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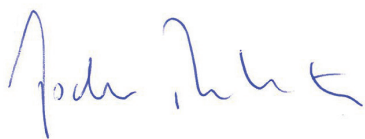
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Preface

Dear Reader,

The 2017 UN Climate Change Conference (23rd session of the Conference of the Parties to the Framework Convention on Climate Change, 13th session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, and 2nd part of the 1st session of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement) was held at the seat of the secretariat of the UN Framework Convention on Climate Change in Bonn, Germany, under the Presidency of the Government of Fiji. From 6th–17th November, Parties and Observer States, civil society, and media from around the world came together in Bonn. The UN Climate Change Conference – also known as the Conference of the Parties (COP) – convened for the 23rd time, therefore using its abbreviated title of COP 23. A total of 22,060 registered participants from 197 Parties, observer organisations and the media were counted, with an average 11,248 people attending the conference each day (including staff). COP 23 called on national governments to continue working out the details to facilitate the implementation of the Paris Agreement, so that the Paris Agreement rulebook can be adopted at the next climate change conference in Poland in late 2018. As in previous years, stakeholders from governments, local administrations, observer organisations, and civil society showcased their climate action initiatives and projects. These demonstrated that highly promising activities and efforts are underway to reduce greenhouse gas emissions (GHG), enable adaptation to climate change, drive investment towards a low-carbon economy, and boost countries' resilience in coping with the effects of climate change.

These goals were also the focus of the environmentally sound and sustainable approach taken in organising the conference itself. We had COP 23 certified according to Eco-Management and Audit Scheme (EMAS) standards. EMAS is an internationally accepted environmental management system, the most demanding in the world. In this updated Environmental Impact Statement, we report transparently and verifiably on the outcomes of our efforts to organise and manage the conference in an environmentally sound and sustainable way.



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1. Introduction

The UN Climate Change Conference took place in Bonn from 6th–17th November 2017. It encompassed the 23rd Conference of the Parties to the UN Framework Convention on Climate Change, the 13th Conference of the Parties to the Kyoto Protocol, and the second session of the 1st Conference of the Parties to the Paris Agreement.

For COP 23, a new and innovative strategy was developed that was designed both for replication and as a source of inspiration in the organisation of future climate change conferences. With its “**One Conference, Two Zones**” concept, the conference emphasised the importance of the climate change activities of a range of non-Party stakeholders and enhanced the official climate negotiations by showcasing the action being taken right now. The negotiations were held in the Bula Zone (World Conference Center Bonn (WCCB), parts of the UN Campus, and several temporary structures) used for the conference presided over by the Government of Fiji. The various climate side events and exhibitions were located in temporary structures that made up the nearby Bonn Zone erected on the lawns of the Rheinaue, Bonn’s central park. This is where Party delegations, municipal and regional representatives, observers from UN and intergovernmental organisations, and non-governmental stakeholders such as NGOs, business, and industry were given the opportunity to showcase their climate action initiatives and projects. The many events and activities that took place in the Bonn Zone showed that climate action is far more advanced and forward-thinking than it has been to date and that a transformation is taking place in which a sustainable society is the ultimate goal.

The environmentally sound, sustainable approach to the conference itself is an important part of that transformation. For example, GHG emissions are avoided to the extent possible and unavoidable emissions, such as those associated with air travel of participants registered for either conference zone, are offset. A comprehensive programme of measures was developed which enabled waste avoidance (to the greatest extent possible), a reduction of printed materials, and wide usage of electronic communication. It also focused on environmentally responsible and reusable materials for temporary structures and an environmentally conscious catering service.

2. Conference Venue and Organisation

The conference took place in two zones: the Bula Zone (Bula means welcome in Fijian) and the Bonn Zone. The official climate negotiations were held in the Bula Zone (consisting of the World Conference Center Bonn (WCCB), the UN Campus, and several temporary structures). The various climate action side events and exhibitions were located in the Bonn Zone comprising a cluster of temporary structures set up on the lawns of the Rheinaue, Bonn's main park. The total area used for the Bula and Bonn zones covered 55,000 sqm.

Around 800 staff from the WCCB, the UNFCCC secretariat, and the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), along with those of the event management agency commissioned by the BMU, were responsible for all organisational issues concerning COP 23, including its environmental and sustainable performance. According to statistics collated by the UNFCCC secretariat, a total of 5,083 individuals were involved in setting up, conducting and dismantling the conference. These included staff from the construction firms responsible for building the temporary structures, 650 volunteers, catering staff, security staff, maintenance workers, and drivers. A total of 11,248 visitors (including staff) were registered as attending the conference each day.

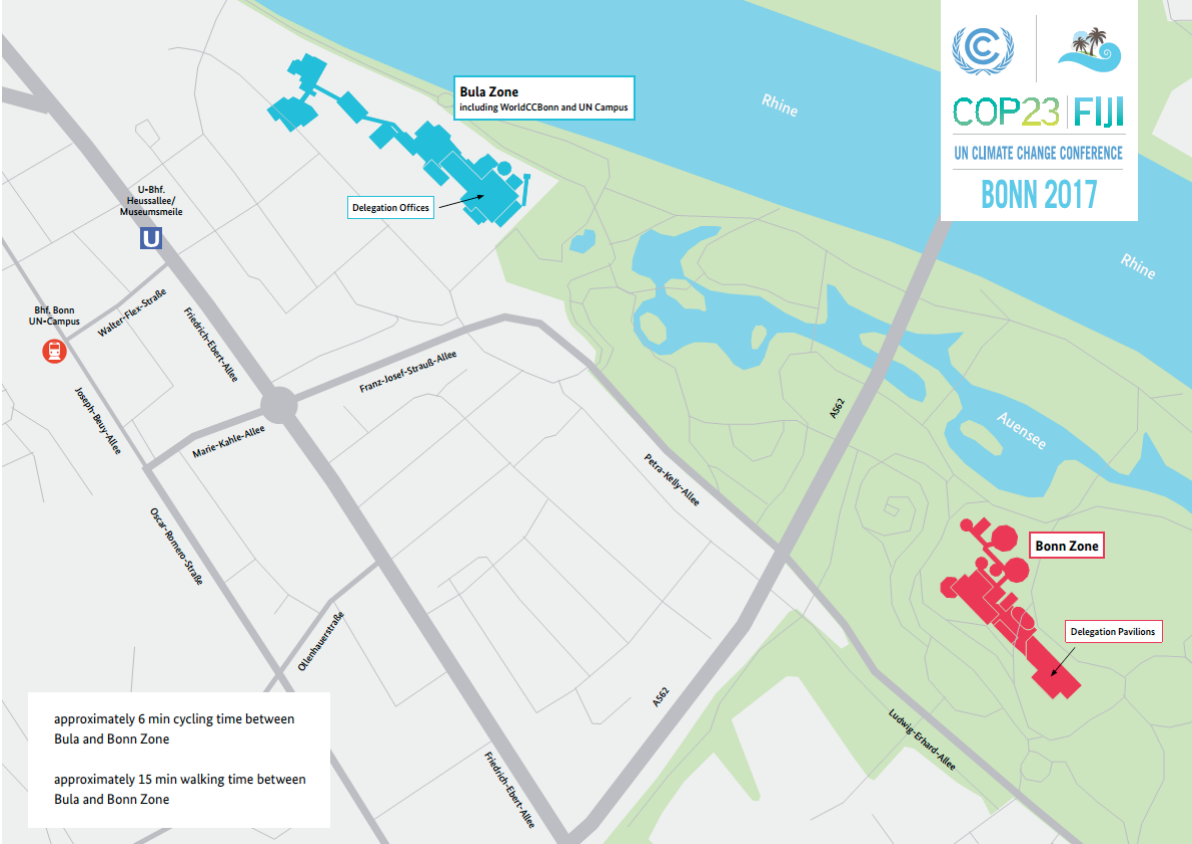


Picture 1: aerial view to the Rheinaue with COP temporary structures

In the Bonn Zone located on the big and small lawns of the Rheinaue park, temporary structures covering an area of approx. 35,000 square metres housed side events and exhibitions on concrete climate action projects and solutions to mitigate climate change. This is also where Global Climate Action Agenda events took place, with Party delegations, municipal and regional representatives, observers from UN and intergovernmental

organisations, and other non-Party stakeholders such as NGOs, business and industry, and the science and research community. Altogether, 385 official side events were held for a duration of 8.5 hours each day. After the conference, the Rheinaue lawns were returned to their original state.

In the Bula Zone, the UN was the official host, determined the house rules, and was responsible for safety and security. The BMU laid down the house rules in the Bonn Zone. The two zones were connected by a thoroughfare, which was managed and controlled by the City of Bonn for the duration of COP 23, but was not part of the area covered by the environmental management system. A security concept was developed for the entire area.



Picture 2: area map of the COP location

The temporary structures erected in the Bula Zone were located in officially declared floodplains on the banks of the river Rhine. To enable a quick response in the event of flooding, a mobile flood protection system was on hand which could be quickly set up to protect the conference area. The system served to prevent harm to individuals, facilities, and the river Rhine and would have facilitated safe evacuation should the area have become flooded. The flood prevention system was designed based on a “flood of the century” scenario. After the conference, the system was handed over to the Bonn Fire and Rescue Service for its own continued use.

In addition to activities at the conference site, the topic of climate change was also the focus of other events held in and around Bonn. These were not the responsibility of UN Climate Change or the German Federal Government and were therefore not included in the scope of the climate conference for which EMAS certification is sought. However, close cooperation and communication between all involved ensured that events held along the connecting corridor between the two conference zones, which was not part of the certification, either, were managed as sustainably as possible.

During the conference, traffic restrictions were in place in the immediate vicinity of the conference site, but these were kept to the necessary minimum. Local residents, visitors to the Rheinaue park, and the citizens of Bonn were informed about the restrictions in detail. Traffic planning and increased provision of public transport was coordinated in close cooperation with the BMU, the Bonn-based utility company SWB, the regional transport associations, and the German railway company Deutsche Bahn (DB). Local events not related to but potentially affected by the conference, such as Bonn's traditional St. Martin's Day processions, were able to go ahead as planned.

3. Environmental Management

3.1 Environmental principles and guidelines for COP 23

COP 23 was managed using an environmentally sound and sustainable approach. GHG emissions were avoided wherever possible. Unavoidable GHG emissions were offset by purchasing CERs from ambitious Clean Development Mechanism (CDM) climate action projects (see Annex: List of Offsetting Projects).

The following guiding principles were followed:

We will use resources responsibly and efficiently. We want to avoid or reduce water and energy use, waste, noise, and road transport. To the extent possible, renewable energy sources will be used.

In our procurement decisions, we will give preference to the most environmentally responsible products and services in terms of their production, use, and disposal. This also applies to catering. Wherever possible, we will give preference to recognised eco-certification programmes.

The needs of people of different ages and gender, nationalities, ethnic groups, and religions will also be taken into account, as will those of people with disabilities. We want to make COP 23 as barrier-free an event as possible. And we have set ourselves the goal of recruiting people with disabilities for 15 percent of all volunteer positions.

All contractors will be required to meet our COP 23 environmental management and sustainability criteria and to communicate the same requirement to their subcontractors.

We want to promote environmentally sound behaviour among all conference participants, using appropriate forms of communication and measures in doing so. COP 23 will be a paper light event.

We see compliance with applicable laws and regulations as a minimum standard which we intend to exceed wherever possible.

We will measure the success of our environmental measures and, where necessary, implement improvements at future events. We will report on the results of our environmental performance in a transparent way.

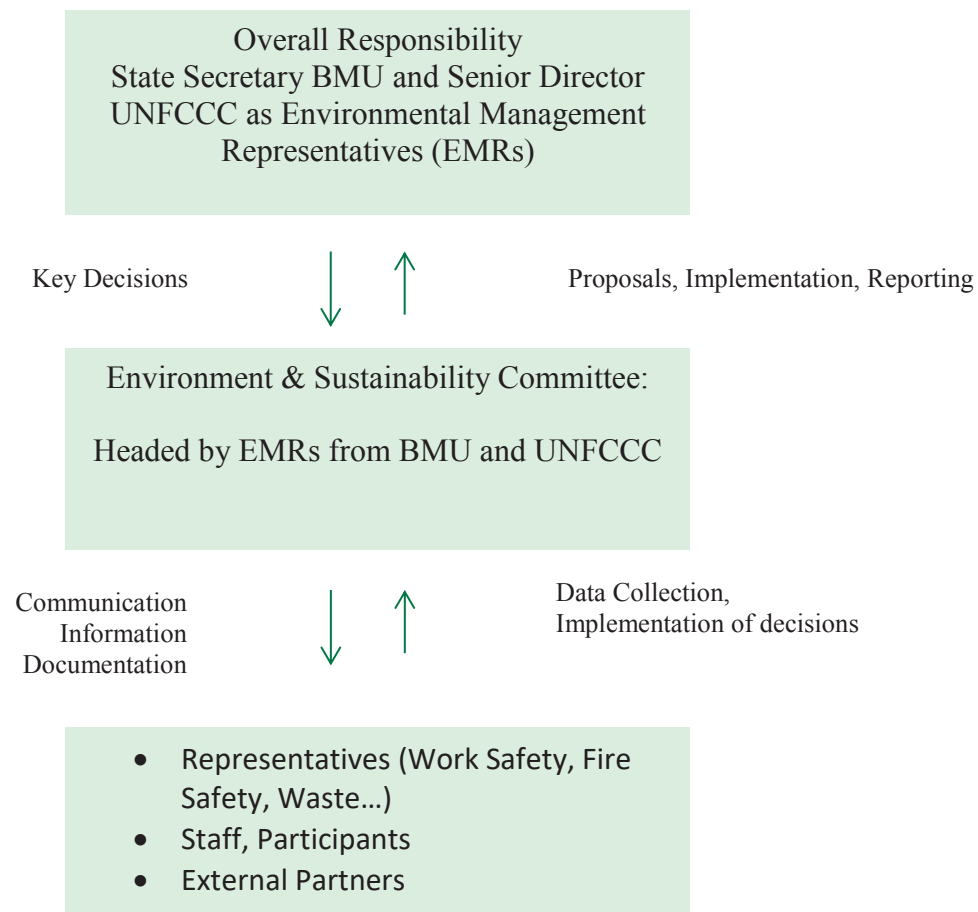
These guiding principles will be applied in planning, preparing, and conducting COP 23. As a component of socially responsible management, we have made staff needs an integral part of our environmental management system.

