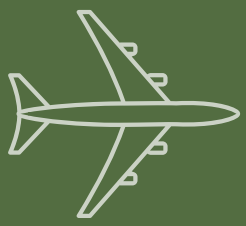
IDOS



GHG Inventory Report

Period under review:
2022–2023

German Institute
of Development
and Sustainability

Imprint

German Institute of Development and Sustainability (IDOS)
Tulpenfeld 6, 53113 Bonn
Germany
Phone: +49 228 94 927-0
Fax: +49 228 94 927-130
idos@idos-research.de
www.idos-research.de

Author:
Senem Berfin Kaya
sustainability@idos-research.de

t1p.de/e5b7z
bsky.app/IDOS_research
youtube.com/c/DIE_IDOS_research

DOI 10.23661/r5.2025

IDOS is institutionally financed by the Federal Ministry for Economic Cooperation and Development, based on a resolution of the German Bundestag, and the state of North Rhine-Westphalia as a member of the Johannes Rau Research Foundation.

Contents

1 Introduction

We, the German Institute of Development and Sustainability (IDOS), are committed to the sustainable development of our organisation – in environmental, social and economic terms – and contribute to sustainable transformation across the globe through research, advice and training.

We view sustainability not as a one-off goal but as an ongoing process that we aim to shape using a responsible, far-sighted approach.

Sustainable action in our everyday operations is a voluntary commitment that we pursue with conviction and continuity. We aim to ensure that the actions we take today are such that good working conditions and the responsible management of natural resources will be possible in the future too.

In 2022, IDOS and the German Federal Ministry for Economic Cooperation and Development (BMZ) signed a memorandum of understanding (MoU) concerning their common understanding of the path towards net zero – as defined in the Federal Climate Action Act (*Bundes-Klimaschutzgesetz*) of 12 December 2019, as amended on 21 August 2021. In signing the MoU, IDOS confirmed its objective of achieving GHG neutrality by 2030 at the latest. Based on the Paris Agreement and BMZ's definition, we understand this to mean the balance between anthropogenic greenhouse gas emissions and their removal through natural or technical sinks, in other words that the same amount of greenhouse gases emitted by human activities is removed from the atmosphere again through natural or technical processes.

The present report for the period from 2022 to 2023 is the first systematic balance sheet of our greenhouse gas emissions. The data were collected in accordance with the Greenhouse Gas Protocol (GHGP) guidance and form the basis of our emissions management. Our GHG inventory was verified by Arqum[1].

The report is geared towards IDOS staff, external stakeholders and other interested target groups. It documents the methods on which the calculation of our GHG inventory was based, including system and balance sheet boundaries, emissions factors and data sources. The GHG inventory report will be updated at regular intervals in future on the basis of current data.

[1] https://www.arqum.de/. A certificate was issued on 16 October 2025 confirming the successful conformity assessment in line with the GHGP.

2 Methodological aspects

The present calculation of the institute's own greenhouse gas emissions uses a methodological framework that was defined by mutual agreement by IDOS and BMZ in the relevant MoU.

The aim is to:

- → systematically record and reduce greenhouse gas emissions,
- → identify potential climate-related risks and opportunities,
- → derive specific measures for avoiding and reducing emissions,
- → create transparency towards stakeholders and
- → mainstream environmental sustainability in operational actions and the organisation's operational strategy.

In the aforementioned MoU, IDOS undertakes to follow a hierarchical approach – prevent, reduce, offset – to mitigation. In addition to the GHGP Corporate Standard, the methodological approach is also based on the German Sustainability Code (DNK). The GHG inventory covers emissions from Scope 1 and Scope 2. Emissions from Scope 3 are currently considered at least in the category of 'business-related travel'. Looking ahead, further upstream and downstream emissions sources are to be added to Scope 3 to the extent that these sources are classified as 'material' and can potentially be influenced by relevant measures.

IDOS bases its choice of compensation measures on the recommendations issued by the Development and Climate Alliance Foundation and on quality standards applied by experienced providers such as atmosfair. Priority is given to projects in least developed countries (LDCs), particularly in countries that are partners of German development cooperation. Internationally recognised standards such as the Gold Standard and the Verified Carbon Standard (VCS) are applied.

