



# Updated Environmental Statement 2023 Issue

Reporting year 2022

**Lufthansa Airlines**  
Lufthansa Airlines Munich  
Lufthansa CityLine



**Lufthansa**



**Lufthansa CityLine**





# Table of Contents

## Our Company

<b>Foreword</b>	<b>3</b>
<b>Employee Voices</b>	<b>4</b>
<b>Introduction to the Companies</b>	<b>5</b>
Lufthansa Airlines Munich	5
Lufthansa CityLine	6
CARE.ACT.SHAPE.	7
<b>About the Lufthansa Group</b>	<b>8</b>
<b>Focus Theme</b>	<b>9</b>
<b>Stakeholders</b>	<b>11</b>

## Our Responsibility

<b>The People Behind</b>	<b>12</b>
<b>Our System</b>	<b>14</b>
<b>Our Scope of Application</b>	<b>16</b>
Our Locations	16
Environmental Management System	17
<b>Our Values</b>	<b>18</b>
<b>Our Expertise</b>	
<b>Communication and Environmental Education</b>	<b>19</b>

## Our Progress

<b>Highlights</b>	<b>20</b>
<b>Environmental Program</b>	<b>22</b>
<b>Environmental Indicators</b>	<b>26</b>
<b>Data Delimitation/Methodology</b>	<b>31</b>
<b>Validation Statement</b>	
<b>EMAS Certificate and Confirmation of Validation</b>	<b>32</b>
<b>Imprint and Picture Credits</b>	<b>33</b>



# Foreword

Dear Readers,

even as we tackle major social and operational challenges in aviation, our ambition remains unchanged: To make aviation more sustainable and to advocate for effective climate protection in all operational processes.

We are convinced that this focus is crucial to becoming more crisis-proof and seizing new opportunities. Our environmental management system is proving to be a valuable compass and at the same time a driver of innovation. Based on Lufthansa CityLine's 20 years of experience, we have created the necessary organisational conditions for more climate and resource protection in our operational processes and leveraged synergies between our companies.

In line with Lufthansa Airlines' new underlying orientation "we take off to take care," we are strengthening the central area of sustainability. By assigning it directly to the Executive Board, we are emphasizing its importance and creating a powerful cross-company team with responsibilities in the various fields of action of sustainability.

In this environmental statement, we present what we have worked on in the reporting year and what successes we have achieved. Once again, we would like to express our special thanks to all our colleagues who are working with great enthusiasm for environmental and climate protection in these challenging times.



**Jens Ritter**  
Chief Executive Officer  
Lufthansa Airlines

**Isabell Stutzenberger**  
Environmental  
Management Officer  
Lufthansa Airlines Munich  
and Lufthansa CityLine

**Jens Fehlinger**  
Managing Director  
Lufthansa CityLine GmbH

**Wolfgang Diefenbach**  
Managing Director  
Lufthansa CityLine GmbH



“Flying connects not only continents but primarily people. It is our key concern not only to reduce distances but also to shrink the climate-damaging effects as well.”

**Rosamunde Rubino**  
Key Account Manager,  
Deutsche Lufthansa AG



**“We should be aware that every flight has an impact on the climate and the environment and we are obliged to do our best to keep this impact as small as possible.”**

**Pascal Karl**  
Aircraft Mechanic,  
Lufthansa CityLine

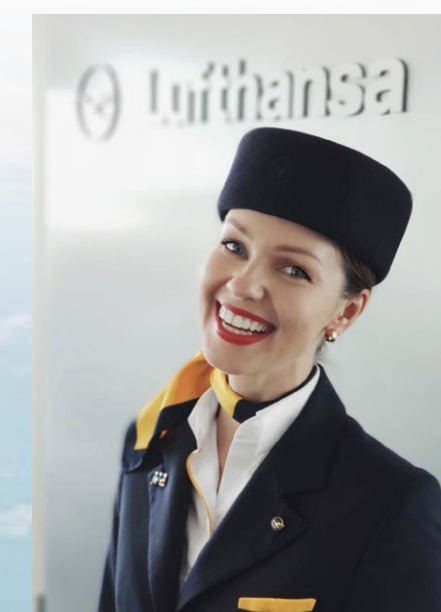


“As an employee of an airline I have an interest in and share responsibility to minimise our negative impact on the environment. That is my motivation!”

**Merlin Erdmann**  
Personnel Development & Marketing Consultant,  
Lufthansa CityLine

**Daniel Poth**  
Aircraft Mechanic,  
Lufthansa Airlines

**“In aircraft maintenance the responsibility towards the environment requires considerate handling of resources and materials that we use every day.”**



“As an airline, we bear a great responsibility for our natural environment and must actively promote more sustainable and environmental friendly practices.”

**Natalya Posukhova**  
Passenger Service Professional,  
Lufthansa Airlines



# Corporate Figures

## Lufthansa Airlines Munich

Lufthansa Airlines is the largest German airline in the Lufthansa Group. It maintains hubs at the two largest German airports, Frankfurt and Munich, and offers its customers a premium product with global connections.

At the Munich hub, Lufthansa Airlines Munich is responsible for station management and the operational planning and steering of passenger flight operations. Administration and the hub-based crews are part of Lufthansa Airlines Munich as well as the addition of aircraft maintenance following an operational reorganisation. The majority of air traffic at Munich Airport is provided by Lufthansa and its partner airlines.

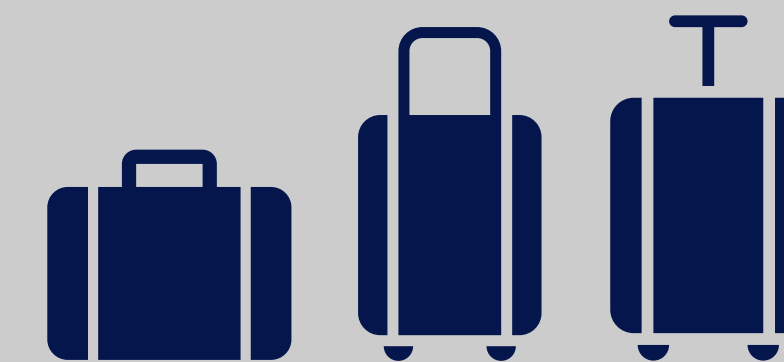
# 8,762

Employees (-5%)



# 14,665,079

Passengers (+169%)



# 46

Countries (+10%)



# 144

Destinations (+8%)

# 106.828

Flights (+123%)



# 41,012

Million Offered Seat Kilometres (+173%)

### Fleet Composition:

# 4



Airbus A340

# 20



Airbus A350

# 14



Airbus A321

# 39



Airbus A320

# 4



Airbus A319

# 81

Total (+62%)



# Corporate Figures

## Lufthansa CityLine

As a partner and subsidiary of Lufthansa Airlines, Lufthansa CityLine GmbH specialises in European destinations and provides fast and comfortable passenger connections to and from the hubs of Munich and Frankfurt. Since 2022 Lufthansa CityLine has also been operating cargo aircraft in wetlease for Lufthansa Cargo. As a medium-sized company, Lufthansa CityLine is characterised by lean structures and the integrated organisation of flight operations, maintenance and administration. Since September 2014 these areas are located at the Munich site as the operating base. A further technical station is located at the Frankfurt site.