3.2 Environmental management organisation and documentation

Several project teams at the BMU and at the UNFCCC secretariat worked with the Fijian COP Presidency to prepare for and organise COP 23. Matters concerning the environmental management of the conference were managed by a specially established Environment & Sustainability Committee. The Committee included members of the various project teams to ensure due consideration was given to the environmental and sustainability aspects of all conference-related matters.

Senior management members from the BMU and the UNFCCC secretariat were responsible for ensuring that the requirements of the environmental management system were met. They provided the necessary staff, technical equipment, and organisational resources needed to implement the environmental management system for COP 23. On behalf of the conference organisers, the Environmental Management Representatives (EMRs) and in some cases their deputies conducted an audit to assess the current status (environmental performance) of the environmental management system and performed a management review. Management was given regular (environmental performance) updates on the status of the environmental management system.

Staff responsible for the EMAS certification of COP 23



- Environmental Management Representatives (EMRs): For COP 23, two EMRs were appointed (representatives from top management at the BMU and the UNFCCC secretariat or their respective deputies, leading representatives for EMAS).
- Environmental Management Officers (EMOs): Two representatives (one each from the BMU and the UNFCCC secretariat, management and coordination of the EMAS and sustainability process)
- Environment & Sustainability Committee: Representatives from the BMU, the UNFCCC secretariat, BMU's event agency and scientific advisor, and the City of Bonn (development of targets and measures, implementation and monitoring of the EMAS and sustainability process, data collection)

3.3 Inclusion of staff and participants

COP 23 participants included staff from the BMU, the UNFCCC secretariat and BMU's event agency involved in organising the conference. These 800 individuals were supervised by the BMU or the UNFCCC. Through various working groups they reported to the COP 23 Steering

Committee. Other participants included Parties, representatives from observer organisations, side event and exhibition organisers, speakers, media representatives, technical staff, caterers, other service providers, invited guests, and 650 volunteers. A total of 5,083 people provided support for the conference overall.

Implementation of the environmental guiding principles and sensitisation of all participants to COP 23 environmental protection measures occurred as part of the overall event management concept and were overseen by the BMU and the UNFCCC secretariat, together with the scientific advisor and event management agency commissioned by the BMU. Particular focus was placed on internal communication and staff training.

The key goals and measures developed as part of the COP 23 environmental management system were communicated in an appropriate way – primarily by digital means, but also in on-site training– to all staff and partners involved in the conference (see Section 5.13 Communication). Maintaining and updating the respective information was the responsibility of the EMOs.

4. Environmental Requirements Related to COP 23

The minimum standard applied in the environmental management system was compliance with all environmental laws, ordinances, and other directly applicable rules and regulations. Those relevant to COP 23 were identified and included in a matrix of laws and statutory regulations for the conference.

All employees were responsible for ensuring that the relevant environmental requirements were met in their respective areas of responsibility. The BMU was responsible for monitoring compliance with environmental laws and regulations or notifications.

Compliance with environmental regulations was reviewed during internal audits by means of a legal check list.

5. Environmental Aspects, Direct and Indirect

5.1 General, evaluation scheme

It was not always possible to separate environmental aspects into direct and indirect impact categories. What counted was that the key environmental aspects relating to COP 23 were identified and assessed. This applied especially with regard to the EMAS core indicators.

The environmental aspects for COP 23 were identified and, using an evaluation scheme, assessed by means of an ABC analysis. The criteria for the analysis were legal requirements,

impact of the environmental aspect, potential for environmental damage, importance to stakeholder groups, and exploitation of natural resources. On the basis of these criteria, the environmental aspects were divided into three categories:

A = Environmental aspect of extreme importance and high priority

B = Environmental aspect of medium importance and priority

C = Environmental aspect of low importance and priority

After classification into the respective categories, the environmental aspects are assessed with regard to their potential impact. Three further categories are used in this case:

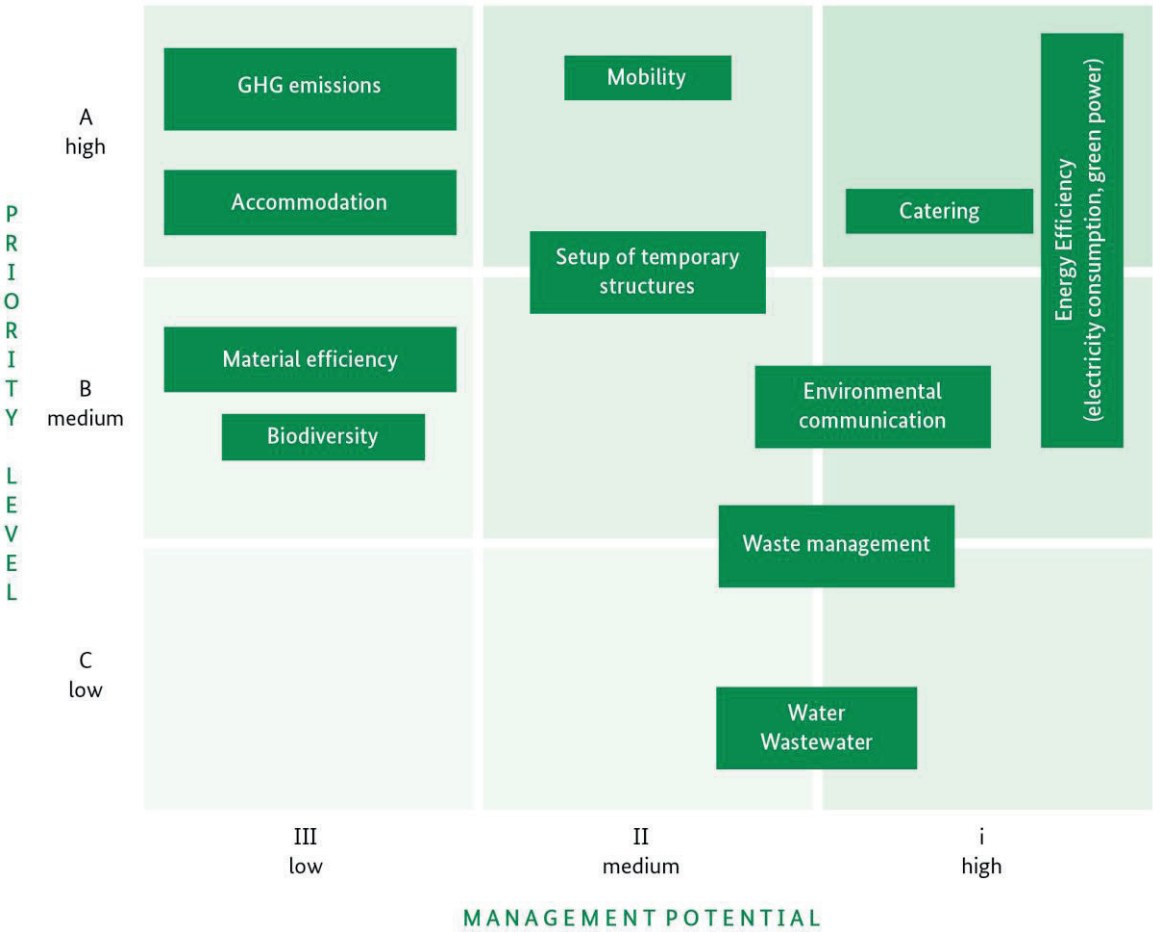
I = Relatively large, short-term management potential.

II = The environmental aspect can be managed sustainably, but only in the medium to longer term.

III = Management options for this environmental aspect are either unavailable or only available as long-term options or subject to third-party decisions.

For example, an environmental aspect assessed as A and I is an environmental aspect of extreme importance and high priority for which there is relatively large, short-term management potential.

Assessment of Priority Areas and Core Indicators



5.2 Direct environmental aspects

For the direct environmental aspects of energy efficiency, material efficiency, water consumption, waste volume, GHG emissions, and biodiversity, the EMAS standard prescribes core indicators for use in measuring and assessing the environmental aspects identified. The indicators allow results to be compared over several years and/or events. These comparisons serve in monitoring whether predetermined goals were achieved and provide an insight into areas for potential improvement. This satisfies the EMAS requirement for continued improvement in environmental performance, based on the results achieved at the conference. A verification audit conducted after the event served as an evaluation of the extent to which the predetermined goals were achieved and set a benchmark for future COPs.

5.3 Climate action and climate neutrality

The environmental impacts of a large-scale event with 11,248 participants per day can be limited but not avoided. In particular, emissions cannot be completely avoided. The travel of participants of an international event of this scale generates by far the biggest share of GHG emissions, due to the long distances travelled and the heavy reliance on air travel. Use of virtual communications platforms, which may reduce or eliminate the need for a speaker's physical presence on-site, is hardly feasible with a conference such as COP 23. This was the case in connection with COP 23.

The environmentally responsible mobility of participants during the conference was, however, easier to influence. To avoid harmful emissions wherever possible, participants were encouraged in the run-up to the conference to travel as carbon-light as possible and, once in Germany, to use the DB rail service and public transport while travelling in and around Bonn. Public transport service connections in the vicinity of the conference area were optimised for the duration of COP 23. Data on participants' travel was collected by means of a survey and the associated emissions were estimated. For all aviation emissions, the overall climate impact was calculated using the Radiative Forcing Index (RFI) factor of 3 (i. e., carbon emissions were multiplied by 3).

As was the case with earlier conferences, the GHG emissions could be broken down as follows:

86 percent were attributed to participants' travel to and from the host city, while the rest were related to other activities (see below).

The offset process followed a fixed set of rules:

Emissions were estimated prior to the conference. For travel, the ICAO calculator was used with an RFI factor (multiplier) of 3 to take account of the impacts not related to carbon emissions and provide a high degree of support for the respective climate activities in developing countries. For the other areas (accommodation, catering, etc.), generic emission factors were used. The total sum of estimated emissions amounted to 82,000 t CO₂eq. The Federal Environment Agency (UBA) issued a call for tenders for the offsetting project in this amount and based on the following criteria: only quality CERs would be used which meet the following requirements – high sustainability effect in the host country, no HFC-23 or N₂O projects, no coal projects or large-scale hydropower projects, credits from the second commitment period of the Kyoto Protocol. In the end, four Clean Development Mechanism (CDM) activities in Zambia, China, Ruanda and Nepal were funded (see Annex). Due to the lack of suitable proposals, no certificates were purchased from projects registered in Small Island Developing States (SIDS). The quantity of emissions which were offset was higher than would have been required according to the ex-post assessment. For environmental policy reasons, offsetting needed to take place immediately after the conference, so that use was made of the ex-ante prognosis.

System limitations in calculating the climate impact

GHG emissions emitted during COP 23 can be divided into two categories:

- 1) Emissions caused by participants' travel to and from Germany.
- 2) Emissions caused by COP-related activities in and around Bonn (e. g. operation of the conference site, accommodation, local mobility, eating and drinking (catering), logistics, use of materials, and waste management).

The largely unavoidable GHG emissions caused by participants' in-bound and out-bound travel are estimated by the UNFCCC secretariat for all UN climate change conferences, including COP 23. The actual quantity of emissions depends on the number of participants and the venue location and transport connections.

For all other GHG emissions a distinction is made, as called for in the Greenhouse Gas Protocol, between direct and indirect GHG emissions:

- Direct emissions occur, for example, from the burning of heating oil to heat the conference halls and from fuel consumption in operating vehicles (Scope 1).
- Indirect emissions (Scope 2) occur through the supply of electricity and district heating, for example for the conference venue.
- A third category involves Scope 3 emissions. These are emissions which occur indirectly at another location as a result of conference-related activities. They include emissions occurring from products procured (e. g. paper production), services provided by subcontractors (railway companies and contractors' vehicles), and emissions generated in the extraction, production, and distribution of energy carriers.

For the provisional footprint, the emissions were estimated for each of the categories. This updated Environmental Statement shows the actual emissions calculated in the final evaluation.

While Scopes 1 and 2 must be accounted for in the impact assessment according to the requirements of the Greenhouse Gas Protocol, the activities and products to be accounted for under Scope 3 can be freely selected. Their selection is based on the significance analysis required under EMAS and in the sustainability strategy for COP 23.

Emissions are also calculated from both a temporal and a local perspective:

- The temporal perspective shows the period for which emissions are to be calculated (start and end, preparatory activities, duration of event, follow-up)

- The local perspective shows the (event) locations for which emissions are to be taken into account, recorded and, calculated.

Temporal and local perspective in emissions reporting

Temporal Perspective	Scope	Local Perspective
COP Preparation/Planning <ul style="list-style-type: none"> – Electricity and heating requirements – Travel 	1 and 2 3	Bonn, Hamburg, Berlin and Republic of Fiji-Germany
Setting up/Dismantling temporary structures <ul style="list-style-type: none"> – Energy needs – Materials – Logistics 	1 and 2 3 3	Bonn Conference sites, Service providers' offices
Travel to/from Bonn	3	Worldwide
Duration of COP <ul style="list-style-type: none"> – Electricity and heating requirements – Water supply – Catering (electricity, food and beverages) – Materials – Accommodation in hotels 	1 and 2 3 2 and 3 3 3	Bula and Bonn Zones
Local Mobility <ul style="list-style-type: none"> – Fuel consumption – Electricity consumption (for e-mobility at the event sites) 	3 2	In and around Bonn and Bonn Zone

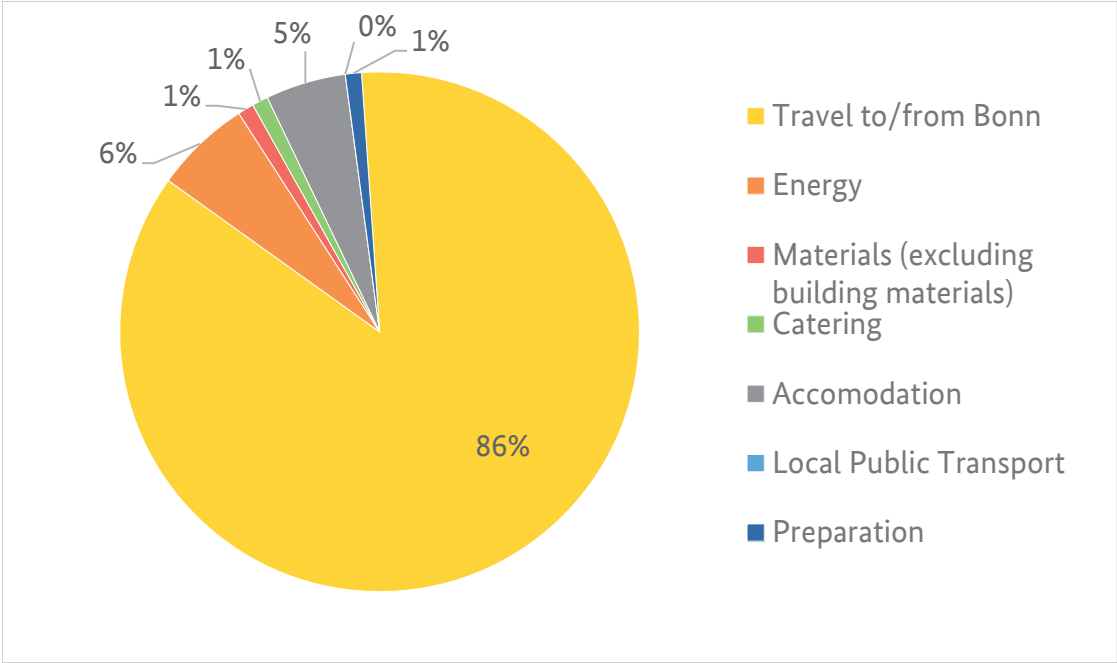
The local perspective does not include events held in connection with the COP outside the official conference venue, such as evening events for invited guests and excursions to local places of interest. In these cases, it is assumed that the resulting emissions made up only a very small and thus negligible share of overall emissions.