2.1 Organisational system boundary

The organisational system boundary describes which legally or structurally separate units are included in the GHG inventory and which locations it covers.

IDOS applies the system boundary in accordance with the principle of operational control[2]. At its main location (location 1), IDOS has full operational control. At its second location (location 2), which it shares with the German Institute for Development Evaluation (DEval), some consumption figures can be clearly attributed for the areas used by IDOS on the 3rd and 4th floor (individually metered electricity per floor). For jointly used utility areas and communally metered consumption (communal electricity and district heating), consumption figures are divided up on a pro rata basis according to the share of the rented floor space. These consumption figures are also included in the GHG inventory accordingly, even though IDOS does not have sole direct operational control over these areas.

Table 1: Location information

Central location (Location 1)	**Tulpenfeld 6, 53113 Bonn**	4,492.49 m^2	Sole tenant of the building, straightforward consumption allocation based on consumption units. Management is handled by Verwey GmbH; heating and ancillary costs are billed by Techem GmbH.
FSS location (Location 2)	**Fritz-Schäfer-Straße 26, 53113 Bonn**	1,696.83 m^2	Shared use with DEval – German Evaluation Institute for Development Cooperation. Administration is handled by the Federal Agency for Real Estate Tasks, while heating and ancillary costs are billed by Ista SE.

[2] https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf

2.2 Operational system boundary

The operational system boundary defines which emissions sources are considered and included in the GHG inventory. In accordance with the GHGP, IDOS takes account of Scope 1, Scope 2 and to a limited extent Scope 3 emissions.

Table 2: Overview of the emissions sources recorded

Scope	GRI Performance indicator	Emissions source	Measured variable
Scope 1	GRI SRS-305-1: Direct GHG emissions	Petrol	l
		Refrigerants R410A, 4R 407C & R32	kg
Scope 2	GRI SRS-305-2: Indirect energy-related GHG emissions	District heating	kWh
		Electricity (location-based)	kWh
		Electricity (market-based)	kWh
Scope 3	GRI SRS-305-3: Other indirect GHG emissions	Business-related air travel*	km

* Looking ahead, business travel by train or car will also be included here. Business flights cover all air travel booked through the external travel agency.

Direct GHG emissions (Scope 1) identified by IDOS include petrol consumption for the institute's own company car, an Audi A6 Hybrid with a combustion engine. Fuel consumption is measured in litres and recorded systematically. The electricity used to charge the vehicle is recorded as electricity consumption at location 2, where the charging points are located (FSS communal electricity).

In addition, emissions generated by the use of refrigerants are also taken into account. IDOS operates a total of three air conditioning systems at location 1. Two of these systems use R407C refrigerant. The small server room is cooled using a Mitsubishi electric air conditioning system installed in 2023 (model PKA M35LAL2), which uses the environmentally friendly R32 refrigerant. Two of these systems are provided by

the property lessor and one is operated directly by IDOS. At location 2, five air conditioning systems are in use; these are operated through the property lessor and use R410A refrigerant. At location 1, the amount of refrigerant used to refill the units was not yet available when the GHG emissions were calculated. By contrast, the relevant data for location 2 are recorded by the property lessor and passed on to IDOS.

IDOS records the purchased district heating and electricity at both locations as **indirect energy-related GHG emissions (Scope 2)**. Electricity consumption is reported using both the location-based and the market-based method.

As the meters installed at location 2 are only partially separate, consumption for the jointly used areas is divided up pro rata based on the share of use. This procedure was agreed on with DEval in order to ensure transparency, traceability and comparability.

Other indirect GHG emissions (Scope 3) identified by IDOS are generated by business-related air travel booked through the external travel agency. The relevant emissions are calculated and made available by the travel agency using the Radiative Forcing Index (RFI) multiplied by a factor of 2.7 (to take account of the impact of emissions on the climate at high altitude). As of 2024, the data have been purchased annually in the form of a Green Report. The present Scope 3 figures do not yet include business-related travel by train or car. Looking ahead, these emissions are to be systematically recorded and included in the GHG inventory.