# 4,832

Million Offered  
Seat Kilometres (+46%)

### Fleet Composition:

# 28



Bombardier CRJ900

# 9



Embraer 190

# 11



Airbus A319

# 2



Airbus A321F

# 50

Total (-6%)



# 2,071

Employees (+-0%)



# 28

Countries  
(-13%)



# 112

Destinations  
(-8%)



# 89,105

Flights (+54%)

# 6,154,697

Passengers (+78%)





## Strategic focus on sustainability

# CARE.ACT.SHAPE.

After the difficult years of the pandemic, Lufthansa Airlines is looking ahead: In a changing world, it is important to find innovative answers to upcoming challenges, to be better prepared for crises and to actively exploit opportunities. A new strategy programme is intended to prepare the ground for this. It sets clear priorities and ambitious, measurable goals until 2025. CARE.ACT.SHAPE. is the title of the programme, which also names the three pillars that support it: “CARE” has first priority and stands for the claim to take responsibility – for customers

and employees as well as for the environment and society. The “ACT” pillar includes concrete financial and operational performance targets, such as the continuous improvement of punctuality. Finally, “SHAPE” aims to give shape to the future with concrete projects. In this way, Lufthansa Airlines intends to consistently advance digitalisation and, in a high-performance system, optimise the interaction of flight operations at the hubs.



## Sustainability is anchored in the DNA of Lufthansa Airlines.

According to the guideline “CARE”, sustainable action is to be integrated even more systematically into everyday operations as a core component of the corporate strategy. For this reason, Lufthansa Airlines continuously identifies projects and initiatives that will contribute significantly to a reduction of net CO<sub>2</sub> emissions by 50 percent by 2030 compared to 2019. In the future, the effects on the CO<sub>2</sub>

balance will be considered from the outset in all management decisions. In addition, numerous other initiatives are in a planning stage that pay attention to the so-called ESG criteria – environment, social and governance. All employees are called upon to actively participate, be it with ideas on sustainability in their own area or by making use of the various information offerings via the internal media.





# The Lufthansa Group

The Lufthansa Group is a globally operating air transport company with 319 subsidiaries and associated companies. It claims a leading role in its home market of Europe. The Lufthansa Group is divided into four business segments.



**Passenger Airlines**  
This business segment includes the airlines Lufthansa Airlines, SWISS, Austrian Airlines and Brussels Airlines as well as Eurowings. Within the multihub-strategy they offer their passengers a wide range of flights via five hubs. Lufthansa Airlines also includes the regional airlines Lufthansa CityLine and Air Dolomiti as well as the holiday carrier Eurowings Discover. Eurowings provides a broad range of point-to-point connections on short-haul European routes.



**MRO**  
This business segment is operated by Lufthansa Technik AG as the world's leading manufacturer-independent provider of maintenance, repair and overhaul services (MRO) for civil, commercially operated aircraft. It serves more than 800 customers worldwide, including airlines, aircraft manufacturers and leasing companies, VIP jet operators and governments.



**Logistics**  
In addition to Lufthansa Cargo AG, this business segment includes the Jettainer Group, which specialises in the management of airfreight containers, the subsidiary time:matters, which specialises in particularly urgent consignments, Heyworld, specialised in the e-commerce industry, and the shareholding in the cargo airline AeroLogic.



**Catering**  
The LSG Group stands for this business segment. It offers a holistic range of products, concepts and services around in-flight service as well as for other sectors such as retail or food manufacturers. LSG Sky Chefs is a global food specialist for airlines, the home delivery market and retail.

**Group-wide reporting**

- The Lufthansa Group publishes facts and figures on sustainability annually in the non-financial statement, which is an integral part of the Annual Report.
- The sustainability factsheet and other sustainability-related reports – including the progress report on the UN Global Compact, the report on the Task Force on Climate-related Financial Disclosures and the CDP Report – are compiled on our website.

## At a glance

Head quarters: Cologne

Hubs: Frankfurt am Main, Munich, Zurich, Vienna and Brussels

Revenue (bn. Euro): **32.77**

Note: All figures refer to the year 2022, or the reference date 31.12.2022.

**109,509** Employees

**177** Nationalities



**710** Aircraft Group Fleet



**826,379** Flights

**101.77** Million Passengers





# CO<sub>2</sub> Reduction Target Scientifically Confirmed

Around three percent of global CO<sub>2</sub> emissions are caused by air transport. The air transport industry therefore has a special responsibility. In order to live up to this responsibility, the Lufthansa Group has set itself ambitious CO<sub>2</sub> reduction targets and backed them up with measures.

The Group is committed to reducing specific CO<sub>2</sub> emissions per tonne-kilometre transported (passenger and cargo, RTK) by 30.6 percent compared to 2019 by 2030. This target is to be achieved exclusively by reducing fuel consumption, for example through operational measures and accelerated fleet modernisation, as well as the substitution of fossil fuel with sustainable aviation fuel (SAF).

### Lufthansa Group among the first worldwide in validation

This CO<sub>2</sub> reduction target was validated by the Science Based Targets initiative (SBTi) in summer 2022. It thus confirmed that the strategy is in line with scientific criteria for achieving the goals of the Paris climate agreement. The Lufthansa Group was the first airline group in Europe to achieve this validation; worldwide, it is among the first three.

By 2050, the Group aims to achieve a neutral CO<sub>2</sub> balance (net zero target). The Aviation Alliance Fit for 55, an alliance of European airlines and airports in which all airlines of the Lufthansa Group are members, founded in 2022, is also committed to this goal. The Lufthansa Group intends to achieve its self-imposed goal of halving net CO<sub>2</sub> emissions by 2030 compared to 2019. Beyond the CO<sub>2</sub> reduction in accordance with the SBTi targets, this is to be achieved through voluntary compensation and corresponding customer offers for more climate friendly air travel.



LUFTHANSA GROUP

[The Science Based Targets Initiative \(SBTi\)](#) is a joint initiative of the non-profit organisation CDP (formerly the Carbon Disclosure Project), the United Nations Global Compact, the World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). It defines and promotes best practices of the private sector in setting and implementing science-based climate protection targets and evaluates companies' reduction strategies independently.