Also, emissions resulting from waste management were not calculated, because the management and treatment of waste had no significant impact on the overall emissions result.

In calculating the emission sources shown above, the upstream chains of the inputs used are included wherever possible (lifecycle assessment). This means, for example, that in the use of diesel, both the direct emissions from combustion and the emissions from production are taken into account (see Scope 3 above).

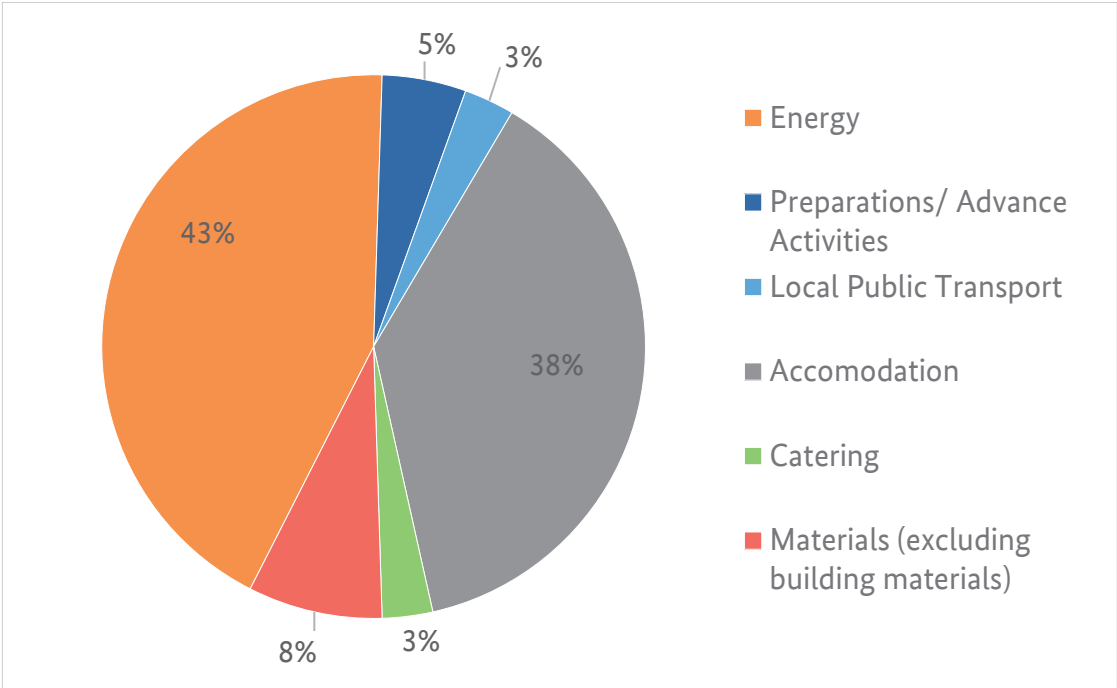
In assessing the GHG emissions for COP 23, it is important that all GHGs be recorded – this means not just carbon dioxide (CO₂), but also methane, nitrous oxide, and fluorinated hydrocarbons (known as Kyoto GHGs). These are expressed as CO₂ equivalents (CO₂eq).

Travel to/from Bonn made up 86 percent (43,054 t CO₂eq with RFI 3; this represents 651 kg t CO₂eq per participant) of all emissions and thus the largest share of GHGs:



Source: Oeko-Institut

Taking account of these system limitations, the GHG emissions (**excluding** travel to/from Bonn) were as follows:



Source: Oeko-Institut

Excluding travel to/from Bonn, i.e. the remaining 14 percent of GHG emissions, most emissions (taking account of the setup phase, the conference and dismantling) resulted from energy and fuel consumption (43 percent with 2,952,508 kg CO₂eq) and accommodation (38 percent). By way of contrast, material use (8 percent), local public transport (5 percent) and preparation phase and catering (both 3 percent each) make up a marginal share. The considerable amount of GHG emissions resulting from energy supply were largely attributed to the use of diesel generators to heat temporary structures. Other solutions had been tested in advance of the conference, but due to the conditions on site could not be implemented.

The significantly lower amount of actual emissions in comparison to estimated emissions (excluding travel to/from Bonn) was caused by overnight stays. This can be attributed to the fact that more people stayed in private accommodation for which a lower emission factor is applied. In particular, energy demand on the conference site was five times higher than indicated in the pre-conference prognosis.

By way of comparison: 38 percent of GHG emissions (excluding travel to/from Bonn) at COP 15 and 14 percent at COP 21 were also caused by overnight stays.

Target: Climate Protection

Action Area	Quantitative and Qualitative Targets	EMAS Indicator	Target Achievement
Climate protection	A 15-percent reduction in GHG emissions compared with the average value achieved at COP 15 and COP 21 (COP conference site (both zones) including local mobility; excluding travel to/from Germany and overnight stays in hotels).	Total GHG emissions	+71 percent Target not achieved (see below for data)
	100 percent of unavoidable GHG emissions which occurred during COP 23 (both zones) (including participants' travel to/from the COP) were offset.	Total GHG emissions	Offsetting achieved.

The emission reduction targets relate to COP 23’s Bula and Bonn Zones, all events held there as well as setup and dismantling. Local mobility of participants, staff, and volunteers was also taken into account. The targets did not include travel to/from Bonn or overnight stays in hotels, as these cannot be directly influenced by action taken within the environment and sustainability strategy.

When comparing the averages for COP 15 and COP 21 with that for COP 23, the differing conditions must be taken into account. On the one hand, different system limitations were selected: while setup and dismantling were not taken into account for COP 15, they were for COP 21 and COP 23. Also, COP 23 had a much larger temporary zone (zone with temporary structures) when compared with the two other COPs. The resulting higher energy use in the (longer) setup phase and in heating poorly-insulated temporary structures resulted in higher emissions. The emission factors applied also differed. Especially where electricity was concerned, the carbon footprint for COP 21 (Paris) was considerably lower compared with other countries due to the large nuclear energy share.

A comparison on the basis of participant numbers did not lead to any clearly comparable results. For example, 67,134 participants were registered and 223,000 visitors were counted at COP 21. At COP 23, 22,060 participants picked up a badge and 134,980 visitors were

registered. This represents an average 6.1 visitors with a collected badge at COP 23 compared with 3.3 at COP 21. No sufficiently accurate figures are available for COP 15.

Measures implemented

- Mechanism for a climate-neutral COP 23: A climate-neutral COP 23 was to be achieved via three steps: 1. Avoiding or reducing carbon emissions, 2. Use of renewable energy sources, and 3. Offsetting of unavoidable GHG emissions. (Steps 1 and 2 were addressed in the energy efficiency and energy supply action areas. Only Step 3 Offsetting was addressed in this particular action area.)
- Offsetting: Four Clean Development Mechanism (CDM) activities in Zambia, China, Rwanda and Nepal were financed (cookstoves and household biogas from biomass).
- A survey of participants conducted by the UNFCCC secretariat was used to obtain data on the location and category of hotels used by participants, the distance between each hotel and the COP 23 venue, use of public transport, taxis, or private vehicles, and the number of conference days respondents were in attendance. The results were anonymised and used to calculate the carbon footprint of COP 23. A total of 889 COP participants took part in the survey: their responses had to be extrapolated to arrive at the total figure – with a margin of error of less than four percent. For local mobility, 3,337,545 kilometres were driven, of which 77 percent were conducted with public transport. The GHG emissions amounted to 169,773 CO₂eq (see Table 4).
- COP 23 Negotiator app for smartphones and tablet computers: The UNFCCC secretariat offered an app for COP 23 which, like the COP 23 website, contained content on a range of sustainability topics with links to other websites and apps (<https://unfccc.int/cop23/sustainable-conference>), such as for public transport, free bike rental, tourism, an events calendar, and a simple carbon footprint calculator for food.
- As a prevention-focused climate action measure and to raise participants' awareness, information on the climate impact (carbon footprint) of food was made available both online and on-site (<https://unfccc.int/cop23/sustainable-conference#eq-6>).

5.4 Waste management

Guiding principle

For this conference, a standardised waste management scheme based on a waste avoidance approach was developed. Unavoidable waste will ideally be reused/recovered/recycled. Non-reusable waste will be disposed of in a way that is compatible with public interest. Waste management applies for all phases of COP 23, including planning, implementation, dismantling, and follow-up activities.

A total of 112,745 kg of waste was produced, of which 82 percent residual waste, six percent paper, four percent each lightweight packaging and bulk waste, and five percent organic waste from catering. Construction waste was not included in the waste calculation as no reliable data were available (see Section 6, facts and figures).

It is difficult to say whether the reduction target was achieved when compared with COP 15 and COP 21, because the figures cannot be easily compared (see Section 6 for comparative values).

Target: Waste

Action Area	Quantitative and Qualitative Overarching Targets	EMAS Indicator	Target Achievement
Waste	Use of reusable dishes wherever possible.	Waste Prevention	Yes
Waste	Avoidance of disposable coffee cups wherever possible.	Waste Prevention	Yes
	15 percent reduction in waste compared with the median of the results achieved at COP 15 and COP 21.	Waste Prevention	Conference duration -45 percent Total duration +65 percent
	100 percent waste separation.	Waste volume according to waste categories	Yes
	Catering: Unused food will be given away to charitable organisations.	Waste prevention	Implemented, where (permitted and) practicable
	Distribution of flyers, give-aways, etc. to be avoided wherever possible.	Waste prevention	Limited

Waste measures implemented

- Use of a waste separation system for COP 23: A recycling system was installed for glass (service providers only), paper and cardboard, plastics, and food waste (caterers only), with containers clearly labelled. The different waste categories were aligned with the waste management system operated by the City of Bonn. External service providers were required to take their waste with them. A total of 112,754 kg of waste occurred (excluding temporary structures and exhibition stands).
- Centralised planning of the waste management concept: Waste management measures were planned for all conference areas – the WCCB, part of the UN Campus, and temporary structures. Separate waste collection and the installation of waste containers and return systems were priority measures in both the Bula and the Bonn Zone. Waste separation was exemplary during COP 23.
- Reusable dishes at the conference site: Food and drinks (snacks, bottled drinks, etc.) sold at COP 23 were served in returnable packaging or reusable dishes wherever possible. Use of porcelain and glass was preferred. The initial large numbers of disposable coffee cups given out were reduced following internal audits conducted during the conference.
- Some 25,000 free reusable water bottles were handed out to delegates. These could be filled and refilled using free water fountains, most of which were fed with tap water from the city of Bonn's water grid. Dispensers were installed in the whole conference area. In the WCCB and at other locations where no tap water pipes could be laid, 49 rented water dispensers were set up, each with a capacity of 18.9 litres. Using reusable water bottles saved up to 539,900 disposable cups during COP 23 (based on 11,248 people per day and an assumed four cups per person per day during the 12-day event). It was evident that the water bottles were repeatedly used and only a limited number of disposable cups were given out.
- Reusable packaging in catering areas: Wherever possible, goods were to be delivered in reusable containers or reusable transport packaging (such as reusable boxes and crates, tubs, baskets). Where cardboard packaging was used, use of recyclable cardboard was required. Contractors committed to taking back all transport packaging.
- Low-waste packaging: Use of low-waste packaging was required. This meant large containers instead of portion-sized packs (e. g. mustard, ketchup, and mayonnaise dispensers rather than sachets), coffee cream in jugs, sugar in dispensers, etc.
- Temporary structures and exhibition stands: The materials reported as waste for the temporary constructions and exhibition stands are shown in the table in section 6. Wood (399,530 kg) made up the largest share of the overall total of 473,850 kg of waste materials. The PVC share amounted to 3,766 kg. Materials (which ended up as waste) resulted in a total of 458,464 kg CO₂eq.
- Paper light conference: Unnecessary use of paper was to be avoided in all areas. This applied to COP 23 events, exhibitions, and offices. To the extent possible, all information

was to be communicated via electronic means. This was fostered by the use of “Poken” (e.g. for the electronic exchange of contacts instead of using business cards, see <https://www.poken.com/smartdevices/>) and limited distribution of paper publications. Unavoidable hardcopies were to be printed exclusively on both sides, preferably in black and white and using 100-percent recycled paper with Blue Angel eco label certification. During the conference, 5,166 kg of paper was used. The recycling share in the offices and computer centres was 100 percent and 71 percent of paper supplies brought in from outside consisted of recycled paper. The share of printed negotiation documents made up 63 percent of total paper used (excluding paper used in offices and delegation pavilions) – this compares with 75 percent at COP 22. Paper accounted for some 2,000 kg CO₂eq.