Value chain

To determine the recorded emissions sources in Scope 3 mentioned above, we conducted a materiality analysis based on the GHGP. As IDOS, a non-university research institute and think tank, does not produce or sell any material products, many of the Scope 3 categories to be reported on do not apply here.

We evaluated the materiality of the categories to be reported on based on the following criteria: significance/impact, influenceability, business risks and opportunities, stakeholders' demands and how the categories relate to the core activities. Moreover, the availability of data and of time were crucial aspects.

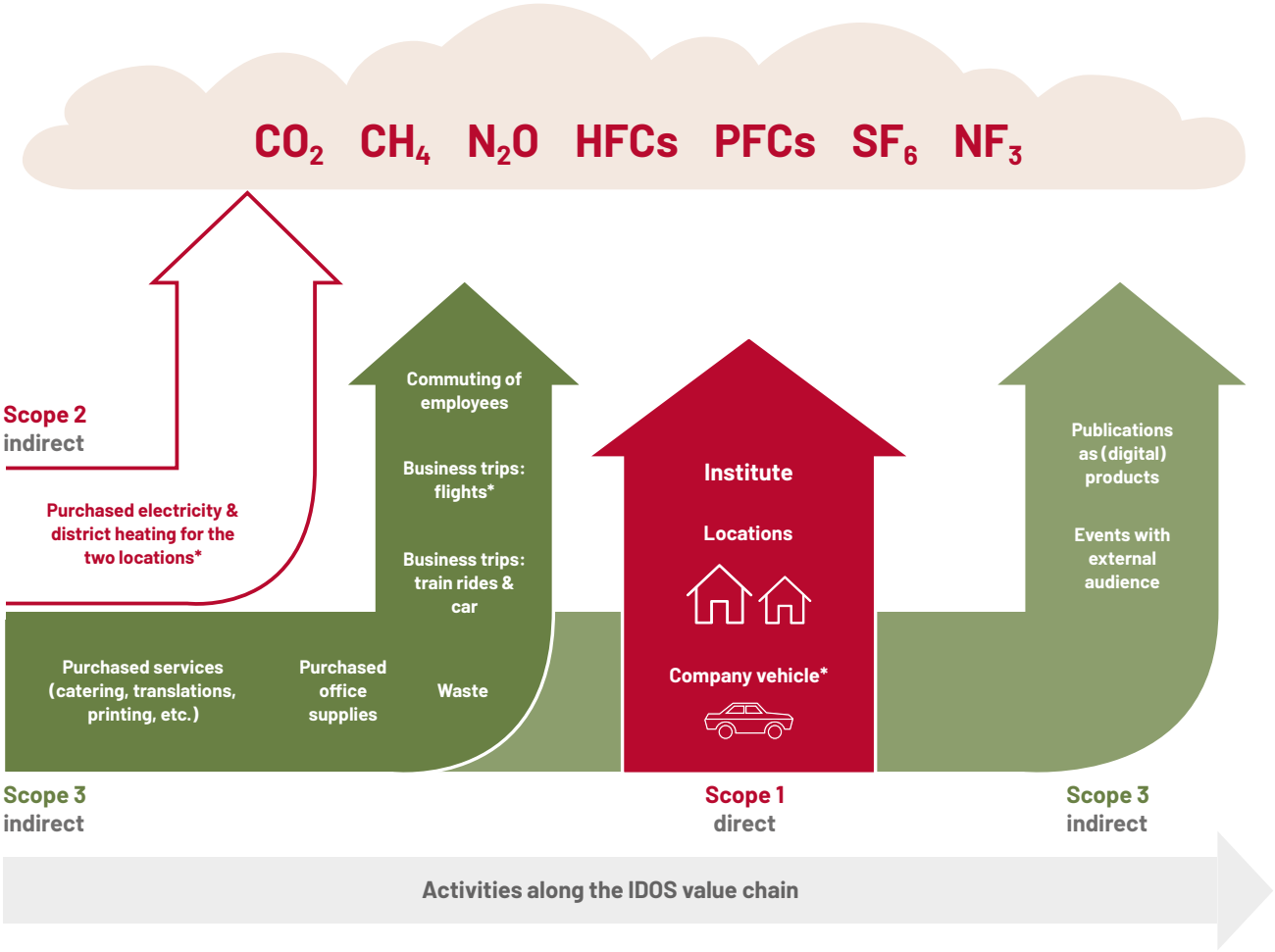
On the basis of the evaluation, business travel and commuting by employees were identified as 'material'. Business trips by train or car and business flights that are not booked through the travel agency are also to be recorded and included in the calculation of the GHG inventory in the years ahead. This also applies to commuting by employees[3].