# -30.6%

gCO<sub>2</sub>/RTK until 2030



## Excellent Ratings in the Renowned CDP Climate Ranking

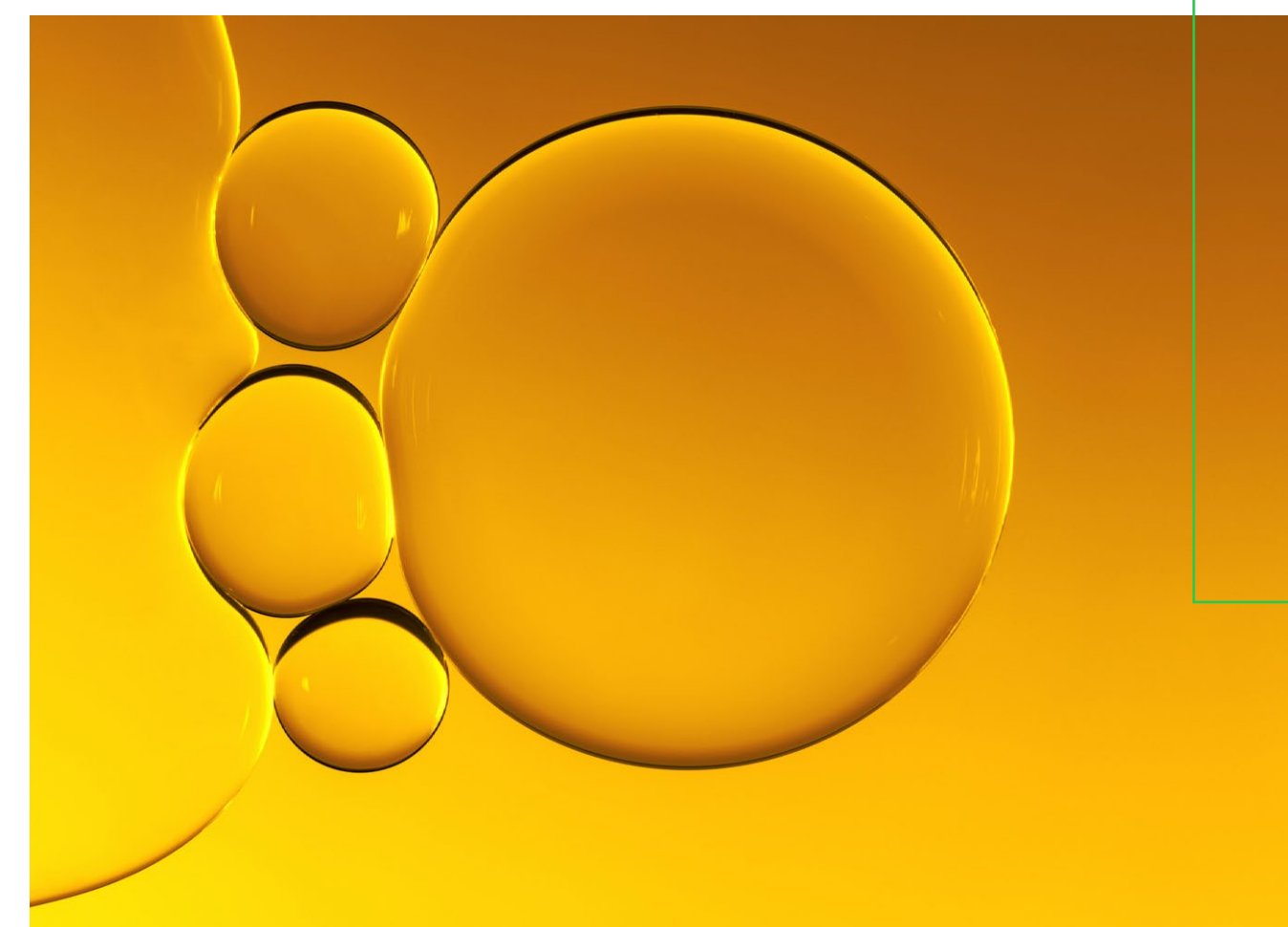
In the global CDP Climate Ranking 2022, the Lufthansa Group received a top rating for its CO<sub>2</sub> reduction strategy and its implementation, improving once again compared to the previous year. On a scale from “A” to “D”, the company was placed in the highest ranking band with “A-” (previous year “B”). The Lufthansa Group is thus among the five best-rated airlines worldwide. CDP gave the Lufthansa Group top marks in reporting in the following assessment categories: Scope 1 and 2 (direct emissions and indirect emissions from purchased energy), Scope 3 (indirect emissions within the supply chain), corporate governance, risk management processes, targets and initiatives to reduce emissions.

Each year, CDP collects information on CO<sub>2</sub> emissions, sustainability strategies and targets from more than 18,700 companies representing more than half of the global market capitalisation in a standardised process. The data determined also flows into other assessments by leading rating agencies. The Lufthansa Group has participated in the CDP reporting since 2006 and therefore informs relevant stakeholders continuously and transparently about its climate protection strategy and measures for CO<sub>2</sub> reduction.



### Remuneration of the Executive Board is linked to emission reductions

Emission reduction targets have been part of the long-term variable remuneration for the Executive Board of Deutsche Lufthansa AG since 2011. Since the changeover of the salary system in 2019, the Supervisory Board has regularly defined an environmental target as a focus for the strategic and sustainability goals as part of the multi-year variable remuneration for the Executive Board. In this way, the reduction of specific CO<sub>2</sub> emissions in accordance with the SBTi targets was also defined as a focus within the framework of the multi-year variable remuneration for the financial year 2022.





# Stakeholder of the Lufthansa Group



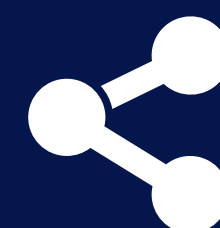
- Customers
- Consumers



- Investors
- Shareholders
- Analysts
- Rating agencies



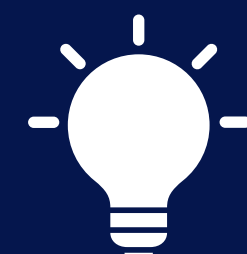
- Government
- Legislation
- Politics
- Authorities



- Residents
- General public
- Social networks



- NGOs
- Industry associations
- Associations



- Science
- Research and education



- Employees
- Employee representation



- Suppliers
- Contracting parties



The companies of the Lufthansa Group are intertwined with society in many ways. They are in relationship with internal and external stakeholders and guided by legal and other obligatory political requirements at national and international levels. In addition, external factors – such as the corona pandemic or the Ukraine war – influence the company's activities.

In recognition of these interactions, the continuous exchange with stakeholders makes an important contribution to the further development of the Lufthansa Group's sustainability strategy. It contributes to understanding the expectations and wishes of the various stakeholder groups and to incorporating them into the company's actions. For this purpose, Lufthansa uses various formats that facilitate an open and trusting exchange. Sustainability topics are also addressed in external communication media, such as social media channels.

The last stakeholder survey took place in 2018. Another broad-based survey of the stakeholder groups was postponed due to the pandemic and is now planned for autumn 2023. Based on this, in a materiality analysis the Lufthansa Group determines which topics are considered particularly relevant from the perspective of the company and the stakeholder groups. The findings will be incorporated into the further development of the environmental and sustainability management.



## Our Environmental Management Organisation



In support, a total of about **40 environmental coordinators** are active in the individual departments at Lufthansa Airlines and Lufthansa CityLine. They ensure that the environmental organization is broadly positioned and that functional environmental topics are consistently pursued.

## The People Behind

An environmental organisation incorporating both companies serves to coordinate and maintain the integrated environmental management system. It defines responsibilities at the various levels, such as the role of the environmental officer and the management representatives. The employee representatives are also involved, and the employees are included through appropriate communication and dialogue measures.



**Wolfgang Diefenbach and Jens Fehlinger**  
Managing Directors Lufthansa CityLine



**Jens Ritter**  
Chief Executive Officer  
Lufthansa Airlines

**The company managements** monitor the effectiveness of the management system and provide the necessary personnel and financial capacities. Together they appoint the environmental officers.