- Reuse rather than disposal: The installed infrastructure (walls, carpets, cables, etc.) was either rented (carpet tiles) or destined for reuse after the conference (large rolls of carpet). Large rolls of carpet were to be processed into clothing, shoes, car mats, or felt products. The exact reuse of some materials depended on the quantities available and the potential partners for COP 24.
- Give-aways: In addition to the reusable water bottles made of polypropylene, 6,000 pens made of recycled polyethylene terephthalate (PET), 5,000 Knirps umbrellas (made from recycled PET and metal), 500 reusable coffee mugs (made of recycled PET) and 600 USB sticks were handed out. In some of the pavilions, exhibitors gave away small gifts. No figures are available on these.
- Reusable cotton roller towels: Except for temporary structures, disposable towels (including those made from recycled paper) and electric hand dryers were not used.
- Reusable cotton roller towels were used instead. This requirement was largely complied with. It did not, however, apply for sanitary facilities located in the temporary structures.
- Requirement to take back transport packaging and waste: For suppliers, companies involved in setup/dismantling, etc., there was a binding requirement for them to take back transport packaging and dispose of their own waste.
- Waste separation backstage: In the backstage areas (catering, staff offices, etc.), efforts were made to conduct separate, type-specific collection of all relevant types of waste (paper/cardboard, lightweight packaging and plastics, glass, organic waste, residual waste, hazardous waste, etc.). Information, education, and controls played an important role.
- Waste separation in the participant areas: In the participant areas, separate collection of lightweight packaging and plastics, paper and cardboard, and residual waste was planned. Waste disposal stations were set up in sufficient numbers and placed at adequate distances from one another.
- Regular emptying of waste containers during COP 23: Waste containers were emptied at regular intervals for the duration of COP 23.

- Waste management system information and training: Prior to the conference, staff, contractors, suppliers, firms involved in the setup and dismantling of temporary structures, etc. were informed about and instructed in the use of the waste management system for COP 23. Conference participants were informed via websites, signs, and other means. Waste management volunteers were on hand to provide help and advice.
- Waste management staff and waste controls during the event: During COP 23, waste management staff monitored waste separation in all areas (including backstage).
- A limited number of reusable cups were used for hot drinks. These were disposed of as lightweight packaging/plastic and subsequently recycled. To raise participants' awareness, the reasons behind the measures were clearly communicated and explained in the course of the conference.

5.5 Energy efficiency

Guiding principle

Reducing energy consumption is a priority measure in climate change mitigation. The available energy-saving potential will be exploited by means of technical and organisational measures involving buildings, facilities, and technology used.

The energy efficiency action area covered both existing buildings and temporary structures. This included setup, implementation and dismantling (excluding transportation). While the electricity supplied for COP 23 was 100 percent certified green electricity, it only represented around 17 percent of the total energy supplied (excluding diesel and propane). Heating was supplied via district heating and amounted to approx. seven percent. The largest share came from heating oil, with 74 percent of total energy supply.

Target: Energy Efficiency

Quantitative and Qualitative Targets	COP 21	COP 23/ Savings
Energy savings of 15 percent compared with the median achieved at COP 15 and COP 21 (COP venue excluding transport)	167 kWh/participant	153 kWh/participant 8 percent saving
EMAS Indicator: Overall energy use and share of renewable energy sources		Total electricity use: 1,453,609 kWh; of which 17 percent from renewable energy sources

Energy-efficiency measures implemented

- Lighting technology/energy monitoring: Lighting was monitored on a daily basis by staff of the lighting technology firm. Lighting that was not needed, such as after the end of an event, was be switched off.
- Avoiding standby losses, minimising base load: To avoid standby losses, energy sources which were not needed by the respective user were switched off. The base load supply of the energy sources was reduced to a minimum outside the event's normal opening times.
- Ambient temperature: An average ambient temperature of 21 °C was aimed for in all conference areas. This median temperature was frequently exceeded. Controlling the ambient temperature proved difficult due to the fluctuating numbers of visitors.
- Energy-efficient equipment: With regard to technical equipment, lighting, etc., technology offering the highest levels of energy efficiency was used wherever possible. This included LEDs, movement sensors, etc.
- Daylight: In the temporary structures, transparent surfaces such as roofs reduced the need for artificial lighting and thus for additional energy use.
- Electricity supply from the electricity grid wherever possible: To the extent possible, electricity demand was met using electricity from the electricity grid.
- Energy efficiency in catering: The performance specifications for the catering services required that all equipment used in storing, cooking, and presenting/serving food was to have the highest energy efficiency category. If not already available, such equipment was supposed to be specially purchased for use at COP 23. This allowed relatively little scope because in most cases, existing equipment was used.
- Energy efficiency initiative: In cooperation with EnergieAgentur.NRW and Tourismus & Congress GmbH Region Bonn/Rhein-Sieg/Ahrweiler (T&C), a programme was launched to conduct an energy efficiency campaign in hotels in and around Bonn. The EnergieAgentur.NRW showcased its energy-efficiency advice programme to interested hotels at a workshop held on 6 September 2017. Similar services were available in 2018.

5.6 Energy supply

Guiding principle

Approx. 80 percent of the energy supplied for COP 23 will be from renewable sources. COP 23 provides a showcase for lighthouse projects that serve climate change mitigation and Germany's energy transformation.

Target: Energy Supply

Quantitative and Qualitative Targets	COP 21	COP 23/Savings
Energy supply: 80 percent of energy supplied will be from renewable sources EMAS Indicator: Overall energy use and share of renewable energy sources	68 percent at COP 15 (no figures for COP 21)	17 percent from renewable energy use

The aim was to have at least 80 percent of energy supply come from renewable sources. The target applied for the duration of the entire event and covered both the Bula and Bonn Zones. Both electricity and heat were taken into account (transport was excluded). Use of 100 percent renewable energy could not be achieved because of the partial need to use diesel generators and heavy use of heating oil. The resulting emissions were, however, offset.

Measures implemented

- 17 percent of electricity demand was covered by renewable energy sources (including certified green electricity). This included the electricity demand for electric vehicles used during COP 23 – these were charged on BMU premises using electricity generated entirely from renewables.

5.7 Water

Guiding principle

At the various conference sites, COP 23 demonstrates responsible and considerate use of water. This includes efficient use of drinking water and prevention of pollutant inputs.

Target: Water Use

Quantitative and Qualitative Targets	COP 15	COP 23/Savings
Drinking water savings of 10 percent compared with the combined mean value for COP 15 and COP 21 were achieved.	92 litres/participant	178 litres/participant for the duration of the event 94 % higher water use for the duration of the event

Quantitative and Qualitative Targets	COP 15	COP 23/Savings
EMAS Indicator: Water use		in comparison to with COP 15
Wastewater flowed into the local drainage system (chemical toilets were not used).	Target achieved	

During the setup phase, drinking water used amounted to 2,048,000 litres (11 litres per day and person) and to 3,924,000 litres during the event (15 litres per day and person).

The target of a 10-percent savings in drinking water use applied for the duration of the entire event and covered both the Bula and Bonn Zones, including water use in sanitary facilities, kitchens and drinking water for participants. To compare water use, only the figures for COP 15 were used because water consumption there and also at COP 23 was calculated for the entire duration of the event. At COP 23 water consumption was extremely high compared with previous COPs. It was not clear whether the lack of concrete water-saving measures or the free supply of drinking water had led to the increased water use.

Measures implemented

- Sparing use of water: At COP 23, water was used as sparingly as possible and associated communication and information measures were implemented.
- Public water dispensers: In the temporary structures in COP 23 areas, water dispensers connected to the mains water supply were available for use free of charge.
- Checking of water pipelines and taps: Provisional pipelines and taps were regularly checked for possible leakage and fixed if needed.
- Zero chemical toilets: Chemical toilets were not used at COP 23. Temporary structures were connected to the public water supply and to the wastewater system.
- Avoidance of pressure on the wastewater system: To avoid overburdening the wastewater system, environmentally friendly dishwashing and cleaning agents were used. Also, the volume of wastewater was kept to an absolute minimum.

5.8 Catering

Guiding principle

Experience has shown that catering accounts for around six percent of the overall GHG emissions emitted at COPs. With the right catering service, this can be reduced (three percent at COP 23). Therefore, the catering principle at COP 23 included offering a balanced and climate-friendly menu with food produced using environmentally responsible practices. Vegetarian dishes, organic produce, and fair trade products were a key component of the food and drink on offer.

Target: Catering

Action Area	Quantitative and Qualitative Targets	Target Achievement – Food Served
Catering EMAS Indicator: GHG emissions, biodiversity	At least 50% of foods carry an eco label, preferably 75%.	Canteens Caterer Bula Zone: 44 % Caterer Bonn Zone: 40 % Conference catering Caterer Bula Zone: 75 % Caterer Bonn Zone: 60 %
Catering EMAS Indicator: GHG emissions, biodiversity	At least 60% of meals are vegetarian (including vegan).	Canteens: Caterer Bula Zone: 39 % Bonn Zone: 31 % Conference catering: Caterer Bula Zone: 75 % Bonn Zone: approx. 60 %
	At least 20% of foods are regional products, preferably as much as 40%.	Caterer Bula Zone: 32 % Caterer Bonn Zone: 60 %
	100 percent of the meat used is organically produced.	100 %
	100 percent of the fish and seafood used bears the MSC eco label (wild catch) or the Naturland, Bioland, or ASC (farm-raised) eco label.	100 %
	Coffee, tea, and chocolate are fairly traded.	Yes

Action Area	Quantitative and Qualitative Targets	Target Achievement – Food Served
	Not more than 10 to 15 percent of the food is transported by plane.	Yes

At COP 23, a total of 35,336 meals were sold. Fish dishes made up the largest share (10,600 meals). These were followed by meals which were mainly vegetarian (6,357) and purely vegetarian meals (5,217). The remaining meals sold contained either poultry (6,396) or beef (5,367). Alcoholic drinks were 100 percent German produce and were certified organic. With the exception of wine from the Palatinate region, they were locally produced or bottled in North-Rhine Westphalia. Eight out of 17 drinks were fairly traded.

Canteen catering caused emissions in the amount of 66,555 kg CO₂eq. Compared with an alternative scenario with an assumed vegan/vegetarian share that was half the actual result, this represented savings of 12,600 kg CO₂eq.

The quantitative targets in catering refer to food sold at the conference venue. Drinks were accounted for separately. The percentage values aimed for relate to caterer-procured food measured in units of weight. With regard to catering services for participants, the share of sold components was recorded to ascertain the extent to which visitors bought the various types of food. Selection of meals and drinks for the conference catering service (receptions, etc.) occurred via an online ordering tool. For each menu, the share of regional, organic, meat, fish, and vegetarian and vegan products on offer was shown. After the conference, an assessment of all the orders placed was made to see if the targets had been met.

In addition to the qualitative and quantitative targets, communication on the topic of low-carbon catering was intensified. Starting with COP 23, this will set a new benchmark for UN climate change conferences and serve as a best-practice model for future national and international events. Given the low demand for vegetarian meals, consumers could be encouraged to take up the vegetarian dishes, rather than adding more meat-based options to the menu.

Measures

- Procurement of regional products: Wherever possible, food was to be from regional sources (up to 160 km). The use of regional foods also meant shorter transport distances and supports regional farms and businesses. The target was achieved in the main. Only the wines on offer were from sources located 180 km from Bonn. They were certified organic, however. 60 kg of bananas and 30 kg of mangos were transported by air. The share of vegetarian meals was lower than expected because fewer participants chose vegetarian meals.

- The organic share of non-alcoholic drinks (except coffee) amounted to 40 percent, and to 100 percent for alcoholic drinks.
- No-waste approach: In the case of both caterers, a small proportion of meals not sold (130 kg) was passed on to a third party (Foodsharing e.V.). A total of 5,669 kg of organic waste was produced, all of which went into composting and was processed into biogas.

5.9 Temporary structures

Guiding principle

The principle of environmentally responsible construction methods, with the use of robust, recyclable, eco-friendly, non-hazardous materials and components, also applies to the temporary structures and their use in operation. Only pollutant-free materials, paints, etc. are to be used (at least in all interior spaces). Use of PVC will be avoided wherever possible.

Target: Temporary Structures

Action Area	Quantitative and Qualitative Targets	Target Achievement
Building EMAS Indicators: Biodiversity	No permanent structures will be built. After the temporary structures have been dismantled and the area has been returned to its original state, no residual damage will remain.	Yes
Material Efficiency	To increase resource efficiency, all participants will be asked to limit deliveries of materials to the conference site.	Participants were given specific instructions
Energy and material efficiency	Wherever possible, reusable building components and systems will be used.	Yes, due to prefabricated construction methods.

Measures

- Provisional structures: To the extent possible, a modular system was used for the temporary structures. Temporary structures/building modules/components/fixtures and fittings/interior decorations were primarily rented or reused, resold, or given away after the conference. A total of 473,850 kg of building materials were used. These were largely wood (339,530 kg), PUR (polyurethane) foam (63,500 kg), steel (6,184 kg) and PVC (3,766 kg).

- Reusable packaging for temporary structures: To minimise waste, reusable packaging was used wherever possible.
- Separated waste collection during setup and dismantling: Waste which occurred in setting up and dismantling the temporary structures built for COP 23 was subject to separate collection, as was all other conference-related waste.
- For environmental protection and preventive healthcare reasons, temporary structures set up at the conference site were not painted. Preference was given to materials bearing eco labels, such as the Blue Angel, versus non-certified materials.
- Use of a ground protection system for temporary use of lawn areas: Damage to vegetation was avoided by means of a ground protection system, especially in case of bad weather conditions.

5.10 Mobility

Guiding principle

For motorised transport, environmentally friendly forms of propulsion will be used wherever possible. Electric vehicles, such as shuttle buses for conference participants, will be used as a future-focused component of the COP 23 mobility concept. Motorised personal transport is only an option as a supplement to public transport.

Target: Mobility

Action Area	Quantative and Qualitative Targets	Target Achievement
Mobility EMAS Indicators: Airborne emissions	Direct emissions of air pollutants (daily journeys to and from the conference site) will be reduced by 20 percent compared with transport that does not include electric vehicles (NO _x , SO ₂ , PM).	SO ₂ : -12 % NO _x : -12 % PM: No data
Airborne emissions, GHGs	All shuttle vehicles (except VIP vehicles) will be electric (battery-- powered and hydrogen-- powered fuel cell vehicles).	Yes, electric or hydrogen-powered
Airborne emissions, GHGs	All registered participants and volunteers may use public transport free of charge and can use it to reach all conference areas.	Technical staff and volunteers did not travel free on public transport, but participants and all other staff did.
Airborne emissions, GHGs	For environmentally responsible mobility, motorised personal transport is to be reduced to the greatest extent possible.	Yes.

