</b>	<b>131.06</b>	<b>58.01</b>	<b>0.02</b>	<b>0.00</b>	<b>tonnes</b>

### Scope 1 Emissions

The company uses petrol and diesel fuel for its vehicles. The fuel consumption has been measured and emission factors have been used from [GLEC2019].

The main office uses geothermal heating and all other offices use district heating, therefore the emissions are accounted for in Scope 2.

Fugitive emissions from air-conditioning are assumed to be relevant for the office in Atlanta. It is assumed that the offices in Europe do not have access to air-conditioning. The quantity of the cooling liquids is estimated using the model [PLANETLY2020-8]. The impact is assessed using the emission factor from [DEFRA2019].

### Scope 2 Emissions

Activity data on geothermal heating consumption is available for the main office in Nuremberg. The emission factor from [UBA2019] was used to assess the impact. For all other locations, the use of district heating was assumed. The consumption has been estimated based on the respective space area [EC2002]. Emission factors for district heating have been used from [UBA2019].

Electricity consumption has been taken from electricity bills for the main office. The missing electricity consumption has been estimated with [PLANETLY2020-4]. For the Location-Based approach emission factors have been used from [IEA2019].

For the Market-Based approach supplier- and tariff-specific emission factors are required. Since the data was missing for all locations the emission factors from [IEA2019] have been used as well.

## Scope 3 Footprint

Category	Activity	tCO2e
01 Purchased Goods & Services	Consumables	8.29
01 Purchased Goods & Services	Cooling liquid	0.02
01 Purchased Goods & Services	Events-catering	3.20
01 Purchased Goods & Services	Events-location	8.42
01 Purchased Goods & Services	External Servers	70.07
01 Purchased Goods & Services	External Services	299.77
01 Purchased Goods & Services	Water	1.27
<b>01 Purchased Goods &amp; Services</b>	<b>Total</b>	<b>301.02</b>
02 Capital Goods	Equipment	49.44
<b>02 Capital Goods</b>	<b>Total</b>	<b>49.44</b>
03 Fuel- & Energy related activities	Electricity Generation / T&D losses	1.86
03 Fuel- & Energy related activities	Fuel production	17.20
03 Fuel- & Energy related activities	Geothermal distribution	68.24
03 Fuel- & Energy related activities	Other distribution	3.73
<b>03 Fuel- &amp; Energy related activities</b>	<b>Total</b>	<b>87.29</b>
04 Upstream Transport & Distribution	Postage	0.12
<b>04 Upstream Transport &amp; Distribution</b>	<b>Total</b>	<b>0.12</b>
05 Waste generated in Operations	Waste	0.50
05 Waste generated in Operations	Water Treatment	2.61



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<b>05 Waste generated in Operations</b>	<b>Total</b>	<b>3.11</b>
06 Business Travel	Business Travel Flight	193.86
06 Business Travel	Business Travel Hotels	30.82
06 Business Travel	Business Travel Street	1.56
06 Business Travel	Business Travel Rail	15.01
<b>06 Business Travel</b>	<b>Total</b>	<b>241.25</b>
07 Employee Commuting	Commute	78.74
07 Employee Commuting	Tele-working	107.45
<b>07 Employee Commuting</b>	<b>Total</b>	<b>186.19</b>
08 Upstream leased Assets	Not Relevant	
<b>08 Upstream leased Assets</b>	<b>Total</b>	
09 Downstream Transport & Distribution	Not Relevant	
<b>09 Downstream Transport &amp; Distribution</b>	<b>Total</b>	
10 Processing of sold Products	Not Relevant	
<b>10 Processing of sold Products</b>	<b>Total</b>	
11 Use of sold Products	Online Interaction	0.11
<b>11 Use of sold Products</b>	<b>Total</b>	<b>0.11</b>
12 End-of-life treatment of sold products	Not Relevant	
<b>12 End-of-life treatment of sold products</b>	<b>Total</b>	
13 Downstream leased assets	Not Relevant	
<b>13 Downstream leased assets</b>	<b>Total</b>	
14 Franchises	Not Relevant	
<b>14 Franchises</b>	<b>Total</b>	
15 Investments	Not Relevant	