**Dominik Moeslein,  
Isabell Stutzenberger  
and Maximilian Adam**

### Management Representation and Environmental Officers

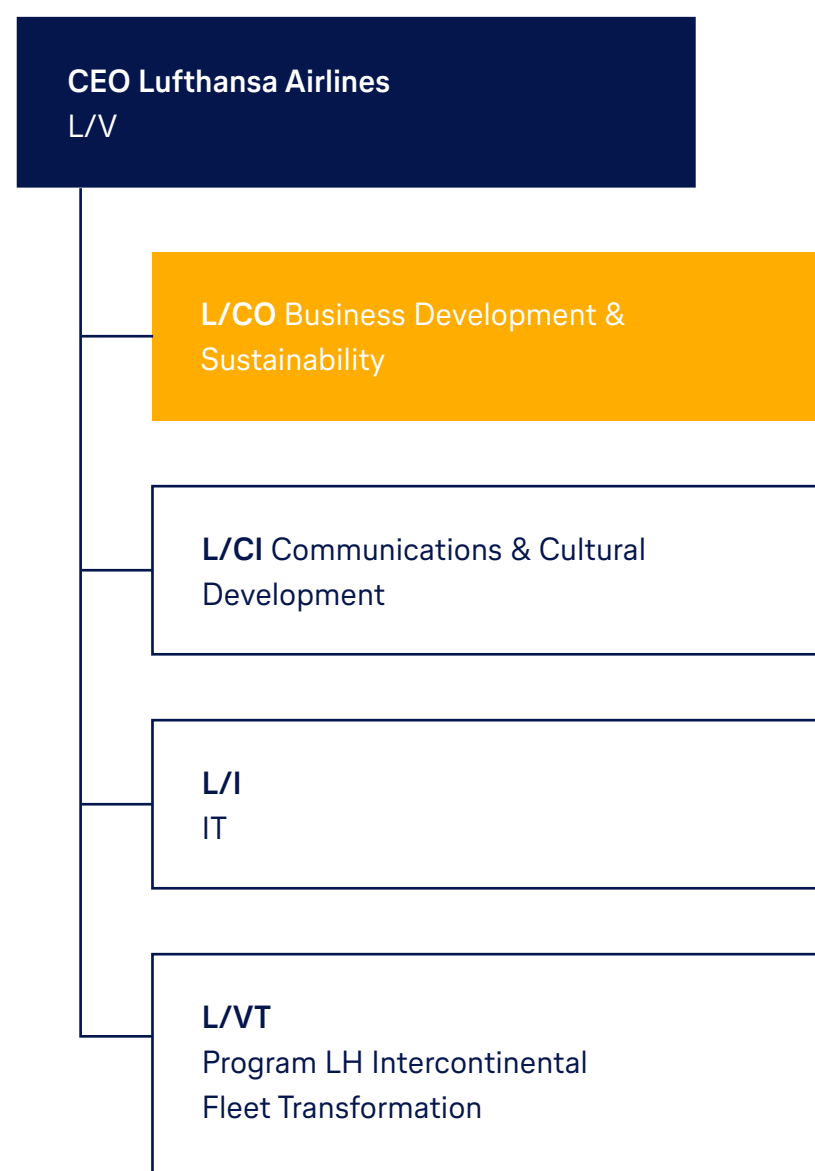
The practical coordination of all environmental activities and the strategic development of operational environmental protection are the responsibility of the Management Representative for the Environment and the joint Environmental Officer of Lufthansa Airlines Munich and Lufthansa CityLine. In April 2023, an Environmental Officer also took up work in Frankfurt to coordinate the expansion of the joint environmental management system at this location.

<sup>1</sup> Included in the environmental management system as of 2022



## Anchored in Top and Base

Responsibility for environmental protection and sustainability for all companies and operating units of Lufthansa Airlines has been bundled in the department Business Development & Sustainability since 2022. In this department, which is directly assigned to the Executive Board of Lufthansa Airlines, the environmental officers work together with other sustainability officers. In this manner, additional specific responsibilities for sustainable aviation fuels (SAF), waste and communication are to be created in the future.



**“Environmental protection is close to our hearts in our private lives. It goes without saying that we are also committed to it at our workplace on board.”**

Corinna Frank (standing left) and Marc Weber (sitting right)  
Environmental coordinators of the Lufthansa CityLine Cabin

Pictured here with Lufthansa CityLine’s Environmental Working Group Cabin, which flight attendants founded back in 2003. Here they jointly develop ideas for more environmental protection and resource conservation on board.



**“Environmental protection in aircraft maintenance is not a luxury, but an obligation we have towards our planet and future generations.”**

Stefan Guigas  
Environmental Coordinator of the Technical Fleet Management of Lufthansa Airlines

Newly appointed Environmental Coordinator of Aircraft Maintenance: Stefan Guigas has officially taken up his position in 2023 and is pleased to have a team of ten colleagues who want to support him professionally in advancing operational environmental protection in the technical hangars.





# Continuous Improvement Process



The joint environmental management of Lufthansa Airlines Munich and Lufthansa CityLine has meanwhile entered routine operation. An essential objective of the management system is continuous improvement, which follows the principle Plan-Do-Check-Act. In doing so, we orient ourselves to the essential components of an environmental management system according to EMAS. In our environmental guidelines, we have formulated our common understanding of values within the company and towards our partners and suppliers.

The main environmental impacts of flight operations include climate effects as a result of CO<sub>2</sub> emissions caused by the combustion of paraffin. Arrivals and departures at airports are also associated with noise pollution for local residents. Other environmental impacts are added: resources such as energy and water are consumed both in on-board service and in the supporting activities of flight operations – aircraft maintenance and administration. Waste is also generated on the ground and in the air, which must be reduced and recycled. This results in

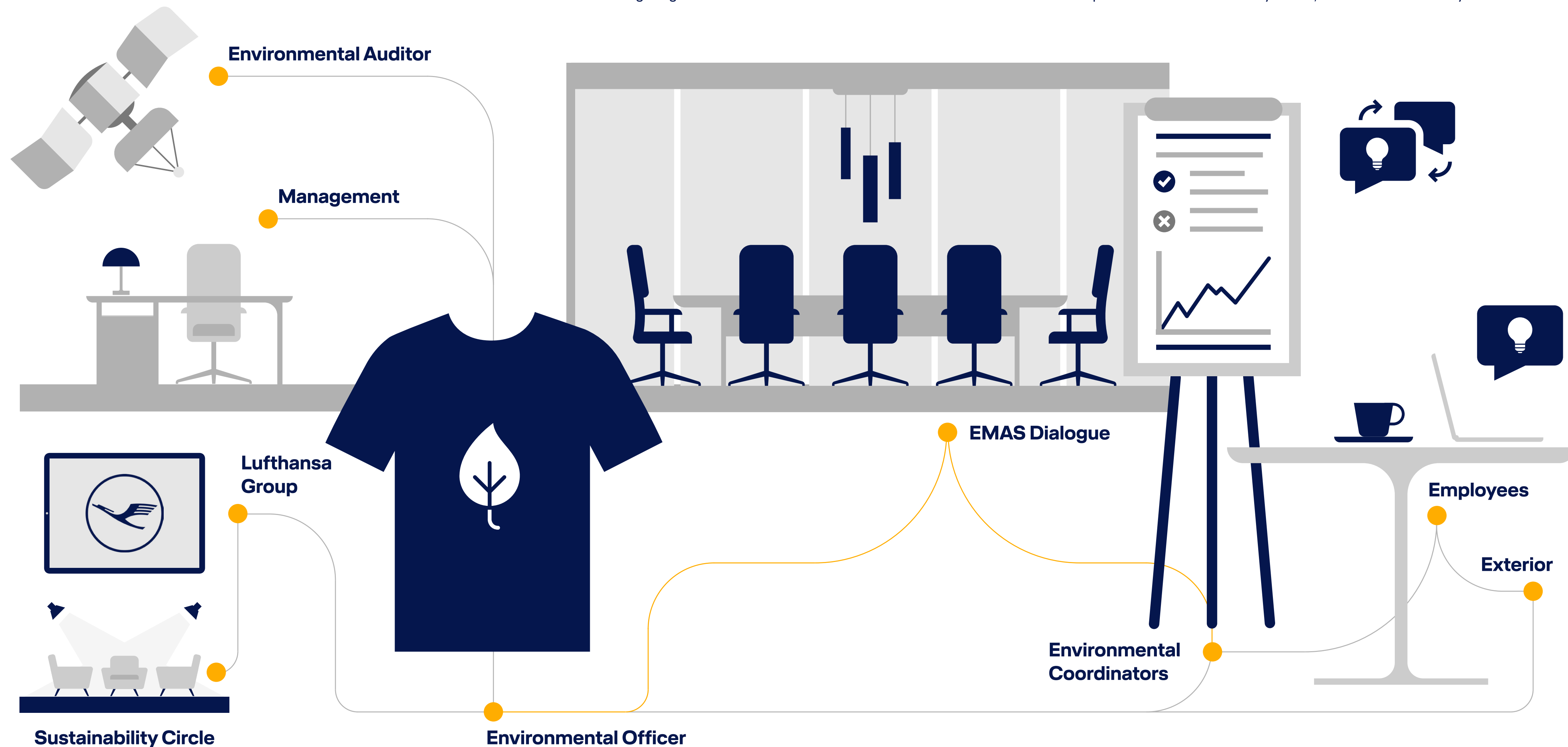
environmentally relevant fields of action that find expression in our environmental programme. Internal monitoring audits serve to ensure continuous improvement in every department. We monitor our progress with detailed environmental indicators. With an annual review by an environmental auditor and the publication of the environmental report, we ensure the quality of our work and make our commitment accessible to our stakeholders and the interested public.