Action Area	Quantative and Qualitative Targets	Target Achievement
	The greatest possible number of journeys will be made with environmentally friendly vehicles (bikes, public transport, electric buses, etc.).	

Direct emissions of air pollutants (daily journeys to and from the conference site) were reduced by 12 percent compared with transport that does not include electric vehicles (NO_x, SO₂, PM)” applies for the duration of the conference. This does not include travel to and from Bonn.

Daily travel to and from the conference site also includes trips between the Bula and Bonn Zones (journeys made using the dedicated COP 23 shuttle service as well as other vehicles used to transport individuals).

All savings achieved through concrete technical and organisational measures taken at COP 23 were counted. Only direct airborne emissions were taken into account. Emissions from upstream operations were not considered (e. g., the electricity generated for the use of electric vehicles was not covered by the impact assessment).

Measures

- COP 23 bike lanes and footpaths: The thoroughfare leading through the Rheinaue park to connect the Bonn and Bula Zones was specially marked out and signposted for cyclists and pedestrians. COP bike pool: A pool of 600 bikes was made available for participants to ‘rent’ (borrow) free of charge. These were to be used via as simple a process as possible. A rental station was set up on the conference site, as were bike parking areas at the entrances to the Bonn and Bula Zones. A total of 11,861 bike ‘rentals’ were registered – a good result for the time of year.
- Bike to work: The UNFCCC secretariat, the BMU (Bonn and Berlin), and the City of Bonn took part in the City Cycling campaign in September 2017. The number of kilometres cycled was documented online (by way of a ranking list), as were the carbon emission savings achieved. The aim was to make not just a symbolic but also an actual contribution to achieving the UNFCCC emission reduction targets. 16,676 km were cycled, which saved 1,865.8 kg CO₂eq. These three participating organisations continue to call for as many participants as possible to cycle to work and encourage a form of friendly competition between the three staff groups.
- Cars banned from the conference site: There was no public car parking available to participants near the COP 23 site. The area surrounding the COP 23 venue was not

accessible by private car. Participants had to leave their cars at a distance and switch to public transport or bikes.

- Use of electric vehicles: During COP 23, electric vehicles were used for transporting registered participants wherever possible (31 electric cars, 13 hydrogen fuel cell cars, 4 hybrid buses, 14 electric buses, 3 hydrogen buses). At the same time, e-mobility was promoted. The electric vehicles were used for four shuttle services: between the two conference zones, between the conference zones and the regional UN Campus railway station, and to Cologne-Bonn airport. A total of 55,278 km were travelled using e-cars, e-buses and hydrogen fuel cell cars (represents 11,147 CO₂eq).
- Criteria for shuttle buses: At COP 23, no transport was to be provided for individual passengers. As a matter of principle, individual shuttle journeys were neither offered nor arranged. A contingent of conventional vans was, however, kept aside for emergency use by delegations from countries that do not have embassies in Germany and are hence unable to make their own arrangements. The VIP service using conventional vans and limousines covered 37,325 km (represents 14,173 kg CO₂eq).
- Low-emission official vehicles: The official vehicles used (German Federal Government fleet) met the highest environmental standards. Preference was given to electric vehicles, with the alternative of using fuel vehicles and bicycles. Rather than limousines, small buses or vans were to be used to transport several people at once.
- Passenger support: At key transport hubs such as the main railway station in Bonn, volunteers were available to help visitors find their way around.
- Public transport: Additional public transport was provided during COP 23. This included DB trains, trams, and buses. For transporting COP participants to the conference site during peak traffic hours, buses ran more frequently along the respective routes and additional (electric) buses were provided. The newly-built UN Campus railway station was opened earlier than planned to coincide with COP 23. The station is located just 800 metres from the main entrance to the Bula Zone.
- Free use of public transport: All participants from Parties, observer organisations, media, and volunteers registered for either the Bula or the Bonn Zone at COP 23 were able to use public transport in and around Bonn free of charge for the duration of the COP.

5.11 Noise

Guiding principle

Noise must be avoided and minimised during the setup, implementation, and dismantling phases. Unavoidable noise must be reduced in terms of time and location in accordance with applicable legal requirements.

Target

In noise-affected areas, noise levels were not to exceed an average of 65 dB(A)

Measures

- Overarching measures related to traffic prevention, handling potential sources of noise, and planning helped to ensure minimisation of noise. This target was served by the event site location in the Rheinaue park which is not surrounded by residential properties and is conveniently situated for connections to the highway. This made it easy for delivery vehicles to avoid driving through residential areas.
- Noise levels: In noise-affected areas, noise levels were not to exceed an average of 65 dB(A). This is in line with the (ambitious) recommendations published by the WHO. However, as noise levels were not actually measured, the actual daily average could not be calculated. Taking account of the fact that hardly any of the events were held in the open air, it seems safe to assume that the average was not exceeded outdoors.
- Noise must be avoided or reduced: Unavoidable noise was to be restricted as appropriate in terms of time and location. Noise emissions were to be reduced at source and kept to an absolute minimum. Local residents were not to be unreasonably disturbed. Again, no local residents live in the immediate vicinity. The noise emitted during the events was limited to what were virtually all indoor events held in closed areas and thus only heard by participants. Residents living in a larger radius had been informed at an early stage.
- Compliance with the State of North Rhine-Westphalia (NRW) Emissions Control Act: Between 10 pm and 6 am, no events were held which could disturb residents' peace at night.
- Reduced permitted traffic speeds: The plan was to reduce traffic speeds on the roads leading to and from the conference site during COP 23. In the immediate vicinity of the COP, control points were set up which automatically led to a reduction in traffic speeds.

5.12 Procurement

Guiding principle

In procuring and using products, technologies, and services for COP 23, preference will be given to those which have the least environmental impact during their entire lifecycle. Both production processes and products must be pollutant-free, while recyclability and resource efficiency will also be taken into account. Key factors in meeting these criteria may include use of a sophisticated environmental management system and products bearing quality or eco labels that indicate they are environmentally and socially sound.

Measures

- Procurement of durable products and goods: To supply and equip COP 23, only durable products and goods (preferably made from natural resources) that have only a marginal impact on the environment in the course of their lifecycle were to be procured.
- Environmentally friendly/green procurement: The German General Administrative Regulation on Federal Procurement of Energy-Efficient Products and Services as amended in the version dated 26th January 2017 provides the framework for Federal Government procurement. The UN Supplier Code of Conduct and the joint COP 23 Recommendations of the Federal Government and the City of Bonn for Suppliers and Contractors supplement the administrative regulation with regard to additional sustainability-related aspects.
- Procurement of certified products: Care was given to procure certified products (e.g. Blue Angel label) and products with the highest energy efficiency classification. To the extent this was legally and actually possible, the BMU gave preference to EMAS-certified companies.
- Textiles: In providing uniforms for volunteers, only textiles certified under the Ökotex standard were procured. This standard guarantees first and foremost that products bearing it are pollutant-free right from the beginning of the production chain.
- Recycled paper: Conference participants were provided exclusively with recycled paper bearing the Blue Angel eco label.
- EMAS: To the extent legally possible, the BMU preferred to collaborate with EMAS-certified companies.

5.13 Communication on environmental protection and sustainability at COP 23

Target

All participants at COP 23 and all employees and third parties involved will be informed about the key aims of the COP 23 sustainability strategy and will act in accordance with its requirements.

Measures implemented

- The BMU website and the UNFCCC secretariat website and app contained information on the environmental and sustainability goals of COP 23.
- Signs and stickers in the corridors and on the walls informed participants about those goals. Particular attention was given to requirements concerning food, reusable dishes, and waste separation. The free bikes provided on the conference site bore appropriate labels.

- Staff and volunteers were informed as part of an internal process and given training as needed. The 650 volunteers recruited by the UN Volunteers (UNV) programme attended an in-depth training event on 30th October 2017. There, the sustainability strategy was explained so that volunteers were able to provide basic information about the environmental goals and measures for COP 23. Thirteen volunteers trained as “greening ambassadors” provided information on environmentally friendly behaviour, conducted sustainability tours in the Bonn Zone and, along with “Sustainability Hosts”, reported potential for improvement during the conference. The agency engaged by BMU conducted two environmental training days for all staff and workers at the conference construction site.
- Packaging of food and beverages and menus offered by the conference catering services gave precise details of product composition and, where appropriate, carried eco labels for certified food and drinks.
- This information was provided in the three restaurants located in the Bula Zone and in the two restaurants in the Bonn Zone.
- Prior to, during, and after the conference, an explanatory EMAS video was shown. The film was also made available online.

5.14 Climate Planet of the German Federal Ministry for Economic Cooperation and Development (BMZ)

The Climate Planet contribution to the COP 23 Environmental Impact Statement and its revision on the basis of an evaluation and data assessment were produced by labconcepts GmbH on behalf of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of the German Federal Ministry of Economic Cooperation and Development (BMZ).

Climate Planet is the world’s biggest-ever model of planet Earth. Following an idea by entrepreneur Henrik Rud, it was developed in 2017 by Global Citizen, a Danish NGO based in Aarhus (Denmark), the European Capital of Culture 2017. Climate Planet is a non-profit initiative that provides a unique communication platform for people committed to achieving a sustainable planet Earth.

The BMZ, in collaboration with the German Agency for International Cooperation (GIZ) GmbH and the City of Bonn, showcased the Climate Planet in the Rheinaue park during COP 23, bringing the giant walk-in globe to Germany. labconcepts GmbH was responsible for managing the event and event logistics, and for monitoring overall implementation.



Picture 3: Climate Planet

More than 23,000 visitors, some 5,000 of them children from various schools, attended the Climate Planet show. A 360-degree screen in the form of planet Earth is used to project a 40-minute film on the global climate, climate developments around the world, and the effects of climate change.

In the covered area of the Climate Planet site, the BMZ-hosted interactive exhibition “Climate Policy is Development Policy” used a range of topics to show visitors how climate change affects the lives of people around the world and what can be done to overcome the challenges it brings. Concrete examples illustrated both the importance and the effectiveness of development policy in mitigating climate change and adapting to its effects, thus highlighting the fact that climate action and development policy are inextricably linked.

The Climate Planet was accompanied by highly effective media campaigns, thus reaching both a broad public and a specialist audience – schools, interested citizens and visitors to COP 23 had the opportunity to visit the Climate Planet free of charge.

Admission to the Climate Planet on weekday mornings was reserved for the schools programme, with Engagement Global inviting school classes to visit the show. The films shown and the post-film talks were moderated by climate experts. After the talks, the school children were able to visit the outdoor part of the Climate Planet exhibition and delve deeper into the topics covered by the films. They were accompanied by staff from the “Bildung trifft Entwicklung” (Education meets Development) programme (<https://www.bildung-trifft-entwicklung.de>).

In addition to the schools programme and the public film screenings, the Federal Ministry for Economic Development and Co-operation (BMZ) invited partners from civil society to hold their side events on the Climate Planet site. A total of 15 side events were held there, one organised by GIZ and three by BMZ.

With the Climate Planet, BMZ together with its partners Global Citizen, GIZ, the City of Bonn and others – such as stakeholders related to the events held – provided a public education programme on climate change and development during COP 23. In over 60 film screenings, as many as 300 visitors learned about climate change. And more than 23,000 visitors to the exhibition obtained an insight into the links between development and climate action.

The aim was to open COP 23 and use the unique opportunity of a climate change conference held in Bonn to inform a broad public and a specialist audience about important aspects of climate change and encourage them to become engaged. This raised visitors' awareness to how they can act to promote and support sustainable development in a variety of ways.

Climate Planet Facts and Figures

- Duration of the exhibition: 5th–17th November 2017
- Location: The open-air theatre in Bonn's Rheinaue park
- Area: 5,600 m², of which
 - Approximately 5,200 m² accessible to visitors, whereby:
 - The interior of the Climate Planet globe (visitors' area) covers approx. 200 m²
 - The separate exhibition container and the covered area (visitors' area) cover approx. 1,000 m²
 - The external paths cover approx. 4.000 m²
 - The remaining space is used for other functional areas (production/technology/equipment, entrance, sanitary facilities, etc.)
- The Climate Planet globe: The giant walk-in planet Earth measures 24 metres in diameter
- Globe within a globe: The inner globe, a four-metre-high 360-degree screen suspended from the top of the outer globe, shows live NASA satellite transmissions of planet Earth; 300 seats
- The "Climate Policy is Development Policy" exhibition is held in the Climate Planet container (a modified shipping container)
- The Climate Planet show was open to the general public and the specialist public. Admission was free and there was no need to book a visit (except for school groups and specific events).

Climate Planet Guiding Principles

The environmental management guidelines of both the BMZ and GIZ also applied to the Climate Planet exhibition.

The BMZ environmental management guidelines are set out in the BMZ Environmental Statement 2017 (Umwelterklärung – in German only):

https://www.bmz.de/de/mediathek/publikationen/reihen/infobroschueren_flyer/infobroschueren/sMaterialie345_umwelterklaerung.pdf

The GIZ environmental management guidelines are set out in the GIZ Environmental Statement 2017 (Umwelterklärung – in German only):

<https://www.giz.de/de/downloads/giz2017-de-umwelterklaerung.pdf>

Measures and Impacts

Planning and implementation of the Climate Planet followed the guidelines of the Federal Environment Agency (UBA) and the BMU on sustainable management of events. Special attention was paid to the EMAS core indicators. Setup, implementation, renaturation of the site, water and energy use, waste production, emissions, mobility, catering and materials efficiency were calculated and then evaluated. The outcomes are outlined below, whereby the list of measures is in purely alphabetical order and does not attach any kind of weighting to the individual activities described.