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15 Investments	Total	
16 Other	Event-travel	20.35
<b>16 Other</b>	<b>Total</b>	<b>20.35</b>
<b>Scope 3</b>	<b>Total</b>	<b>888.89</b>

## 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 2019, 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.

### Cooling-liquid

The consumption of cooling-liquid is estimated based on the respective area of the office in Atlanta [PLANETLY2020-4]. The emission factor for cooling-liquid is used from [DEFRA2019].

### Event location

The electricity and heating consumption is estimated based on the respective area and duration of the events [PLANETLY2020-4]. The emission factor for electricity is used from [IEA2019] and [UBA2019] for heating.

### Event catering

The amount of meals have been provided by Exasol and the emission factors are from [SCARBOROUGH2014].

### 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 has been developed by Planetly. 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 for different types of services, e.g. insurance, auditing, telecommunication, IT, etc. The expenses for these service providers have been assessed with [EXIOBASE2018].

### Water

Actual water consumption has been measured for the main office. For all other locations, water consumption was estimated based on previous calculations done by Planetly [PLANETLY2020-4]. For the calculation of the effects of the water supply and treatment [DEFRA2019] has been used.

## Category 2 - Capital Goods

### Equipment

All capital goods purchased in 2019 for all locations including the warehouses have been collected and assessed with [EXIOBASE2018].

## Category 3 - Fuel & Energy related Activities

### Electricity transmission & losses and fuel production

Upstream emissions for electricity have been calculated based on the most up-to-date emission factors from [IEA 2019]. Fuel production for car travel has been calculated with [GLEC2019], for the production and distribution of geothermal heating [UBA2019] has been used.

## Category 4 - Upstream Transport & Distribution

### Postage

The number of letters and parcels was not available and therefore the spendings are used to assess the impact of postage. Important assumptions are the average price of 2 euros for a letter and 5 euros for a parcel. The emission factors from [IPC2019] are used to assess the impact. Category 5 - Waste generated in Operations

### Offices

Information about the actual amount of waste was missing for all the locations. Therefore the amount of waste per employee was estimated based on [PLANETLY2020-3]. The emissions were then calculated with emission factors from [DEFRA2019] and scaled with the total number of employees.

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### Waste Water

Waste Water is based on the actual or estimated water consumption (see purchased goods and services). Emissions factors are taken from [DEFRA2019].

## Category 6 - Business Travel

### Flights, Hotels, Rental Cars, Taxis & Trains

To account for Exasol's business travels is important in the calculation of a corporate carbon footprint 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 Exasol. Distances have been calculated with *Here Maps*. For flights the Great Circle Distance + 95 km has been used in accordance with [DIN2013].

All flights, train rides, rental cars as well as the hotel nights have been collected by Exasol. To calculate the emissions, Exasol provided us with the number of the total amount of train rides and flights for 2019, divided into the booking class and into the 3 categories short-, medium- and long-distance. For flights, the category "short" includes flights under 3 hours of flight time, "medium" 3-6h flight time and "long" includes flights with a travelled time of more than 6 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 has been estimated based on costs and [KORDS2019]. Taxis have been calculated with a spend-based approach. The amount of money spent in each country was translated into distance travelled with data from [RANDELHOFF2011] and [WADE2017]. Emissions factors have been used from [DEFRA2019], [GLEC2019] and [UBA2018]. For hotels, the number of nights per country was extracted from travel management systems. Emissions factors per hotel night were then used from [CORNELL2019].

## Category 7 - Employee Commuting and Tele-working

### Commuting & Tele-working

Data for Commuting and Tele-working has been collected with an employee survey, which was answered by 60 employees (33%). In the survey, the employees are asked for the number of workdays, home-office hours, and kilometres travelled each day per mode. With this information, the total kilometres commuted per year and mode, 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



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consumption needed for the use of a laptop, lighting and cooling- and gas consumption for the heating of the house. Since there was no distribution of home-office locations available conservative factors are used in the calculation.