# Committees and Networking

In day-to-day operations, various formats ensure a professional exchange and the involvement of relevant groups of people at different levels. For example, the EMAS dialogue takes place three times a year (formerly the environmental committee meeting), which brings together the environmental coordinators from all

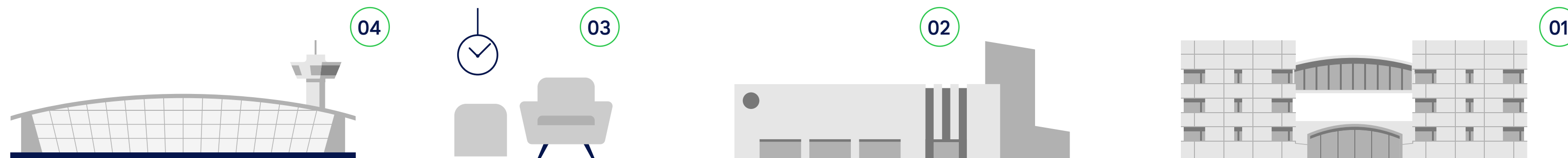
relevant areas. The management review with the executive board is scheduled once a year, and managers also meet to discuss specific environmentally relevant issues. We also attach importance to a regular exchange with other Group companies in the Sustainability Circle, which meets monthly.





# Our Locations

Lufthansa Airlines Munich and Lufthansa CityLine have their operational base at Munich Airport, where they rent buildings for administration, aircraft maintenance, lounges and training from Flughafen München GmbH. Lufthansa CityLine maintains a technical base in Frankfurt am Main.



## Munich

Südallee 15,  
85356 Munich Airport



**01 Flight Operations Center (FOC)**  
The FOC at Munich Airport houses the flight operations and a large part of the administrative units of Lufthansa Airlines and Lufthansa CityLine.

### Lufthansa Airlines

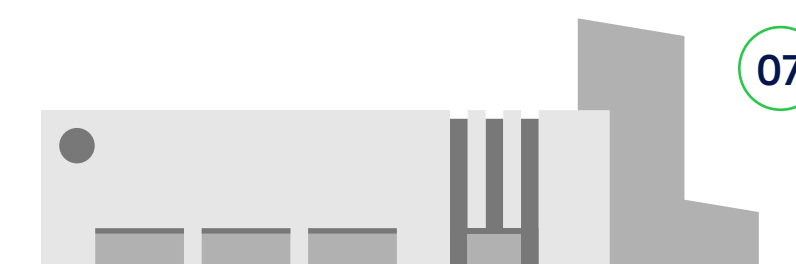
- 02 Maintenance Hangar 1**  
In addition to Lufthansa Technik, the large hangar also includes Lufthansa Airlines' aircraft maintenance.
- 03 Lounges**  
In Terminal 2 and the satellite of Terminal 2 there are seven lounges for passengers of Lufthansa and its partner airlines.
- 04 Administration building**  
Lufthansa Airlines Munich is using additional administrative space in the extension to Terminal 2.

### Lufthansa CityLine GmbH

- 05 Maintenance Hangar 4**  
Lufthansa CityLine's Munich Technical Station maintains its own hangar with office space.
- 06 Training centre**  
The training building of Lufthansa Aviation Training and Lufthansa CityLine houses aircraft mock-ups as well as training rooms for emergency and service training.
- 07 Maintenance Hangar**  
Lufthansa CityLine's Frankfurt Technical Station uses the hangar together with Lufthansa Airlines' aircraft maintenance.

## Frankfurt am Main

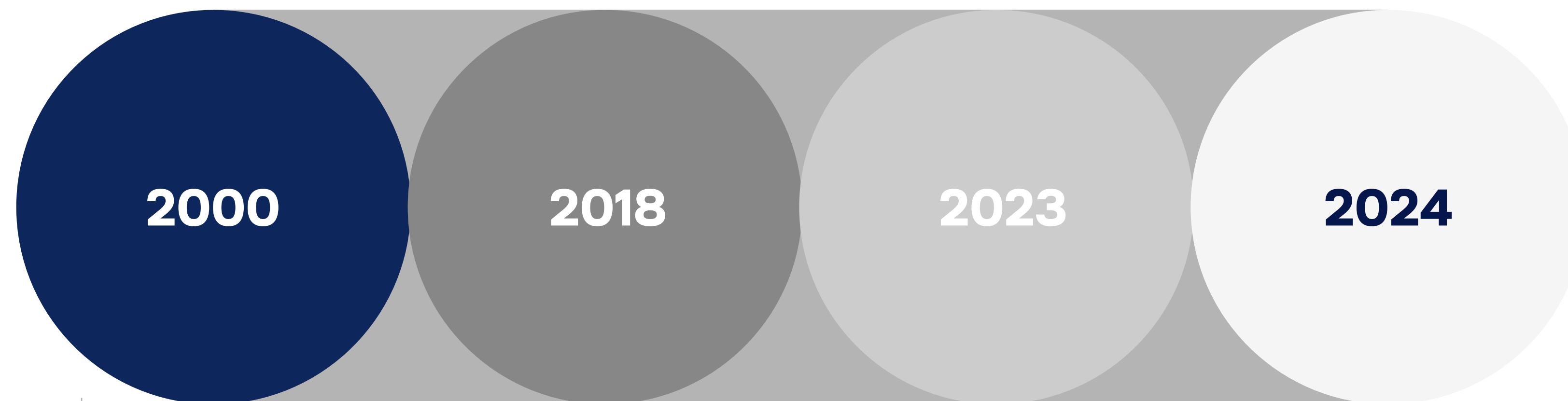
Cargo City South, Bldg. 520 (Hangar 7),  
60549 Frankfurt am Main







## Our Milestones



2000

### Lufthansa CityLine

is the first airline to receive the EMAS certificate.

2018

### Lufthansa Airlines Munich

enters the joint environmental organisation and is validated according to EMAS.