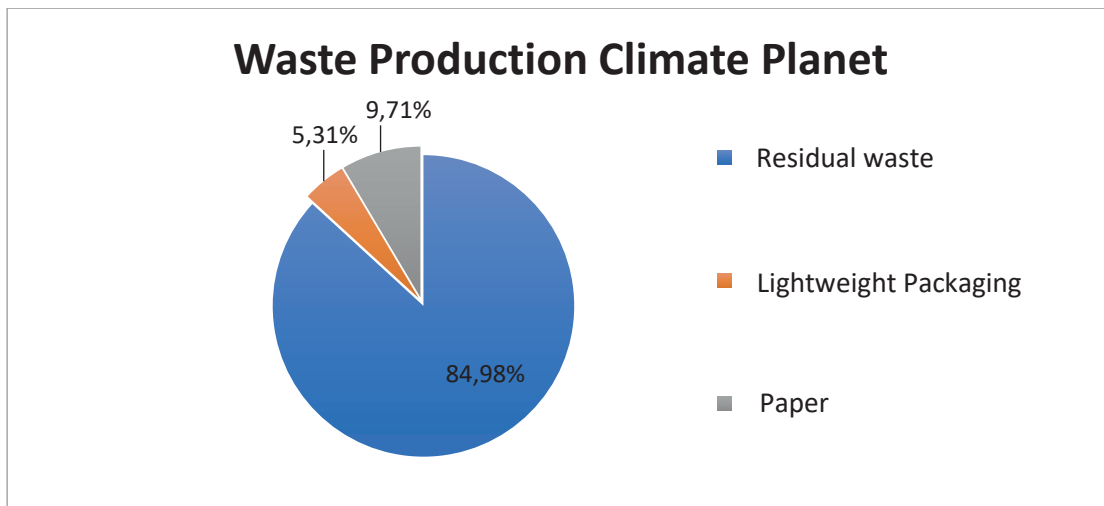
The data were collected by means of a questionnaire sent to the various subcontractors. A total of 13 subcontractors were involved in setting up and implementing the Climate Planet.

The findings for the various action areas were as follows:

- **Waste disposal/waste separation**

On the event site, a total of 15 waste separation stations were set up for visitors. These comprised waste islands for paper, residual waste, and plastics, with English signs indicating the type of waste. Glass was not allowed on the site. Separation of organic waste and collection of food waste had to be abandoned after the first few days of the event, because the waste attracted vermin due to the river-side location in the Rheinaue park.

Large waste containers were placed around the exterior site. Daily waste collection was conducted by Bonn Orange. A total of 3,162 kg (residual waste, packaging, paper) was removed. This included 307 kg paper, 168 kg of lightweight packaging and 2,687 kg of residual waste.



Graphics: Share of waste types in overall waste in percentages (figures in the graphic may differ due to rounding).

Added to this comes packaging waste generated by the technical service provider who took six cubic metres of residual waste produced in setting up the indoor section of the Climate Planet exhibition back to their site for separation and environmentally-friendly disposal. The Euro-pallets used as work islands in the exhibition area were distributed across the technical service provider’s site and will be used for future transport and furniture assembly. The waste generated also contains set-up and dismantling waste.

- **Site access**

The entire site and the individual event areas were designed to ensure barrier-free access to the site, the Climate Planet, the exhibition containers and the sanitary facilities. Barrier-free toilets were available, there were ramps to all containers and barrier-free flooring covered the entire area. The touchscreens were suited for use by all visitors. The barrier-free access measures were expandable for film screenings and touchscreen use, but it was not possible to provide sign-language subtitles for the films due to the short preparation period involved.

- **Catering**

During the Climate Planet exhibition, catering was only offered for the on-site team and for the three special events hosted by BMZ. The organisers of the 15 side events were informed about the sustainable catering concept. With an average visit lasting approximately one hour per person, it was decided not to offer catering or drinks.

Regional and, where possible, seasonal, fairly-produced¹ and fairly-traded products were offered. More than 50 percent of the food on offer carried an eco label and more than 20

¹ Explanation of Fair Trade: <https://wfto.com/fair-trade/definition-fair-trade>

percent of the food was regionally produced. All food on offer was vegetarian. Only reusable dishes were used.

A transparent volume management system and reliable figures for the number of team members to be served helped to ensure that hardly any food waste occurred. One exception was the opening event, where many visitors had not made use of the catering services due to the cold temperatures in the exhibition area. All other left-over food was used for crew catering after the event and a high percentage of it was consumed. Food could not be passed to charitable organisations because the cool chain could not be maintained due to a lack of appropriate infrastructure and restrictions on vehicle access to the site.

Originally, it was planned for the disposal company ReFood to collect and reuse food waste for biogas production. In the end, for the reasons given in the section on waste this was not possible.

- **Emissions**

All climate-damaging emissions, expressed in CO₂eq² that could not be avoided during the Climate Planet exhibition were calculated and offset by Klima-Kollekte.

Klima-Kollekte gGmbH is an offset fund run by Christian churches in Germany. It enables all individuals, organisations and communities to offset unavoidable emissions from energy use, mobility, paper and print products. Offsetting payments are invested in projects which reduce both emissions and poverty in developing countries and emerging economies, thus helping to reduce emissions of climate-damaging gases.

To ensure calculations were as accurate as possible, consumption, mobility and logistical data were collected from all service providers and staff. This included all data which arose during preparation, such as for meetings. Wherever possible, physical meetings were substituted by video and telephone conferences.

The following emissions data were collected and offset:

Energy use (electricity), staff mobility, logistics (transport, set-up and dismantling, staff and technicians' travel to/from the site), meals and overnight stays, printed matters. Visitors' data was not collected (see the section on Mobility).

² In addition to CO₂, other greenhouse gases exist which affect the atmosphere in different ways. The UN IPCC has thus defined what is commonly referred to as Global Warming Potential (GWP). This expresses the warming effects of a specific quantity of GHG over a pre-determined period (usually 100 years) compared with the same quantity of CO₂. GHG emissions can hence be calculated in CO₂-equivalents (CO₂e) and collated.

GHGs Climate Planet Exhibition/COP 23

	Quantity	CO ₂ eq in t
Mobility		18.7
Catering		2.8
Overnight stays		4.7
Paper use/Printed products		9.3
Wasser use m ³		0.0
Energy use (electricity)		32.4
Heating use, e.g. natural gas kWh		0.0
Logistics		212.8
Total GHG Emissions		280.6 t CO₂eq

A total of 280,6 tons of **CO₂eq** were associated with the exhibition and offset.

Of these, 18.7 tons were attributed to mobility (staff and service provider travel to/from the site). This includes journeys by road, air travel and ferry trips. Service providers and staff were requested to use rail and public transport for daily travel for the duration of the Climate Planet.

Catering accounted for 2.8 tons – all 1,150 portions of meals according to our catering policy, plus energy used in meal preparation. Overnight stays generated 4.7 tons: 130 in hotels and three in an apartment. Paper use and printed materials accounted for 9.3 tons (see the graphics below).

Energy use (electricity) accounted for 32.4 tons. The largest share of emissions was related to logistics (journeys with trucks and transporters, etc.), at 212.8 tons. This was primarily due to Climate Planet deliveries from Denmark.

The offsetting costs amount to **€ 6,454.19**.

The Climate Planet generated **12,2 kg CO₂eq per visitor**.

- **Area Covered**

The Climate Planet was set up in Bonn's Rheinaue park, along what was known as the connecting corridor at COP 23. This was located between the two conference zones where accreditation was required for access. The area was provided to Global Citizen by the City of Bonn under a space-leasing agreement which required that any damage to the area be repaired afterwards. The Climate Planet was set up in the open-air theatre area. Only a small area of that space is sealed. To assemble the exhibition and avoid sealing other parts of the area, 6,000 m² of lawn were covered with flexible flooring. Paths needed for vehicle access to the site were covered with heavy-duty flooring. In planning the site, any measures which would have required digging were avoided, such as laying of electricity and Internet cables. This ensured that the lawn areas remained intact.

Handover of the area back to the City of Bonn occurred in a multi-phase process. In March/April 2018, the entire area of m²lawn was reseeded. The final, official handover to the City of Bonn took place in summer 2018. . The area had been restored to its original state.

- **Materials**

When planning the Climate Planet exhibition, attention was paid to restricting materials use to a necessary minimum. Actual needs were identified and the least amount of materials possible was used. Materials were procured based on the criteria of reusability, environmental friendliness and durability. Given that the project lasted just under two weeks, durability was the deciding factor when it came to selecting sustainable products. In many cases, but not in all, durability could be combined with a high degree of environmental performance. In this context, please also see the section on Decoration and Signage.

- **Exhibition**

The principle of reusability applied when designing the Climate Planet (see the section on Reusability of the Climate Planet Show below) was also applied for the exhibition area and its associated components. Only existing exhibit pieces were used for the show. The communication islands (made of Euro-pallets) located in the exhibition area have been distributed among the fair construction service provider's sites and will be used for future projects. When selecting the pallets, care was taken to rent pallets made of smoked wood rather than pallets treated with chemicals. The flooring in the containers carried the Blue Angel eco label and can be reused.

- **Badge System**

To control admission and ensure compliance with the maximum number of 300 visitors in the Climate Planet and 600 on the entire site at any given time, a badge system was used which enabled controls by means of differently-coloured lanyards. A surplus of 100 lanyards in each of the two colours was factored in to cover potential losses. Despite this, there were not enough lanyards available at the end of the first week because visitors failed to return them even though they were expressly requested to do so when leaving the site. Rather than produce new lanyards, perforated tickets printed on recycled paper were introduced and lanyards were no longer given out. The remaining lanyards have been stored at BMZ and will be used at a future event. As a result, the remaining lanyards were not included when calculating the emissions.

- **Decoration and Signage**

The signage largely consisted of weather-proof cardboard. In some places, floor signs had to be used because there was no opportunity to affix signs to a surface. To keep the use of floor

signs to an absolute minimum, a weather-proof, self-adhesive film was used which was laid out for the duration of the event. This practice needs to be optimised: The film did not withstand the heavy rain and the wear and tear from pedestrians and bikes in wet weather and had to be replaced twice. A total of 77 floor signs were used in place of the originally planned 24. A mesh fence banner measuring 24 metres in length and two metres in height and various other materials from the Climate Planet will be reused. A stage carpet measuring two metres in diameter was also produced using materials bearing the Blue Angel eco label and will continue to be used by Climate Planet. Use of trade show carpeting was largely avoided. Only the floor of a tent (36 sqm) was covered with carpet oddments from the Bonn Zone, because a short-term solution was needed.

- **Give-Aways**

The Climate Planet exhibitors refrained from issuing give-aways altogether.

- **Furniture**

Almost all furniture needed was part of the Climate Planet show and will be used again. Only a few pieces of furniture – such as coat stands, tables and benches for the crew catering area, a bar element used for standing talks and five chairs – were rented and delivered from a warehouse near Frankfurt. Since the subcontractor responsible for decoration and technical equipment owns this type of furniture, this small amount of equipment for the Climate Planet could be delivered along with the necessary technical equipment shipped by the subcontractor (see the mobility data in the graphics below).

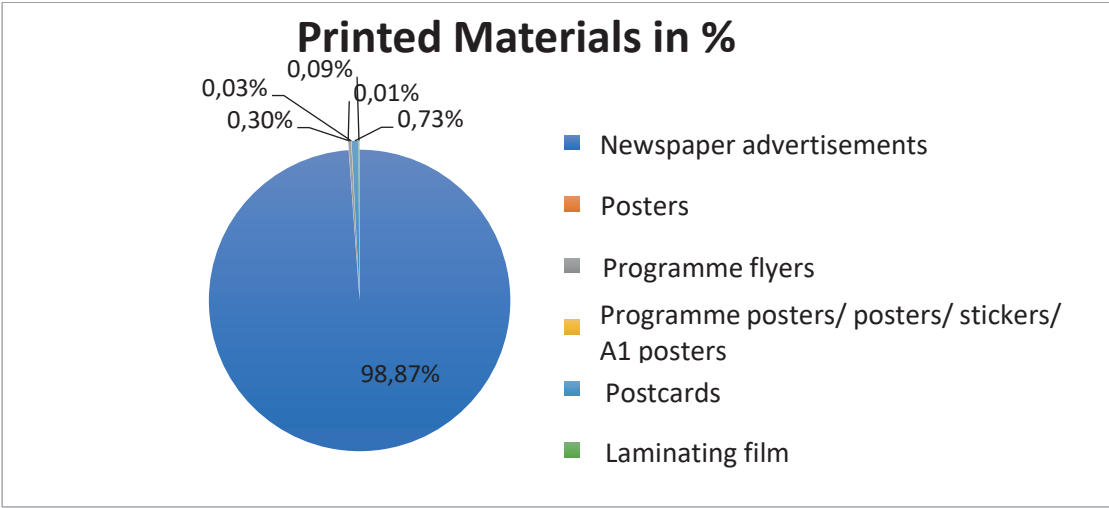
- **Paper Use**

When exhibiting the Climate Planet, care was taken to limit paper use. At the planning stage, it was decided to make the show as far as possible paper free. In the first week of the exhibition, a large number of visitors asked for printed programmes. Although the programme was available online, it was nonetheless printed on posters and programme flyers were handed out.

Another last-minute decision involved collecting feedback from visitors to enable a response to suggestions and critique. Specially-made postcards were made and placed around the site for visitors to pick up, fill in and submit for collection.

Paper use was counted in sheets. A total of 11,374 sheets of A4-size paper were used for the activities described. Adding in newspaper advertisements, some 1,100,000 sheets were used. The largest share of printed materials (98 percent) involved adverts in newspapers and magazines. This was responsible for most of the emissions in relation to printed materials –

8.9 tons in total. Although these were indirect emissions, they were nonetheless offset (see the section on Emissions).



Graphics: Share of printed materials in % (figures may differ due to rounding)

- **Cleaning Agents**

For cleaning, care was given to ensure that only environmentally friendly cleaning agents and soap were used (palm oil-free, crude oil-free and made from renewable resources).

Right from the start, the cleaning service provider was informed that only environmentally-friendly cleaning agents were to be used.