Overall, within the meaning of the GHGP, we include the following as **upstream activities**: *commuting by employees, business travel, waste, purchased business supplies* and *purchased services (catering, translations, printing, etc.).*

The **downstream activities** include the following: *publication of IDOS publications (digital and in some cases in print form)* and *events with an external audience* (associated travel and meals to the extent that they can be attributed to IDOS).

[3] See also the Evaluation section: reduction in area in the German Government's buildings sector.

Figure 1: IDOS value chain, including emissions sources



* Currently reported sources

3 Data collection

IDOS uses the ecocockpit tool to calculate its GHG emissions. The tool was checked by BMZ to confirm that it is suitable to be used for calculating GHG emissions by Arqum. In methodological terms, it is based on the GHGP and uses both nationally and internationally valid emissions factors. These factors are primarily taken from databases such as GEMIS[4] and ProBas[5]. Our approach is based on the five principles of the GHGP:

- **Relevance:** We ensure that the emissions factors used and the sources selected present a realistic picture of our actual emissions in order to allow well-founded decisions to be taken.
- **Completeness:** We report all the relevant emissions sources and activities within the system boundaries we have chosen. Exceptions are disclosed transparently and reasons are given.
- **Consistency:** We use consistent methods to enable comparisons to be made across several years. Changes in the methodology or the system boundaries are documented.
- **Transparency:** We disclose all assumptions, calculation methods, data sources and uncertainties and ensure a clear audit trail.
- **Accuracy:** We strive to ensure that uncertainties are as limited as possible and to neither systematically underestimate or overestimate emissions.

3.1 Baseline year

For compiling the institute's first GHG inventory and deriving realistic GHG neutrality goals, 2022 was taken as the baseline year. The reason for this was that fundamental changes in operations and in the use of the locations were implemented during the transition period at the end of the COVID-19 pandemic. 2022 was the first year in which a hybrid working model was established involving up to three days of remote working per week and fixed days in the office. The consumption data for this year are thus deemed to be a reliable basis for a realistic assessment of operational emissions. Data

[4] Global Emissions Model of Integrated Systems: https://iinas.org/en/work/gemis/.
[5] Process-oriented basic data for eco-management instruments: https://www.umweltbundesamt.de/en/portal/project-prozessorientierte-basisdaten-fuer.

on business flights have been consistently recorded, documented and offset every year since 2019.

As part of our GHG inventory, we also define significant scenarios that could make it necessary to recalculate and adapt the baseline year:

- **Extension of the Scope 3 categories:** If, as a result of refining how we calculate our GHG emissions, additional Scope 3 emissions sources are identified and integrated into these calculations, we will examine whether these sources lead to a significant change in overall emissions.

- **Estimates on the basis of past data:** For reporting periods for which primary data are not yet fully available, we use estimated figures, for example based on average figures for the previous years. As soon as the actual data become available, we will examine whether there is a significant.

Ongoing review of the emissions data is a key element of our GHG inventory process. All assumptions and adjustments are documented transparently. This allows us to create a reliable basis for strategic decision-making to reduce emissions and to consistently refine our objective of achieving GHG neutrality by 2030.

3.2 2022 and 2023 GHG inventory

Calculation of the GHG emissions is based on the performance indicators of the Global Reporting Initiative (GRI): GRI SRS 305-1, 305-2, 305-3 and 305-5.