2023

### Lufthansa Airlines Frankfurt

is striving for the EMAS validation.

2024

### Lufthansa Airlines

are equipping themselves for the future with a cross-company validated environmental management system.

### At full speed ...

... we are working on the implementation of the environmental management system at the Frankfurt hub. It is to be integrated into the already existing environmental organization of Lufthansa Airlines and also certified or validated according to ISO 14001 and EMAS.

## Maintenance business transferred to Lufthansa Airlines

Since January 2020, aircraft maintenance and CAMO (Continuing Airworthiness Management Organization) have been transferred from Lufthansa Technik to Lufthansa Airlines – including tools and service vehicles. This transfer of business ensures close operational coordination and control in Lufthansa Airlines' fleet maintenance during ongoing operations. Starting in the reporting year 2022, the maintenance operations of Lufthansa Airlines Munich with about 500 employees will thus also be included in the environmental reporting.





Together we operate internationally.



We are committed to the highest quality standards.



We record and evaluate the impact of our actions on the environment.



Our environmental responsibility also applies to our surroundings.



We want to constantly improve.



This ambition is set out in our environmental guidelines.

# Environmental Policy

## Our guidelines



Air transport consumes energy and raw materials and pollutes the environment through emissions and waste. In order to keep the environmental impact of our industry as low as possible, both locally and globally, we have committed ourselves to introducing guidelines for environmental precaution. These are an expression of our responsibility and form the basis of the joint environmental management of Lufthansa Airlines Munich and Lufthansa CityLine.

In April 2023, the CEO of Lufthansa Airlines, Jens Ritter, and the managing directors of Lufthansa CityLine, Jens Fehlinger and Wolfgang Diefenbach, confirmed the guidelines with their signatures. They will be continuously updated according to the development of research and technology as well as the social discussion.

### ➤ Environmental care is a primary corporate goal.

The obligation to protect the environment is an expression of our common corporate responsibility. Environmental care is one of the most important corporate goals. We want to meet the demands of our employees and customers for environmental compatibility, economy, safety, quality, service and comfort in the same way.

### ➤ We are guided by the guiding principle of sustainable business.

Sustainable management also means using energy and raw materials as efficiently as possible and making appropriate use of renewable resources. We avoid environmental impacts such as emissions, noise, waste and waste water whenever possible and keep them low if they cannot be avoided. Our environmental management system ensures the planning and implementation of our environmental goals.

### ➤ We want to constantly improve.

We constantly work to ensure compliance with environmental laws, ordinances and regulations. In addition, we strive to use the best possible technology within the scope of our economic possibilities and thus to constantly reduce the negative effects of our business activities on the environment. Our own environmental management system controls the responsibilities, processes and means for implementing our environmental measures. The requirements of occupational health and safety are also taken into account.

### ➤ We record and evaluate the effects of our actions on the environment.

We systematically record our activities that have an impact on the environment. We document and assess them and derive targets and measures for improvement. We monitor the results of the implementation and optimise them.

### ➤ We assess the consequences for the environment before we make decisions.

In our economic decision-making processes, consideration of the resulting environmental impact is an indispensable component. If it becomes apparent that a decision will lead to a greater environmental impact, we specifically look for ways to reduce or avoid it. In this way, we ensure compliance with the environmental protection goals that are binding for us.

### ➤ Environmental protection is everyone's responsibility.

In an open and comprehensive dialogue, management and staff work together towards the goal of continuously improving environmental protection in all areas of the company. Ongoing information and regular training promote the environmental awareness of the employees.

### ➤ Environmental protection needs innovation.

Where economically and socially justifiable, we use innovations and modern technologies to conserve resources and improve environmental compatibility.

### ➤ Our environmental responsibility also applies to our surroundings.

We are committed to adhering to our guidelines and environmental goals at all our locations. We will also enforce them in all cross-company projects and participations within the scope of our possibilities. For us, compliance with environmental standards is a criterion for the selection of our contractual partners. We inform our customers and suppliers about our achievements in environmental protection and give them suggestions on how they can support us in our efforts.

### ➤ Our principle is openness.

We take concerns about environmental impacts associated with our activities seriously. We engage in constructive dialogue with the authorities and the public. We are aware that only honest information can create trust. The regularly published environmental report forms the basis of this communication.