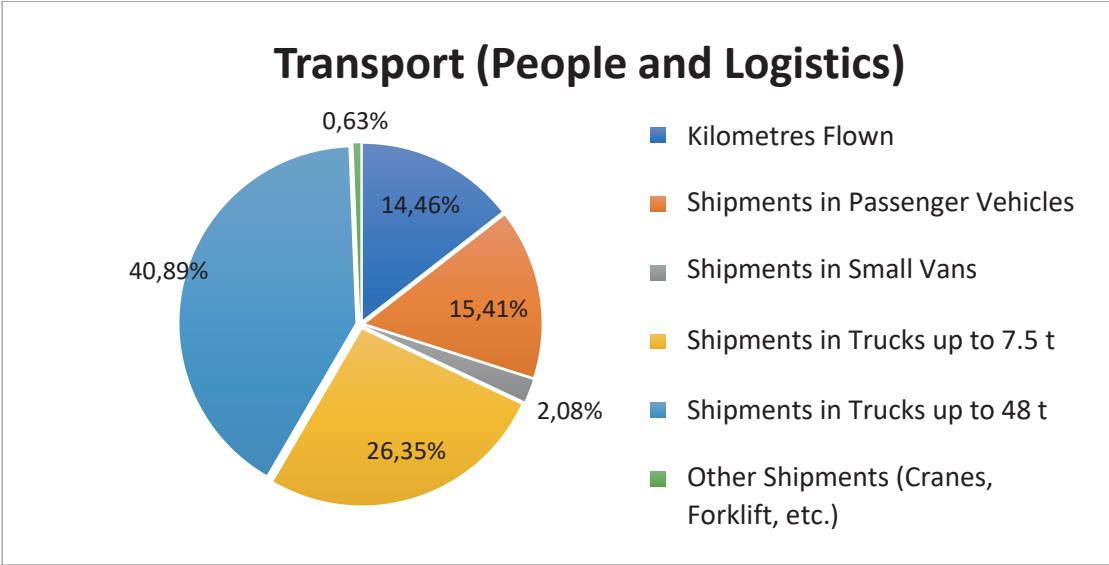
- **Mobility**

When preparing for the Climate Planet exhibition, several trips were necessary (set-up, travel of staff/service providers). The associated emissions varied depending on the type of transport involved. Service provider staff (excluding those working for Global Citizen) could use a wide range of options for carbon-light travel from A to B, both in preparing for and in implementing the Climate Planet show.

On the Climate Planet website, in the programme flyers and the flyers for schools, visitors were requested to travel to the Climate Planet using public transport only. Travel options for visitors to the various events were explicitly addressed in the briefing for event organisers, and service provider staff were requested not to travel to the Climate Planet by car wherever possible.

Shipments of individual service providers were transported using passenger vehicles, small vans and in some cases trucks (Climate Planet set-up).

Passenger vehicles were used for a total of **14,958 km** (mostly by service providers coming from Denmark, where Global Citizen is based). Small vans were used for a total of **2,021.4 km** and trucks with a capacity of up to 7.5 t for **25,580 km**. Additional trucks (over 7.5 t, 24 t and 48 t) travelled **39,693 km**. Other journeys were made by two cranes and two forklifts (**611 km**). Kilometres travelled by air amounted to **14,209.58 km**.



Graphics: Percentage share of non-passenger transport types (figures may differ due to rounding off)

Total Transport	in %	in km
Kilometres flown	14.46%	14,209,58
Shipments in passenger vehicles	15.41%	14,958,00
Shipments in small vans	2.08%	2,021,40
Shipments in trucks up to 7.5 t	26.35%	25,580
Shipments in trucks up to 48 t	40.89%	39,693
Other Shipments (crane, forklift, etc.)	0.63%	611
TOTAL	99.82%	97,072,98

Staff mobility during the Climate Planet exhibition caused a total of 18.7 t CO₂eq. Trips of staff involved in setting up and transporting materials (logistics) caused 210.1 tons.

Mobility data were not collected for visitors, they all arranged their own travel. In the case of COP participants – their travel data were collated by the COP organisers and offset using the COP offsetting programme. It can be assumed that the vast majority of visitors used public transport to reach the COP. The travel advice emphasised the difficult traffic conditions expected in Bonn during COP 23 and visitors were provided with a detailed list of public transport connections for trips to the Climate Planet. This occurred via the website and by e-mail in the case of school classes and invited guests.

- **Sanitary Facilities**

The Climate Planet site was not connected to any existing infrastructure. This meant that sufficient sanitary facilities had to be installed. Compost toilets which use neither chemicals nor water and are thus environmentally friendly were set up. A total of 12 toilets and 7 wash basins were available. In addition to their environmental friendliness, the sanitary facilities also had a positive effect in terms of communication. Above the washbasins, brief but effective handouts were displayed which explained the benefits of compost toilets compared with water toilets.



Picture 4: Washbasins and compost toilets at the Climate Planet

- **Electricity Use**

Electricity was a major factor in operating the Climate Planet. Both the heating system and the technical equipment in the Climate Planet show and the exhibition, and also in the functional containers used as offices and for crew catering, had to be supplied with power. The electricity supply was provided exclusively from renewable energy sources. Via the City of Bonn utility company SWB and MANN Naturenergie, SWB's regional partner in the supply of renewable energy (which carries the "Green Electricity" seal awarded by Grüner Strom Label e.V.), a total of 57,909 kWh of electricity were used between the start of the set-up on 19 October 2017 and when dismantling was completed on 16 November 2017. This represents a daily consumption of 1,868 kWh.

- **Reusability of the Climate Planet Show**

Global Citizen designed and produced the Climate Planet show with the notion of long-term use. It was assembled in Denmark, in Aarhus and Copenhagen, and Global Citizen plans to take it on tour throughout Europe. The tent constructed for COP 23 in Bonn using shipping containers as exhibition space will also be part of the tour.

- **Water Use**

Given that compost toilets were installed, water was only needed in the catering area and for the washbasins. The amount of water used was negligible.

- **Procurement**

In the planning and implementation of the Climate Planet, a variety of subcontracts were awarded, in line with the Federal German Procurement Regulations which include energy-efficiency and environmental friendliness as minimum requirements and award criteria. Procurement in connection with the Climate Planet was performed by GIZ, by labconcepts as the primary contractor and by the operators of Global Citizen. Bidders were required to provide details of the sustainability measures they would take when performing the contract. Minimum sustainability standards were also stipulated. As part of the contract award process, information on company sustainability plans and environmental management systems was requested to enable short-term improvement measures to be implemented as needed (e.g. avoiding the use of disposable dishes, requirement to use biodegradable cleaning agents, etc.)

- **Communication**

labconcepts made a concerted effort to inform staff, agents, business partners and subcontractors about the agency's sustainability approach, intensify their knowledge, and raise their environmental consciousness and responsibility with the aim of promoting more

sustainable behaviour at work and at home. During the bidding process, service providers were notified of the requirement to work as sustainably as possible and were also requested to provide details on their own approaches to environmental and social sustainability.

A specially-produced Climate Planet manual for suppliers and service providers contained information on the infrastructure, set-up and dismantling, and had a section dedicated to the measures involving sustainable event management and the associated expectations placed on all those involved.

Each day, some 50 employees were on hand to oversee visitor relations, technical equipment, catering, sanitary facilities, cleanliness, safety and security. All staff were given an awareness briefing and informed about the measures involved in sustainable event management and the security plan. An event manager was always present so that questions could be asked at any time.

After the event, 10 out of 13 suppliers and service providers filled out the questionnaire on their sustainability measures, thus enabling a detailed evaluation of all measures taken. In addition, a number of subcontractors were approached directly and asked whether and where they had experienced difficulties in implementing their measures.

Social sustainability played an important role in the interaction within the team. Despite the extreme spaciousness of the area involved, a dedicated on-site rest and recuperation area with catering facilities was made available for staff. Long working days were broken up into shifts wherever possible and compensatory time was agreed.

- **Continuous improvement during the COP**

The event organisers held numerous talks with visitors regarding the measures taken in organising and conducting the event. The measures were repeatedly discussed with visitors and aligned where necessary. Over 1,000 feedback cards were submitted in (or during but not over – just an editorial note to the translator) the course of the COP. The feedback was evaluated in evening debriefings, suggestions were taken up and implemented wherever possible. For example, greater attention was paid to the lighting times in the outdoor area and communication on the waste separation system was stepped up. A detailed evaluation of the feedback cards was performed by GIZ.

- **Recommendations**

In project planning and implementation, sustainability was defined as a guiding principle for personal behaviour and attitudes and discussed in detail with all stakeholders who were actively involved. Their comments and suggestions were taken on board and then

implemented. This communication approach proved successful and is recommended for all types of large-scale events.

For future events, it is recommended that staff from participating organisations and suppliers/service providers be involved in the development of environmental targets right from the planning stage. This will raise their awareness of the targets in question and help them better identify with those aims. In particular, when selecting suppliers/service providers greater attention could be paid in ensuring they are sustainably managed businesses. This was not always possible due to the short space of time between planning and implementation, and the scarce capacities available for COP 23.

6. EMAS-Related Facts and Figures³

	COP 15 (where available)	COP 21 (where available)	COP 23 estimated (where available)	Actual Results (set-up, conference, dismantling – unless stated otherwise)
No. of registered participants	33,526 (participants with badge, excluding staff)	67,134 (participants with badge)	Up to 25,000 (Bula Zone and Bonn Zone)	22,060 (participants with an activated badge)
No. of staff	8,000	7,378	Approx. 800 (only staff in the strictest sense, i.e. subject to direct instructions from COP 23 management)	5,083 (incl. volunteers)
Visits	166,500 (unknown if this number includes staff)	223,000 (unknown if this number includes staff)		134,980 (with an activated badge, incl. staff)

³ Without climate planet.

	COP 15 (where available)	COP 21 (where available)	COP 23 estimated (where available)	Actual Results (set-up, conference, dismantling – unless stated otherwise)
Energy use (kWh) (figure per person in brackets)	954,204 (28)	11,200,000 (166)	1,200,000 (48) of which Electricity: 750,000 (30) Heat: 450,000 (18)	1,453,609 (65) of which District heat in kWh: 416,000 Heating oil for heat in litres: 366,099 Heating oil for electricity in litres: 232,478 Diesel for vehicles in litres: 10,831 Propane gas for forklift in kg: 10,142
Renewable energy share (%)	68 (38,168 kWh produced by on-site wind turbine and 26,726 kWh produced by conversion of food waste to biofuel)	-	75 (electricity) Mains operation: Green electricity Onsite power generation: Diesel generator Heat: No renewable energy sources	Mains power: 100 % generated from renewables, but only 17 % of overall energy supply 4,034 kWh (e-vehicles, 26,890 km) 13,440 kWh (e-bus, 11,200 km)

	COP 15 (where available)	COP 21 (where available)	COP 23 estimated (where available)	Actual Results (set-up, conference, dismantling – unless stated otherwise)
Water use (l) (figure per person in brackets)	3,083,000 (92)	3,155,298 (47)	4,500,000 (180)	6,757,000 (306) Event duration: 3,924,000 (15 per day in the conference period)
Resource efficiency: Quantity of building materials for temporary structures (t)	-	-		473,850 kg
No. of PCs and laptop computers provided for Bula and Bonn Zones	2,400	1,045		Pavilions and delegation offices: 57 PCs, 35 laptops, 20 beamers
No. of printers provided for COP 23	-	-		
No. of screens provided for COP 23	-	-		Pavilions and delegation offices: 40
Volume of paper used (BMU)			5,166 kg	5,166 kg
Volume of waste (kg), broken down by:	103,720 (3,092)	1,000,000 (15 kg)	55,000 (2.2) This figure does not include all	112,754 (5,11 per visitor with activated badge)

	COP 15 (where available)	COP 21 (where available)	COP 23 estimated (where available)	Actual Results (set-up, conference, dismantling – unless stated otherwise)
(figure per person in brackets, where appropriate)		including construction waste	waste and excludes construction waste.	
Paper, cardboard (kg)	-	11,000 (0.160)		6,626 (0,3)
Lightweight Packaging (kg)	-	-		4,199
Residual waste (kg)	-	-		92,024
Bulk waste (kg)	-	-		4,237
Organic waste (kg)	-	20,000 (0.300)		5,669 (0,25)
Biodiversity (total built-up area) (m²)	-	-	103,000 m ²	103,000 m ²
WCCB and Altes Abgeordneten-hochhaus (m²)	-	-	40,400 m ²	40,400 m ²
Temporary structures (without Climate Planet and structures at the connecting corridor) (m²)	-	-	62,640 m ²	62,640 m ²
Total GHG	72,374	43,000	74,000	49,966 CO ₂ eq

	COP 15 (where available)	COP 21 (where available)	COP 23 estimated (where available)	Actual Results (set-up, conference, dismantling – unless stated otherwise)
emissions (t CO₂eq) (figure per person in brackets)	(2.16)	(0.64) ³	(3)	(2.26)
GHG emissions⁴ from delegates' travel to/from COP 23 (long-distance travel) (t CO₂eq) (figure per person in brackets)	66,374 ⁴ (1.98)	33,800 (0.50)	66,000 (2.6)	43,056 (1.95)
Other GHG emissions (kg) (figure per person in brackets)	-	-	8,000 (0.3)	6,910 (0.31)
Other airborne emissions	-	-		0.404 kg SO ₂ , 125.6 kg NO _x , 2.5 kg PM (with 403,856 km travelled in passenger vehicles) – conference period only

1 Only staff in the strictest sense, i.e. subject to direct instructions from management

2 Not all waste

3 Including 7 weeks' preparation (with one week preparatory meetings) and 4 weeks' dismantling

4 Air travel only

⁴ Long distance travel GHG emissions calculated with RFI=2.7 COP 15; RFI=3.0 COP 23; COP 21 RFI unknown

7. Sustainability in Non-Environmental Aspects

This Environmental Statement was supplemented by a section on sustainability which refers to inclusion, economic sustainability/value creation, fairness, and energy efficiency/sustainability.

7.1 Inclusion

Guiding principle

In planning and implementing COP 23, the needs of people of different ages and gender, different nationalities and ethnic groups, and people with disabilities were taken into account. By setting the goal of recruiting people with disabilities for 15 percent of all (volunteer) positions, inclusion is both visible and lived.

Target

Action Area	Quantitative and Qualitative Targets	Target Achievement
Inclusion and accessibility	15 percent of volunteer positions are to be filled with people with disabilities.	20 people with disabilities (3 %).
	All areas at COP 23 are fully accessible.	Most access points were barrier-free.

The target of filling 15 percent of (volunteer) positions with people with disabilities applied for the entire duration of the conference and the entire COP 23 site, with both the Bula and Bonn Zones. The number of applications received was, however, significantly lower. Approximately three percent of volunteers (20) were people with impairments. In addition 12 refugees worked as volunteers.

Measures

- Barrier-free access guaranteed: The entire COP 23 was planned as a fully accessible event. Most access points were barrier-free.
- UN Convention on the Rights of Persons with Disabilities: The State of North Rhine-Westphalia and the City of Bonn have implemented the Convention in the form of an action plan.

- Accessible hotel rooms: The Bonn-Cologne region is continually expanding its offers for people with disabilities. Hotels, other tourism operators, and transport service providers thus follow the guiding principle of the NRW Action Plan to Implement the UN Convention on the Rights of Persons with Disabilities.
- On-site assistance: Volunteers were on hand to assist people with disabilities.