The following table shows the emissions by emissions source and reporting year. Electricity consumption is reported using both the *location-based* and *market-based* method. Not all the data are available for 2024 yet.

Table 3: 2022–2023 GHG inventory

		2022	2023	2024
Emissions source		**Emissions kg CO_2e**	**Emissions kg CO_2e**	**Emissions kg CO_2e**
Scope 1				
Petrol	l	235,18	446,48	187,15
Refrigerants				
R410A*	kg	104,4	104,4	104,4
Scope 2				
Electricity (location-based)				
Tulpenfeld	kWh	99.131,71	77.894,59	90.034,24
FSS**	kWh	34.005,78	31.538,58	
Electricity (market-based)				
Tulpenfeld	kWh	0,00	0,00	0,00
FSS	kWh	0,00	0,00	0,00
FSS General Electricity***	kWh	8.084,97	8.702,68	k.A.
District heat				
Tulpenfeld	kWh	55.493,25	55.126,10	
FSS	kWh	9.495,37	12.167,83	
Scope 3				
Business-related air travel**	km	41.300,00	552.000,00	912.000,00
Total in tCO2e		**239,77**	**729,28**	

* The quantity shown corresponds to the refills carried out during the period 2022–2024. Since the exact timing of the refills cannot be determined, the quantity has been distributed across the individual years.

** Including "FSS general electricity" (not green electricity).

*** 100% green electricity at Tulpenfeld and for the floor electricity of IDOS in the FSS. Proof of origin available. Stadtwerke Flensburg applies an emission factor of 0 gCO_2e/kWh.

**** Includes all flights booked through the travel agency. Supply and calculation of GHG emissions for 2022 and 2023 by atmosfair; in 2024 via Airplus.

3.3 Evaluation

The GHG inventory shows a considerable increase in overall emissions for the period from 2022 to 2024: from 239.77 t CO_2e in 2022 to 729.28 t CO_2e in 2023 and a provisional figure of 1,002.14 t CO_2e in 2024. It should be noted that the entire reporting year is not yet available for 2024 and individual figures (see table) are still missing[6]. The missing data will affect the final GHG inventory for 2024.

Developments in 2022: normalisation phase following the COVID-19 pandemic

In 2022, operations underwent a normalisation phase following the pandemic-related restrictions. At 41.3 t CO_2e, emissions from business flights were comparatively low, which was due to the fact that travel continued to be limited during this period. In contrast, Scope 2 emissions – particularly from the use of electricity at the Tulpenfeld location (around 99.13 t CO_2e) and district heating (55.49 t CO_2e) – were the largest drivers of the GHG emissions. Scope 1 emissions (petrol, refrigerants) accounted for a minor share.

Developments in 2023: increase as a result of the return to normal travel

A considerable change can be seen for 2023: total emissions increased to 729.28 t CO_2e, which was primarily due to the increase in Scope 3 emissions from business flights. These emissions rose from 41.3 t CO_2e in the previous year to 552 t CO_2e. This change reflects the return to normal travel. At the same time, emissions from the use of electricity and district heating decreased, which can presumably be attributed to calls to save energy in the winter of 2022/23 in the wake of Russia's invasion of Ukraine. Scope 1 emissions from the company car increased slightly, but at 0.45 t CO_2e continued to be very low.

Developments in 2024: full resumption of travel

The provisional figures for 2024 show a considerable increase in overall emissions to 1,022.14 t CO_2e. Of these emissions, business flights account for more than 900 t CO_2e. This considerable increase in 2024 is predominantly due to the full resumption of normal travel. No reliable data are available yet for the other emissions sources, which is why figures will be adjusted to produce the final GHG inventory.

The present data highlight the fact that Scope 2 and Scope 3 emissions are the institute's largest emissions sources.

[6] 2024 is not covered by the conformity assessment carried out by Arqum and is only mentioned here to provide an outlook.

→ Energy

Energy consumption is highest at the main location (location 1). This is particularly due to the larger number of employees and to the fact that administrative tasks are bundled together there. In the months ahead, this location will be a particular focus when examining the potential for avoiding and reducing emissions.