Munich, April 2023

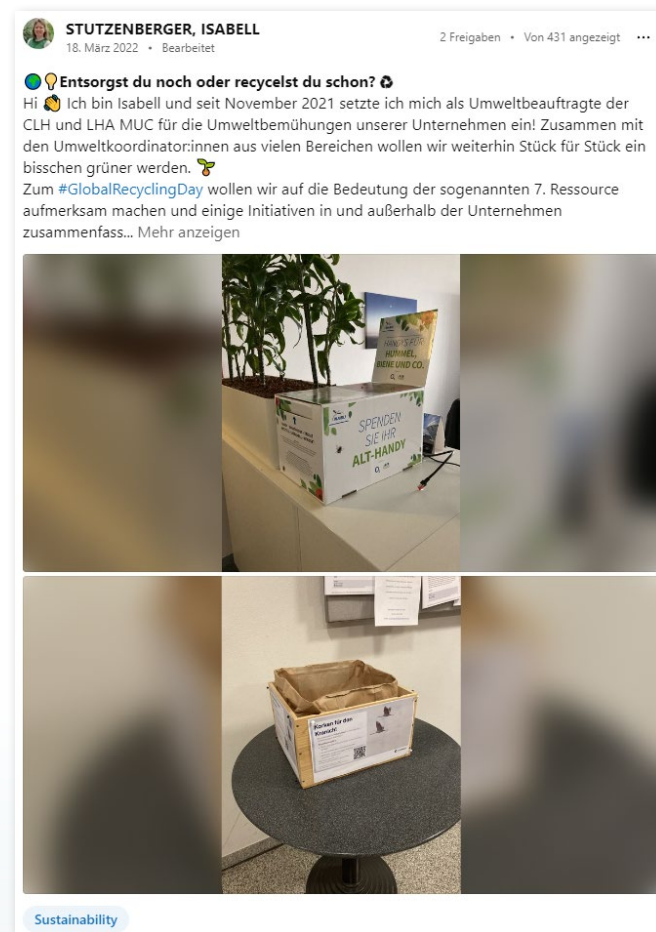
Jens Ritter  
CEO Lufthansa Airlines

Wolfgang Diefenbach  
Managing director  
Lufthansa CityLine GmbH

Jens Fehlinger  
Managing director  
Lufthansa CityLine GmbH



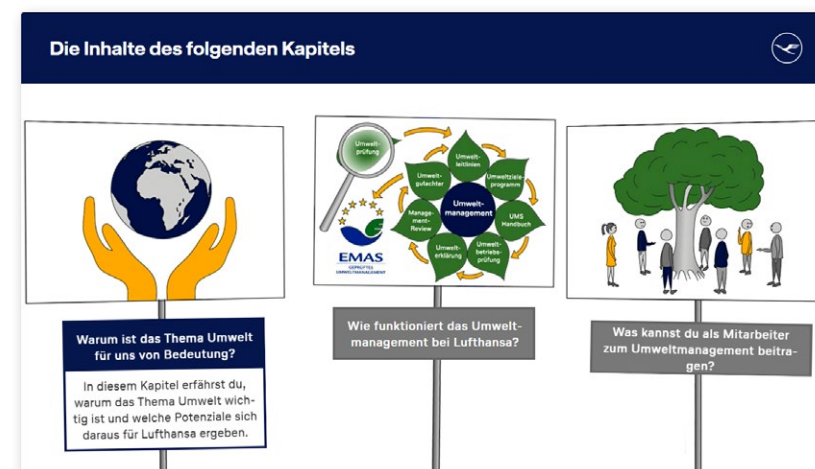
01



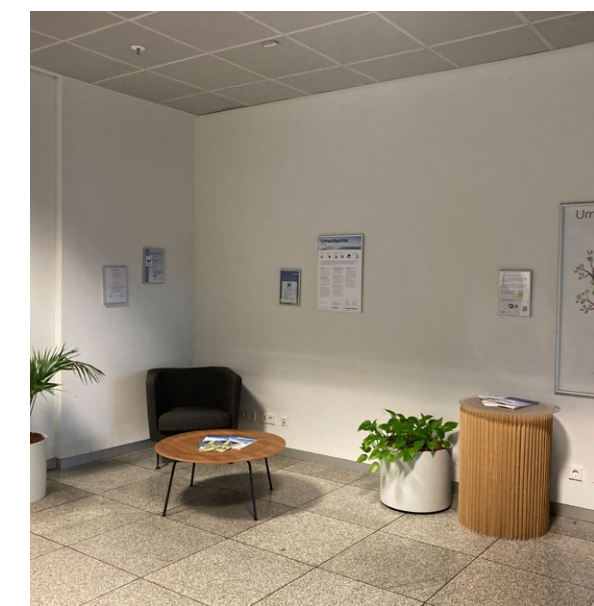
02



03



04



# Our Expertise

“Environmental protection is everyone’s responsibility” – this is what our environmental guidelines state. If our employees know what environmental and climate impacts are associated with the individual company processes and what strategic goals we have set ourselves in the field of environmental protection and resource conservation, they can better participate and contribute their own ideas. Communication, information and further training therefore play a major role in our environmental management system. The Environmental Officer regularly takes part in editorial meetings of the Corporate Communications team.

**01 #sustainability**  
In the joint internal media, such as the news app ONE and our internal social media network Yammer, we provide information about environmentally relevant measures and present projects under the hashtag #sustainability. Competitions and other campaigns invite people to participate, for example in the World Recycling Day or the 9-Euro-Ticket.

**02 Know how**  
Practically relevant information about environmental protection requirements in work processes is on the agenda in various specialized training courses. The general environmental training already established at Lufthansa CityLine is now also available for ground employees of Lufthansa Airlines.

**03 Environmental lounge in the FOC**  
On the first floor of the shared FOC office building, a seating area is dedicated to climate and resource protection. There is an idea board, the environmental policy is displayed and there is plenty of reading material for the coffee break – such as the Integrated Environmental Statement, sustainability reports and information flyers on corporate environmental protection.

**04 Welcome with environmental benefits**  
In 2022, Lufthansa CityLine introduced a Welcome Day for new colleagues. Corporate environmental protection is an integral part of the agenda for the first day. In the reporting year, 60 new employees were already directly familiarized with the topic.



# Our Highlights

Selected measures from the environmental program 2022 of Lufthansa Airlines Munich and Lufthansa CityLine.



## CO<sub>2</sub> compensation made easy

Wherever our customers come into contact with us, we offer CO<sub>2</sub> compensation options: during the booking process, through the so-called corporate fares in the B2B segment, on the flight itself, or afterwards via the Lufthansa Group platform compensaid. On this website, the CO<sub>2</sub> emissions of the individual flight can be precisely calculated. Sustainable Aviation Fuel (SAF) is available, as well as climate protection projects for a sustainable offset of CO<sub>2</sub> emissions through our partner myclimate.

Starting in 2023, the Lufthansa Group will also be the first airline group worldwide to offer its own flight fare for more sustainable travel. The new “Green Fares” already include compensation for flight-related CO<sub>2</sub> emissions –

20% through the use of sustainable aviation fuel and 80% through climate protection projects. In addition, Green Fares offer extra status miles and a free rebooking option.

## Naturally ahead

In 2022, Lufthansa Airlines designed and implemented a marketing campaign aimed at promoting environmental awareness and highlighting our company’s efforts towards climate-friendliness and resource conservation.

## Sustainable plastic alternative on board

We are getting closer to our goal of a single-use plastic-free onboard service: In 2022, we partnered with the German start-up “traceless materials”. The two founders have developed an innovative technology for producing

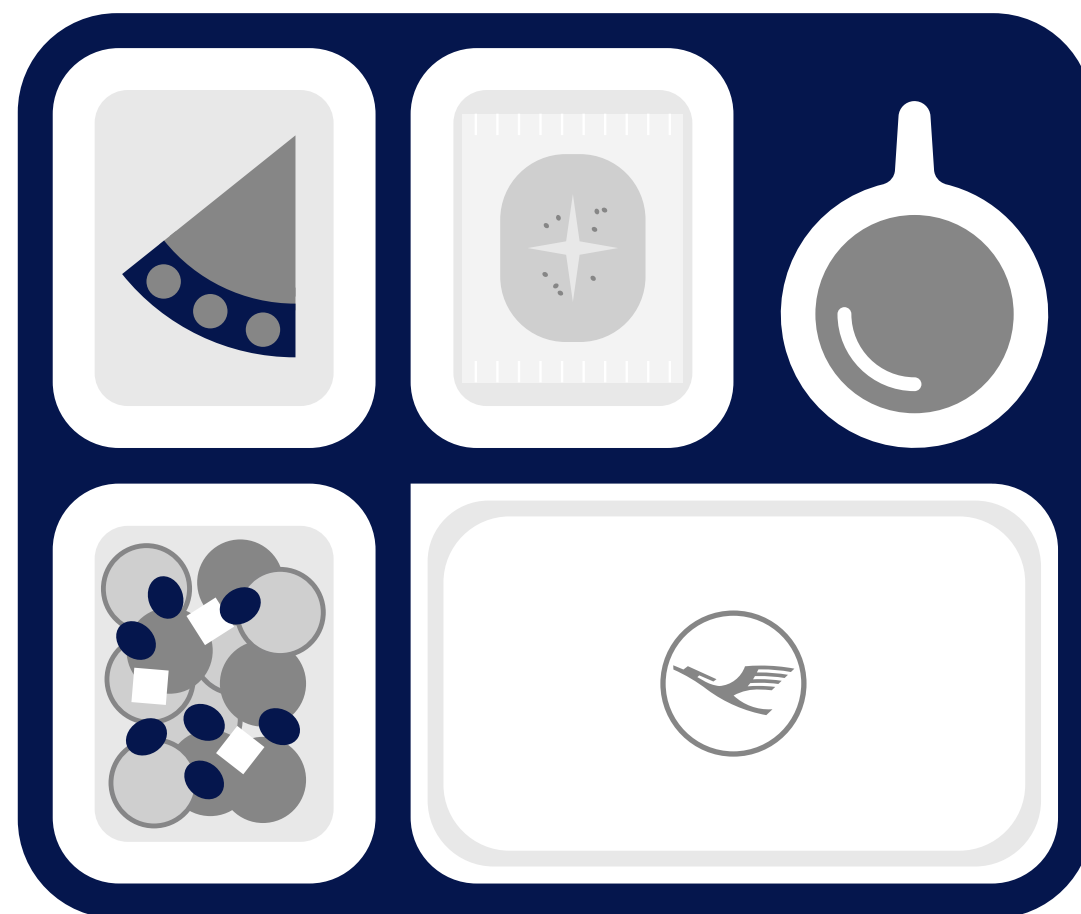
biodegradable plastic alternatives from agricultural waste products. We use this material, which decomposes residue-free and can be recycled, for our food packaging on board. In this way, we support the young company on its path to industrialize their sustainable plastic alternative – and save up to 100 tonnes of PET plastic when fully introduced on our flights.

