Emissions calculation methodologies

Givaudan

Human by nature

Emissions calculation methodologies

Scope 3 model enhancement

The modelling of scope 3 GHG emissions is an iterative process based on science that is still evolving. We started our efforts in 2017 with our first full scope 3 inventory based on financial activity data (input/output model) using the so-called ESHER model, which has since gone through several evolutionary steps. We have begun modelling our raw material with a process-based approach that applies the best available proxy data from verified generic databases. We added granularity and accuracy through the inclusion of additional packaging categories and new classes of business travel.

The raw material model remains the focal point of our efforts when it comes to model improvement because this category represents the majority of our scope 3 emissions. The portfolio of ingredients that we purchase is extremely diverse, and we need to understand the GHG emissions of our direct suppliers, but also of all the upstream emissions in the value chain. This data is not readily available, and so we rely on secondary databases (such as EcoInvent or the WFLDB) in order to calculate our footprint. These databases model theoretical emissions of each ingredient by computing the raw materials, the energy consumption, and means of transportation needed in their production (see image Raw material carbon footprint). These models contain an inherent uncertainty that extends into our corporate footprint, but they are nonetheless the best available indication of our ingredients emissions and so remain the standard used across the industry. In 2023, we made important improvements in our raw material model with increased confidence on monitoring and action tracking; introducing a confidence level, integrating supplier data, and splitting FLAG and non-FLAG emissions.

All modifications allow for a considerable decrease in the uncertainty of the model, but they also imply a potential increase or decrease in the results of our scope 3 emissions. This is a necessary part of the journey and we will recalculate our baseline accordingly, as required by GHG protocol, to ensure progress is diligently reported.

We actively advocate for more transparency and alignment in this area by participating in several relevant initiatives. We also participated in an IOFI project to define standardised emission factors for the industry and improve other scope 3 categories.

Purchased goods and services

Raw materials

For naturals and synthetics raw materials, figures are estimated according to process-based modelling using individual modelling per substance and considering all physical inputs (energy, fertilisers, etc.). The model allows us to identify the carbon footprint of each substance using its weight (kg) and the most accurate emission factors. Emission factors are based on data from global generic Life Cycle Inventory databases (ecoinvent, World Food LCA Database) and internal primary data. Specific emission factors are used for substances representing the highest volume purchased. Proxies have been extrapolated for others. The model has been applied on purchased data from 2015, 2020, 2021, 2022 and 2023, which allows us to establish the current performance and the 2015 baseline.

Indirect material and services

The figures are calculated using a new model implemented in 2023 for both the current year (2023) and the calculation of figures for past years. The spending figures are sourced from our ERP system.

The model then incorporates emission factors per sector from the EPA's US Environmentally-Extended Input-Output (USEEIO) Model. Additionally, various impacts stemming from inflation (U.S. Bureau of Labor Statistics), technological improvements (ICOS Integrated Carbon Observation System), the efficiency gap between the US and CHF (Our World in Data and OECD), and currency exchange rates are factored in to achieve a more precise analysis over time.

Packaging

For packaging materials, the figure was calculated by extracting the number of units for each type of packaging used at Givaudan from the Company's ERP database. This number was multiplied by the carbon footprint figure for the type of packaging (as received from suppliers or in publicly available databases). The totals for each type of packaging were consolidated to give a total Givaudan figure.

Capital goods

The figures are calculated using a new model implemented in 2023 for both the current year (2023) and the calculation of figures for past years. The spending figures are sourced from our ERP system.

The model then incorporates emission factors per sector from the EPA's US Environmentally-Extended Input-Output (USEEIO) Model.

Additionally, various impacts stemming from inflation (U.S. Bureau of Labor Statistics), technological improvements (ICOS Integrated Carbon Observation System), the efficiency gap between the US and CHF (Our World in Data and OECD), and currency exchange rates are factored in to achieve a more precise analysis over time.