7.2 Economic sustainability/value creation

Guiding principle

COP 23-related costs and performance will be reported in a transparent way. This serves the EMAS process as well as future sustainable investment and financial decisions.

Target

Action Area	Quantitative and Qualitative Targets	Target Achievement
Economic sustainability/ value creation	Transparent reporting of COP 23 costs and performance.	The total costs incurred can be determined.

Measures

Transparent accounting: The costs incurred to the German Federal Government in connection with COP 23 have been calculated and are illustrated in this report. Calculation of costs incurred by other stakeholders proved difficult, however. We have thus refrained from reporting those costs.

Sustainable financial and investment decision-making: Sustainable finance includes divestment of any interests in the coal/petroleum/natural gas sector. Potential stakeholders in this regard are the BMU, the State Government of North Rhine-Westphalia, and the City of Bonn. This topic was addressed at side events, including some held at the German Pavilion, and will be pursued by public and private investors in the future.

7.3 Fairness

Guiding principle

During planning, implementation, and dismantling of COP 23, national and international regulations and standards on working conditions, ethical codes, and anti-corruption policies

which go beyond legal minimum standards were complied with. This applies along the entire value creation chain, both for the primary contractor and for any sub-contractors.

Target

All COP 23 contractors and suppliers are to sign and comply with the UN Supplier Code of Conduct or the COP 23 Recommendations for Suppliers and Contractors.

Measures

All direct contractors and suppliers for COP 23, among them 21 UNFCCC and more than 75 suppliers and service providers of the general contractor of the BMU, were given a copy of the binding UN Supplier Code of Conduct or the COP 23 Recommendations for Suppliers and Contractors to ensure compliance with statutory regulations as well as environmental and social standards. These guidelines served to ensure that all contractors and suppliers for COP 23 were at least aware of the need for sustainable business practices. The BMU had therefore asked that they sign and return a copy of the Recommendations to the BMU. The following issues were addressed:

- Minimum wage according to UN regulations and German law, no wage dumping, compliance with collective bargaining agreements: Germany's statutory minimum wage was observed, and wage dumping or circumventing the provisions of collective bargaining agreements was prohibited.
- Zero tolerance on corruption.
- Compliance with ethical codes: Compliance with ethical codes was ensured.
- Compliance with ILO core labour standards: With regard to construction and other services it was ensured that goods procured were not produced in violation of the ILO's core labour standards.

Contractors were asked to pass the Recommendations to their subcontractors and to request that they also comply with them.

7.4 Energy efficiency/sustainability of Bonn's hotels

Guiding principle

Efforts will be made to eventually put all Bonn's hotels on a long-term path towards increased energy efficiency and sustainability. The existing Sustainable Bonn project is to be expanded for this purpose.

To support and promote the project, the BMU invited representatives from hotels in and around Bonn to a workshop with the EnergieAgentur.NRW on 11th September 2017 to inform them about the COP 23 sustainability strategy and ways to further improve the

energy efficiency of their operations. They were given the opportunity to request tailored advice from the EnergieAgentur.NRW.

8. COP 23 Costs and Savings

Topic	Costs and Savings
<p>Overall costs incurred for COP 23</p>	<p>The Federal Government allocated approx. €117 million to the BMU and Federal Foreign Office budgets for use in the organisation and implementation of COP 23. Approximately €7 million were added from the Federal Ministry for Economic Cooperation and Development’s budget to provide local support to the Republic of Fiji’s COP 23 Presidency and designing and equipping the German Pavilion on the conference site.</p>
<p>Of which, costs incurred in environmental protection and sustainability activities (excluding costs involved in offsetting emissions)</p>	<p>Environmental protection and sustainability activities were largely performed or managed by staff from the BMU and the UNFCCC Sustainability Team. As a result, no additional staffing costs were incurred. The BMU agency participated in the EMAS implementation, but also conducted a range of other measures. In financial terms, these cannot be easily distinguished from the agency’s other activities.</p> <p>Expenses amounting to almost €80,000 were incurred for advisory services regarding the environmental and sustainability strategy for COP 23, including climate neutrality.</p>
<p>Costs incurred in offsetting emissions</p>	<p>€418,000</p>
<p>Contributions from other stakeholders</p>	<p>As part of the UNFCCC Call for Partnerships, non-monetary (material) donations amounting</p>

Topic	Costs and Savings
	<p>to approximately €830,000 were received – mainly services from various media channels (interviews and publications/advertisements) and climate-neutral shipping and media campaigns by DPDHL Group. The only monetary donation was € 10,000 which was used to upgrade infrastructure relevant to media/press. The biggest donations came from DPDHL Group, Politico, Facebook, KPMG and Innovators Magazine.</p> <p>“COP MAN”: In line with an agreement between a caterer and another company, certain types of plastic bottles could be disposed of in the “COP Man”. The revenue from the bottle return deposits, which amounted to €1,905, went to the New World Programme.</p>
<p>Savings achieved through environmental measures</p>	
<p>Approximate savings on disposable coffee cups</p>	<p>Using reusable water bottles saved up to 539,900 disposable cups during COP 23 (based on 11,248 people per day and an assumed four cups per person per day during the 12-day event). It was evident that the water bottles were repeatedly used and only a small number of disposable cups were given out.</p>
<p>Approximate savings on energy use in kWh</p>	<p>Mobility</p> <p>Use of e-vehicles and hydrogen fuel cell vehicles enabled reductions in GHG emissions of 6,157 kg CO₂eq (34%) compared with generic vehicles.</p> <p>Assuming that because of its free use public transport was used 20% more than if had not been free of charge, savings of 63,122 kg CO₂eq (37%) were achieved, compared with the use of private cars.</p>

Topic	Costs and Savings
	<p>Catering</p> <p>Compared with an alternative scenario with an assumed vegan/vegetarian share of only half the actual share, savings of 12,600 kg CO₂eq were achieved.</p>
<p>Approximate savings on waste (residual waste) in t</p>	<p>This is difficult to estimate because, among other things, the trade fair construction companies disposed of their waste themselves and the data they provided are lacking in some respects.</p>

9. Points of Contact

Any enquiries concerning the COP 23 environmental management system and sustainability strategy should be addressed to:

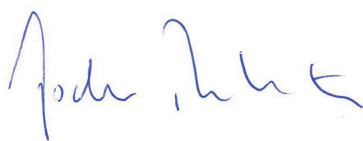
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Note: This Environmental Statement will be printed in a very limited number of copies only.



Jochen Flasbarth
State Secretary BMU



Ovais Sarmad
*Deputy Executive Secretary UNFCCC
Secretariat*

10. Annexes

Table 1: Offsetting Projects

Sequence	Total Running No.	Provider	CDM Project No.	CDM Project Name	Project Type	Country	PoA	LDC	Gold Standard	SDG	Contingent of Certificates
1	2.4	First Climate Markets AG	8060	Improved Cookstoves Program for Zambia	Cookstoves	Zambia	✓	✓		Total 4 No. 3 - No. 5 - No. 7 - No. 15	30,000
2	1.1	UPM GmbH	2898	Sichuan Rural Poor-Household Biogas Development Programme	Household biogas from biomass	China	✓		✓	Total 14 No. 1 - No. 2 - No. 3 - No. 4 - No. 5 - No. 6 - No. 7 - No. 8 - No. 9 - No. 10 - No. 12 - No. 13 - No. 15 - No. 17	30,000
3	3.2	atmosfair gGmbH	6207	Improved Cook Stoves programme for Rwanda	Cookstoves	Ruanda	✓	✓	✓	Total 11 No. 1 - No. 2 - No. 3 - No. 4 - No. 5 - No. 7 - No. 8 - No. 11 - No. 13 - No. 15 - No. 17	7,495
4	3.1	atmosfair gGmbH	9572	Nepal Biogas Support Program-PoA	Household biogas from biomass	Nepal	✓	✓	✓	Total 13 No. 1 - No. 2 - No. 3 - No. 4 - No. 5 - No. 6 - No. 7 - No. 8 - No. 9 - No. 11 - No. 13 - No. 15 - No. 17	14,505
Total Certificates											82,000

Legend of the global sustainability development goals – SDGs – (see. www.un.org/sustainabledevelopment)

SDG

No. 1	No Poverty	No. 7	Affordable and Clean Energy	No. 13	Climate Action
No. 2	Zero Hunger	No. 8	Decent Work and Economic Growth	No. 14	Life below Water
No. 3	Goodhealth and Well-Being	No. 9	Industry, Innovation and Infrastructure	No. 15	Life on Land
No. 4	Quality Education	No. 10	Reduced Inequalities	No. 16	Peace, Justice and strong Institutions
No. 5	Gender Equality	No. 11	Sustainable Cities and Communities	No. 17	Partnerships for the Goals
No. 6	Clean Water and Sanitation	No. 12	Responsible Consumption and Production		

Table 2: Emissions from Air Travel (Oeko-Institut)

	GHG Emissions (t CO₂eq)
Total GHG Emissions (RFI = 1)	14,352
Average GHG per participant ^(RFI=1)	651 kg CO ₂ eq/participant*
RFI Factor	3
Total including RFI	43,056
<hr/>	
Average km per participant	8,814 km
Average GHG per km ^(RFI=3)	0.18 kg CO ₂ eq/km
Average GHG per participant ^(RFI=3)	1,851 kg CO ₂ eq/participant
* No. of participants: 22,060	

Table 3: Total Consumption (Energy and Fuel) in all Phases and Zones, as well as GHG emissions (Oeko-Institut)

Energy	Use		GHG Emissions	
Electricity	1,453,609	kWh	891,615	kg CO ₂ eq
District heat	416	MWh	100,300	kg CO ₂ eq
Heating oil for heat	366,099	l	1,151,824	kg CO ₂ eq
Heating oil for electricity	232,478	l	731,425	kg CO ₂ eq
Diesel for vehicles	10,831	l	35,750	kg CO ₂ eq
Propane gas for forklift(s)	10,142	kg	41,594	kg CO ₂ eq
Total			2,952,508	kg CO₂eq

Local Transport During the COP

Table 4: Evaluation of Participant Survey, Extrapolated Results and GHG Emissions (Oeko-Institut)

Transport Type	Survey (km)	Share	Extrapolation (km)	GHG Emissions (kg CO₂eq)	
Public	83,871	77 %	2,560,739	Public (incl. Other")	169,773
On Foot	3,219	3 %	98,267	On Foot	0
Bike	5,991	5 %	182,918	Bike	0
Other (please specify)	4,228	4 %	129,090		
Passenger vehicle or Van	8,607	8 %	262,774	Car/Van/Taxi	58,209
Taxi	3,398	3 %	103,757		

Table 5: Kilometres Driven, Energy Used and GHG Emissions from Shuttle Services on the Event Site (Oeko-Institut)

Vehicle	Km Travelled	Energy Used	GHG Emissions (kg CO ₂ eq)
e-Car	26,890	4,034 ¹ kWh	2,474
e-Bus	11,200	13,440 ² kWh	473
Hydrogen Car	17,188	228.39 kg hydrogen ³	8,200
Total	55,278		11,147

¹ With average consumption of 15 kWh/100 km (own assumption)

² With average consumption of 120 kWh/100 km (own assumption)

³ Actual consumption data (measured)

Table 6: Kilometres driven and energy used by the VIP limousine service (Oeko-Institut)

Vehicle	Km Travelled	Energy Used (L Diesel)	GHG Emissions (kg CO ₂ eq)
Vans (Diesel)	26,495	2,385 ¹	10,061
Limousinen (Diesel)	10,830	975 ¹	4,112
Total	37,325		14,173

¹ with 9L / 100 km (Data supplied by BMU)



Two certificates (scans) are provided as attachments to this Environmental Statement:

- ENVIRONMENTAL VERIFIER'S DECLARATION ON VERIFICATION AND VALIDATION ACTIVITIES
- REGISTRATION CERTIFICATE OF THE CHAMBER OF INDUSTRY AND COMMERCE DUISBURG

ENVIRONMENTAL VERIFIER'S DECLARATION ON VERIFICATION AND VALIDATION ACTIVITIES




The EMAS environmental verifier signing for OmniCert Umweltgutachter GmbH with registration number DE-V-0360

Thorsten Grantner (verifier registration number DE-V-0284), accredited or licensed for the scopes:

-  82.3: Organisation of conventions and trade shows
-  84.1: Administration of the State and the economic and social policy of the community

declares to have verified whether the organisation as indicated in the environmental statement of the 2017 UN climate change conference (COP23) meet all requirements of Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a community Eco-management and Audit Scheme (EMAS).

By signing this declaration, I declare that:

-  the verification and validation has been carried out in full compliance with the requirements of Regulation (EC) No 1221/2009,
-  the outcome of the verification and validation confirms that there is no evidence of non-compliance with applicable legal requirements relating to the environment,
-  the data and information of the environmental statement of the 2017 UN climate change conference (COP23) reflects a reliable, credible and correct image of all the organisations activities, within the scope mentioned in the environmental statement.

This document is not equivalent to EMAS registration. EMAS registration can only be granted by a Competent Body under Regulation (EC) No 1221/2009. This document shall not be used as a stand-alone piece of public communication.

Bad Abbach, the 28.11.2018



Dipl.-Ing. (FH) Thorsten Grantner
Environmental Verifier DE-V-0284



**Niederrheinische Industrie- und Handelskammer
Duisburg · Wesel · Kleve zu Duisburg**

als gemeinsame registerführende Stelle von Industrie- und Handelskammern
in Nordrhein-Westfalen nach Umweltauditgesetz
- Registrierungsstelle -

CERTIFICATE



Organisation

UN-Klimakonferenz der Vereinten Nationen
vom 6. bis 17. November 2017
c/o Klimasekretariat der Vereinten Nationen

Site

Martin-Luther-King-Straße 8
53153 Bonn

Registration-No.: DE-110-00035

Date of first registration
17th November 2017

This certificate is valid until
17th November 2020

This organisation has established an environmental management system according to Regulation (EC) No. 1221/2009 and EN ISO 14001:2015 (sections 4 to 10) to promote the continual improvement of environmental performance, regularly publishes an environmental statement, has let the environmental management system be verified and the environmental statement be validated by an independent and accredited verifier, is registered under EMAS and therefore entitled to use the EMAS-Logo.



Duisburg, 17th November 2017



Dr. Stefan Dietzfelbinger
General Manager