Due to the particular organisational structure involving cooperation with DEval, IDOS has only limited control over the total energy consumption at location 2. These general conditions will also be taken into account when assessing the relevant potential.

Since the COVID-19 pandemic, employees have also had the option of working remotely for up to three days per week. This is also included in the analysis. However, this does not result in any potential for a permanent reduction in CO_2 emissions, as the emissions are not avoided altogether but are merely transferred to employees' remote workplace.

Looking ahead, as part of efforts to achieve a reduction in area in the German Government's buildings sector, we are also called on to gradually reduce the amount of office space we require. This could have an impact on our operational conditions and on our energy consumption behaviour in future.

IT

In its procurement, operation and disposal of devices, the IT Department at IDOS takes account of the requirements for the public sector and of energy efficiency and resource conservation criteria. Equipment is predominantly purchased through public framework agreements (e.g. the federal procurement platform Kaufhaus des Bundes); in cases in which such agreements are not sufficient, external suppliers are used. Priority is given to devices with an energy label (e.g. Energy Star). The IT infrastructure focuses on efficiency, consolidation and device architecture designed to last. Integration of modern Wi-Fi 6E access points with green mode technology and energy-optimised server, storage and network systems along with central software management and a sustainable communication structure together form a practical approach for reducing the use of resources and CO_2 emissions.

→ Business flights

For a research institute with international operations, business flights are a necessary instrument in providing services in line with our mandate but at the same time they are a major source of emissions for IDOS. As part of operational sustainability management, this is a key area of activity in the pursuit of environmental sustainability.

IDOS is aware of the conflicting goals associated with the travel needed to perform our work and the aim of avoiding emissions wherever possible. To fulfil the institute's mandate, however, IDOS depends on business travel – particularly in con-

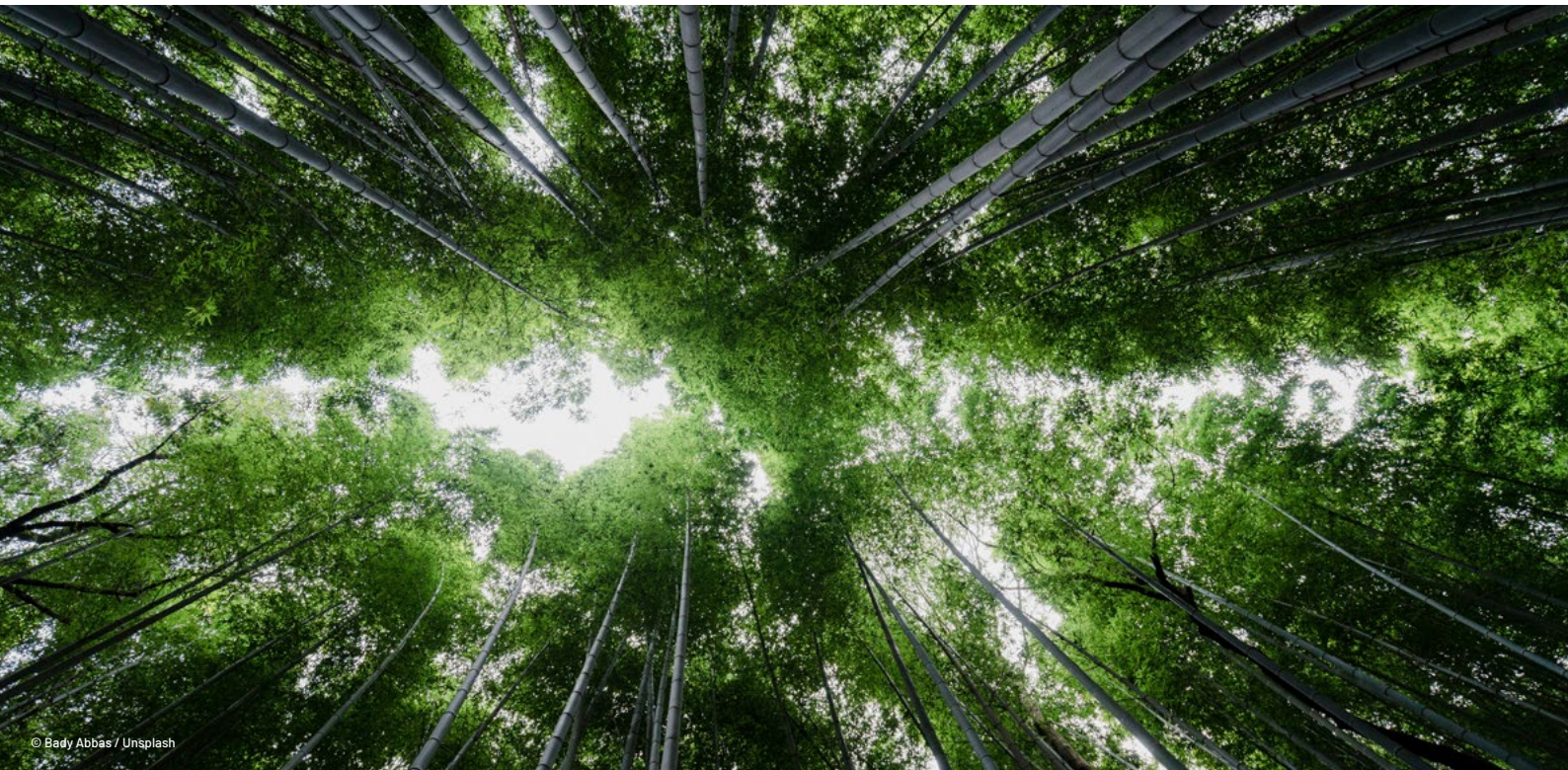
nection with field research trips, national and international events and IDOS training programmes. Although numerous formats are now carried out in hybrid or completely digital form, in-person presence at global conferences and meetings is nevertheless a vital part of our institute-related work.