### **Category 11 - Use of sold Products**

#### **Online interaction**

An important and unavoidable point for carbon accounting nowadays presents online interactions by clients and other Internet users. By spending time on Exasol's website and apps, viewers use electrical energy with their end devices, which in turn generate emissions. Energy consumption emissions then have been estimated based on an average energy consumption of cell phone or laptop chargers and the electricity mix of the respective customers' countries 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 Exasol's website and app.

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### Offsetting Projects

Exasol is offsetting its emissions for the year 2019 with three high-quality offsetting projects located in Borneo, Peru and Cambodia. All projects have been certified by the Gold Standard or the VCS Standard and contribute to different Sustainable Development Goals.

Project	Compensation Volume (tCO <sub>2</sub> e)
Borneo Rainforest Protection Project, Indonesia	375
Amazon Rainforest Protection Project, Peru	375
Rainforest Protection Project, Cambodia	375
<b>Total</b>	<b>1125</b>

### REDD+ Rainforest Project, Borneo

Deforestation amounts to the cause with the second-largest impact on climate change, after fossil fuel burning. Since 1973, over 400,000 hectares (4,000 square kilometres) of rainforest have been lost on the island of Borneo. Oil palm plantations have been the cause of almost half of the forest loss on Borneo since 2000, which have devastated rainforests across all of Indonesia. REDD+ is an acronym for Reducing Emissions from Deforestation and Forest Degradation. United Nations REDD+ projects pursue long-term strategies for addressing the underlying causes of deforestation and degradation.

This project has successfully defended 64,500 hectares of carbon and biodiversity rich lowland peat forest from conversion to oil palm plantations, which surround the project area. This project prevents 3.5 million tonnes of CO<sub>2</sub>e from being released into the atmosphere each year. Additionally, it continues to effectively support local communities living in and along the boundaries of the project, who have traditionally held no tenure and who have used the forest in an unsustainable way, and protect biodiversity and wildlife habitat. The project protects over 120 threatened and endangered species including the endangered Borneo Orangutan, The project is accredited under Voluntary Carbon (VCS) and Climate, Community & Biodiversity (CCB) Standards. Moreover, this is now the world's first forest conservation project to independently verify its contributions to sustainability under the newly created Sustainable Development Verified Impact Standard (SD VISta).

### Amazon Rainforest Protection Project, Peru

The Amazonian rainforest is a symbol of this and has found itself at most risk. In 2019 it was measured to be losing prime forest at a rate of three football fields a minute. United Nations \*REDD+ projects pursue long-term strategies for addressing the underlying causes of deforestation and degradation. This REDD+ project conserves 182,000 hectares of one of the



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most threatened ecosystems in the tropical, Peruvian Amazon, through forest management and community programmes. Protecting this area is of critical importance to the survival of Peru's endemic fauna and flora.

Even with the protection of the Peruvian government as one of the nation's Natural Protected Areas, the project area faces intense deforestation, pressure from illegal logging and unsustainable farming practices. Since the mid 1990's a boom in coffee prices has led to surging coffee production and until the implementation of the project in 2008, led to 4000 hectares (7000 football fields) of land being cleared each year. Voluntary conservation agreements with families living in the region have halted deforestation, in exchange for ecological agriculture training, organisational capacity building, Fair Trade certification, and market linkages that have transformed their livelihoods.

The project works to provide land security for the families that inhabit the forest and is establishing new approaches to sustainable farming, primarily in the coffee supply chain. Through conservation agreements, communities receive direct technical assistance aimed at improving ecological health and crop yields. The project is helping farmers to realise the economic value of forest protection and modelling a sustainable development pathway for the Government of Peru and civil society stakeholders, who view this project as a leading example of how REDD+ can support the country's broader conservation.