Fuel- and energy-related activities (not included in scope 1 or 2)

The calculation considered the primary energy carriers for the production of heat, electricity, and steam, as well as the technology standards in the countries of the respective sites. The data basis for the lifecycle inventory is the ecoinvent database 3.6 (method: IPCC 2013, 100 years), complemented with the new Scope 3.3 database from the IEA. The scope 3 emissions were estimated directly through the analysis of the respective ecoinvent and IEA datasets, involving the subtraction of scope 1+2 emissions from overall emissions. Additionally, scope 3 emissions related to the delivery of electricity (including infrastructure, grid losses, and direct emissions) have also been accounted for.

Upstream and downstream transportation and distribution

We monitor the environmental impact of transportation (air, ship and road) by calculating the associated GHG emissions. We do this through a model that tracks all transport movements through our SAP system (by mode of transport), from delivery to receipt locations of raw materials. To calculate the GHG footprint, we use emission factors per mode of transport according to the Cefic (European Chemical Industry Council) guideline. We have integrated recent acquisitions for which we did not have data in SAP. To address this gap, we utilised a production tonnage proxy to extrapolate their impacts.

Waste generated in operations

Emission factors on a per tonne waste basis (as extracted from scope 3 guidance documents from WBCSD + WRI) have been multiplied with the total weight of waste generated at our manufacturing locations. The scope of the calculation covers waste to landfill and to Incineration. We have integrated recent acquisitions for which we did not have data in SAP. To address this gap, we utilised a production tonnage proxy to extrapolate their impacts.

Business travel

Data on distance travelled are collected through our global and local travel agencies. To calculate the GHG footprint, emission factors per haul and class are used according to the 2023 Department for Environment, Food and Rural Affairs (Defra, UK) definition. We use the Emission factor including the RF effect. We integrated recent acquisitions for which we lacked data in our travel agencies' databases, using the names of employees as a proxy to extrapolate the emissions within this category.

Employee commuting

The reported 2023 figure is based on our 2021 employee commuting survey/ questionnaire. We calculated 2023 emissions by updating the number of employees between 2021 and 2023. The next survey is planned for 2024.

Restatements of information

Over the year, we may face changes in data or calculation methods that impact data that has already been published. We therefore restate the data, both to provide a meaningful comparison between years for environmental performance and to monitor key performances indicators.

Baseline recalculation

In order to enable a meaningful comparison of environmental performance over time, Givaudan has established a standard process, based on the GHG Protocol, to recalculate its baseline indicators in case of structural changes such as acquisitions, changes in calculation methodology or inventory boundaries.

This allows us to compare performance on a like-for-like basis over time. The process includes definitions of recalculation triggers and the process of reporting the information. Thanks to this guidance, Givaudan is able to track its environmental performance in a transparent manner and with confidence that the data are accurate despite changes related to business growth.

Baseline years

In this report we use two baseline years to show our performance indicators, 2015 and 2020. The GHG emission science-based targets were set against a 2015 baseline and water and waste targets have a baseline of 2020.

In this report, the baseline recalculation is done for all environmental metrics.

To consider the impact of 2015 and all subsequent acquisitions, we recalculated the 2015 baseline. In the 2020 baseline the past values for water and waste of the acquired sites have been integrated.

Reasons for change

The majority of the changes for operations-related data are due to the impact of integrating information from recently acquired companies – Albert Vieille, Golden Frog and Ungerer – into our baseline and past-year data. We also restate data when we identify corrections that must be reflected in the past performance or when we use a new calculation or measurement methodology for certain indicators. This is done with the aim of keeping the data consistent and comparable over time.

In 2023, all Scope 3 categories were restated to ensure alignment between the sites included in Scope 1+2 disclosure and the ones included in Scope 3 disclosure. This ensures a like-for-like analysis and proper comparison between 2015, 2022 and 2023. Only categories ‘Indirect material and services’ and ‘Capital goods’ are not covering the same scope as they don't yet account for latest acquisitions; Vika, Naturex, Drom, Ungerer and DDW.