IDOS takes its duty to set an example seriously with regard to these competing interests – the global impact of our activities, the institute's mandate and environmentally responsible actions. In the years ahead, IDOS will thus devote considerable effort to avoiding, reducing and offsetting emissions generated by business travel.

We already focus on ensuring that all employees are made aware of the need to take a critical look at each potential business trip to assess whether it is really necessary. The amendment of the Federal Travel Expenses Act (*Bundesreisekostengesetz*, BRKG) that took effect in 2021 supports these efforts. It makes it easier to choose more environmentally sustainable travel options, even if they entail higher costs. As a matter of principle, employees should travel by train for domestic journeys. They may only travel by air in exceptional circumstances and with prior approval.

Moreover, long-distance trains operated by Deutsche Bahn have been run on 100% green electricity since 1 January 2018. Business-related train travel by our employees between cities is therefore now completely carbon-neutral, albeit not fully emission-free.

In the months ahead, we will be analysing this area of activity in greater depth with a view to developing targeted measures to avoid and reduce emissions generated by business travel.



Measures currently implemented

- Employer-subsidised travel pass valid on public transport throughout Germany
- Mobile working
- Awareness-raising among employees
- Bicycles for employees to borrow
- Hybrid electric vehicle for business purposes
- Wall-mounted charging boxes/electric vehicle charging stands
- Digitisation of applications
- Digitisation of & open access to publications
- Sustainable hospitality guidelines (now vegetarian only)
- Waste separation
- Replacement of light bulbs with LEDs

4 Outlook

The present GHG inventory report is the first systematic record of the institute's own emissions and at the same time is an analysis of our current situation. The aim of this analysis is to create a reliable set of data as the basis for our internal sustainability management, to ensure transparency regarding relevant emissions sources and to identify initial potential and risks. The insights obtained from this analysis serve as the starting point for developing effective reduction measures.

The analysis shows that particularly emissions from Scope 2 (indirect emissions from purchased energy) and Scope 3 (further indirect emissions, business flights) account for relevant shares of our GHG emissions. The current use patterns are to be examined in detail in both these areas to specifically identify potential ways of cutting emissions. As these emissions cannot be avoided completely, the next step will involve defining the necessary minimum requirements for emission-related behaviour. Remaining emissions that cannot be avoided will be offset completely no later than 2029 as part of our GHG neutrality goal.