The project is accredited under Voluntary Carbon (VCS) and Climate, Community & Biodiversity (CCB) Standards. This ensures that the project produces genuine carbon emission reductions and supports local communities whilst protecting the fantastic biodiversity of the project region.

## Rainforest Protection Project, Cambodia

Deforestation amounts to the second-leading cause of climate change, after fossil fuel burning. Tropical forests are disappearing at an alarming rate, and as stated in the Paris Agreement, humanity's future relies on our forests. REDD+ is an acronym for Reducing Emissions from Deforestation and Forest Degradation. United Nations REDD+ projects pursue long-term strategies for addressing the underlying causes of deforestation and degradation.

Tropical deforestation is one of the major drivers of carbon emissions. Situated in South West Cambodia, this REDD+ project protects one of the last unfragmented rainforests remaining in Southeast Asia and is a critical part of the Indo-Burma Biodiversity Hotspot. Using global best practices for forest protection and community development, positively impacting wildlife conservation, ecosystem servicing, and community livelihoods, this project prevents more than 3.8 million tons of carbon emissions annually and protects 497,000 hectares of tropical rainforest. There are currently 131 rangers operating across the project area to prevent wildlife poaching and illegal logging. The project works with more than 15 villages in 2 main areas. Community-based projects enable ecotourism jobs to be created for communities living in and around the forest which actively encourages women to get involved and diversify their roles. Further project activities include training on sustainable agricultural methods and Women's Community Saving Credit Groups, empowering women to learn about micro financing.

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Since 2006, the project has achieved zero poaching of Asian elephants and supported recovery of ungulates and carnivore populations. The community projects directly benefit 29,000 villagers from 15 different communities, and with an award-winning model of community based ecotourism has been regarded as the best community driven bottom-up conservation in tropical Asia. Moreover, around 3.8 million tonnes CO<sub>2</sub>e are prevented from being released into the atmosphere each year. Accredited by the Voluntary Carbon (VCS) and certified with a Triple Gold Label from the Climate, Community & Biodiversity (CCB) Standards. This ensures that the project produces genuine carbon emission reductions and supports local communities whilst protecting the fantastic biodiversity of the project region.

## Conclusion & Next Steps

With this first Corporate Carbon Footprint Report Exasol gains transparency on its emissions. All as of yet unavoided emissions have been offset with high quality and certified offsetting projects. 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 implementation of green electricity, the use of electric vehicles in Exasol's fleet and supplier engagement for purchased services.

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### 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
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)
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
IEA2019	International Energy Agency	2019	Emission Factors
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
MUNTEAN2018	Muntean et al.	2018	Fossil CO2 emissions of all world countries - 2018 Report, EUR 29433 EN, Publications Office of the European Union
PLANETLY2020-2	Planetly	2020	Modelled spend-based emission factors for different cloud providers
PLANETLY2020-3	Planetly	2020	Modelled waste generation by average office employees
PLANETLY2020-4	Planetly	2020	Average consumption of electricity, water and heating, based on previous calculations
PLANETLY2020-8	Planetly	2020	Modelled aircondition liquid consumption and estimated production emissions
PLANETLY2020-11	Planetly	2020	Modelled emission factor for home-office per hour
PLANTELY2020-14	Planetly	2020	Modelled online-interaction based on IEA2019



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REINHARD2020	Reinhard et al.	2020	Ökologische Fußabdrücke von Lebensmitteln und Gerichten in Deutschland
SCARBOROUGH2014	Scarborough et al.	2014	Dietary greenhouse gas emissions of meat-eaters, fish-eaters, vegetarians and vegans in the UK
UBA2019	Umweltbundesamt	2019	Emissionsbilanz erneuerbarer Energieträger
UBA2020	Umweltbundesamt	2020	Vergleich der durchschnittlichen Emissionen einzelner Verkehrsträger im Personenverkehr in Deutschland - Bezugsjahr 2018

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## 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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