On the basis of the present emissions inventory, an emissions reduction pathway is to be drawn up in the months ahead in line with the GHGP, setting out specific details of our short-term, medium-term and long-term reduction goals and going beyond measures that have already been implemented. The pathway will include specific, measurable emission reduction targets.

In the context of implementing a double materiality analysis as part of our DNK declaration, calculation of our GHG emissions was identified as a key area of activity, particularly with regard to business flights. Climate-related opportunities and risks were weighed up, especially in relation to the competing demands of the institute's mandate and the resulting emissions. The aim is to mainstream climate action holistically within the organisational culture and in our processes.

Our GHG inventory will be updated annually to allow ongoing progress reviews and to facilitate a strategic focus on the path to becoming a GHG neutral organisation.

Annex

Table 4: Emissions factors

Emissions factors & Data source									
	2022					2023			
Emissions sources		**Emitter**	**Data source**	**Designation**	**kg CO2e**	**Emitter**	**Data source**	**Designation**	**kg CO2e**
Scope 1									
Petrol	l	Petrol in Litres	Gemis 5.1	Gas station / Petrol-DE-2020 (incl. biofuel) – direct emissions (www.helmholtz.de)	2,879	Petrol in Litres	Gemis 5.1	Gas station / Petrol-DE-2020 (incl. biofuel) – direct emissions (www.helmholtz.de)	2,879
Refrigerants									
R410A*	kg	R410A	Germany Environment Agency	Greenhouse gas potentials of selected compounds and their mixtures	2.088	R410A	Germany Environment Agency	Greenhouse gas potentials of selected compounds and their mixtures	2.088
Scope 2									
Electricity (location-based)									
Tulpenfeld	kWh	Electricity (UBA) 2022, without upstream emissions	Germany Environment Agency 2023	Development of the specific greenhouse gas emissions of the German electricity mix	0,439	Electricity (UBA) 2023, without upstream emissions	Germany Environment Agency 2023	Development of the specific greenhouse gas emissions of the German electricity mix	0,388
FSS	kWh	Electricity (UBA) 2022, without upstream emissions	Germany Environment Agency 2023	Development of the specific greenhouse gas emissions of the German electricity mix	0,439	Electricity (UBA) 2023, without upstream emissions	Germany Environment Agency 2023	Development of the specific greenhouse gas emissions of the German electricity mix	0,388
Electricity (market-based)									
Tulpenfeld	kWh	Green electricity	Guarantee of origin from the supplier	Stadtwerke Flensburg	0,00	Green electricity	Guarantee of origin from the supplier	Stadtwerke Flensburg	0,00
FSS	kWh	Green electricity	Guarantee of origin from the supplier	Stadtwerke Flensburg	0,00	Green electricity	Guarantee of origin from the supplier	Stadtwerke Flensburg	0,00
FSS General Electricity	kWh	Standard electricity mix, without upstream emissions	Guarantee of origin from the supplier	Stadtwerke Bonn	0,143	Standard electricity mix, without upstream emissions	Guarantee of origin from the supplier	Stadtwerke Bonn	0,157
District heat									
Tulpenfeld	kWh	District heat	Guarantee of origin from the supplier	Stadtwerke Bonn, alternative generation method according to the CO_2 Cost Allocation Act (CO2KostAufG)	0,1306	District heat	Guarantee of origin from the supplier	Stadtwerke Bonn, alternative generation method according to the CO_2 Cost Allocation Act (CO2KostAufG)	0,1562
FSS	kWh	District heat	Guarantee of origin from the supplier	Stadtwerke Bonn, alternative generation method according to the CO_2 Cost Allocation Act (CO2KostAufG)	0,1306	District heat	Guarantee of origin from the supplier	Stadtwerke Bonn, alternative generation method according to the CO_2 Cost Allocation Act (CO2KostAufG)	0,1562
Scope 3									
Business-related air travel	km	International & domestic flight	atmosfair			International & domestic flight	atmosfair	atmosfair	

www.idos-research.de