## Closing the recycling loop

What has already been initiated in Frankfurt, we also want to introduce – and expand – in Munich: there, empty PET bottles generated during our onboard service will be fed into a closed recycling loop.



This means that it is important to ensure that the product quality is maintained – in other words, that a bottle is transformed back into a bottle. In Frankfurt, Lufthansa Airlines collaborates with airport operators to return PET bottles to a selected water bottle manufacturer, resulting in a total of 88 tonnes of PET being recycled in 2022. In Munich, we aim to introduce the concept in collaboration with Eurowings Discover, and to recycle all suitable PET items from onboard products in a closed loop. The project is currently in the conceptual phase and is expected to start in 2023.



**Up to 100 t PET**

replaced by sustainable plastic alternative

### More accurate planning – less waste

By continuously evaluating how much demand there is for certain meals on our scheduled flights, we gain more accurate information about needs: this allows us to plan our loading more precisely and avoid having to dispose of surplus food. The waste rate for fresh food can thus be reduced by up to 45 percent.

### Corks for the Crane

1.2 billion corks are produced in Germany every year, only about 10 per cent are recycled – the rest end up in the rubbish. However, cork is a natural product obtained from cork oaks, mainly from Portugal. Their deforestation leads to the loss of nesting sites and hibernation opportunities for the crane – the heraldic figure of Lufthansa. Lufthansa Airlines and Lufthansa CityLine want to contribute to a better recycling rate: since 2022, we have been collecting corks in Munich that remain from the onboard service. In addition, employees are invited to donate their private corks. In this way, more than 18 boxes of corks were collected in 2022 for the NABU’s “KORKampagne”. The association aims to promote recycling while creating jobs for people with disabilities and long-term unemployed persons. They process the cork into insulation material. The proceeds finance educational work and nature conservation projects. The Frankfurt location also wants to participate in cork collection as soon as logistical questions are clarified.

### Paperless Office by 2025

Around 12 tonnes of paper are consumed every year at Lufthansa Airlines Munich alone, despite numerous successful digitization steps. Therefore, we have set ourselves the goal of almost completely dispensing with paper in our administrative processes by 2025. On the way there, we continue to rely on consistent digitization. We have also introduced an office supplies shop through which all areas have been ordering centrally since 2022. Previously, around 260 individual orders had led to the purchase of containers that were often too large. As a new standard, we have also established a recycling rate of 100% for paper products as well as other eco-criteria. From 2023, we will introduce new, less and only centrally available printers with standard

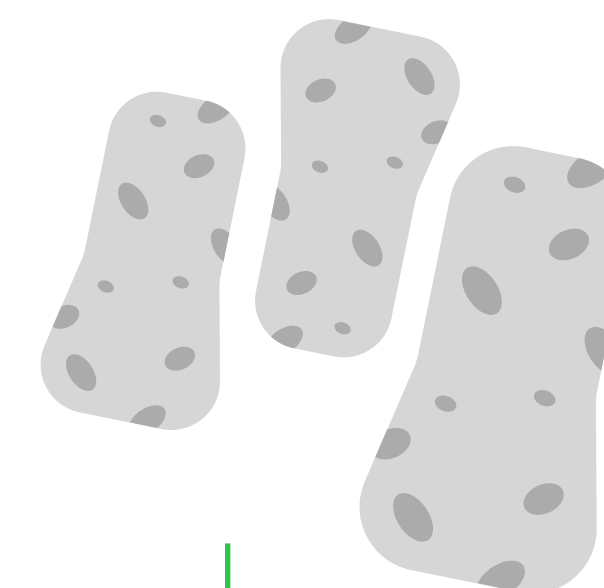
settings such as black and white and double-sided printing. We are examining recycling alternatives for printer cartridges. From 2023, Lufthansa CityLine and other companies based in the FOC will also participate in the office supplies shop.

### OPS Sustainability Program supports CO<sub>2</sub> reduction goals

All flight operations departments of the Lufthansa Group participate in the “OPS Sustainability Program”, which aims to contribute to a sustainable reduction of operational CO<sub>2</sub> emissions by 2030. To achieve this, efficiency measures are implemented along the entire operational production chain – from flight preparation, through the flight itself, ground handling, to data-based flight analysis. All Lufthansa Group airlines benefit from a uniform, cross-operational approach and a continuous exchange. In this way, standards for efficient and sustainable flight operations are to be established for all.

In a first step, 90 project ideas will be implemented by 2025 and accompanied by targeted training and communication measures. The reductions in CO<sub>2</sub> emissions achieved in the program will be continuously accounted for and are thus an essential building block for achieving the Lufthansa Group’s SBTi goals.

The flight operations of Lufthansa Airlines Munich alone processed about 14,000 applications digitally in 2022. Previously, one to eight sheets of paper were necessary per application, sometimes in several copies. Lufthansa CityLine now uses a digital signature for all contracts. This measure saves 5,000 sheets of paper per year and eliminates transport routes.



**18 boxes**

Natural corks for the NABU KORKampagne



# Environmental Program

## Field of action: Fuel efficiency (selection)

Goal	Measure	Timeline	Status	Description
Reduction of flight-related greenhouse gas emissions	Scientific validation of CO <sub>2</sub> reduction target	2022		The Science Based Targets initiative (SBTi) has confirmed that the CO <sub>2</sub> reduction target of the Lufthansa Group is in line with the goals of the Paris Climate Agreement. It envisages a reduction of specific CO <sub>2</sub> emissions per transported tonne-kilometre (passenger and freight) by 30.6 percent by 2030 compared to 2019.
	Optimization of the rate of climb	2022		Additional information has been integrated into the Flight Profile Optimizer, which is used to calculate fuel-efficient flight performance. This allows for further reduction of fuel consumption during the climb. Annual kerosene savings for Lufthansa Airlines: 2,374.5 tonnes.
	Bus service replaces air travel on the route Nuremberg-Munich	2021 until 2022		Since 2021, instead of a plane, the Lufthansa Express Bus operates four times a day between Nuremberg and Munich, and the boarding pass serves as the ticket. Since January 2022, baggage can already be checked in before departure in Nuremberg and will then be automatically transported to the connecting flight in Munich.
	Intermodal traffic to Frankfurt and Zurich Airport from Munich main station	2022		With the further expansion of the Lufthansa Express Rail service, train connections from Munich to Zurich and Frankfurt Airport are available with Lufthansa flight numbers, connection guarantee, and seat reservation.
	Weight savings by dispensing containers in the hold of the A319	2022		Lufthansa CityLine loads the six Airbus A319s acquired from Austrian Airlines loosely, and the containers at five possible loading positions are not needed. Calculated weight savings per aircraft: up to 445 kilograms, which corresponds to fleet-specific kerosene savings of up to 49.8 tonnes per year.
	Weight savings through removals in the passenger cabin of the A319	2022		Lufthansa CityLine has removed the redundant Dangerous Good Kits and galley curtains from the A319s. Weight savings per aircraft: two kilograms, which corresponds to around 3.5 tonnes of kerosene per year when calculated for the entire fleet.
	Weight savings by omitting service unit	2022		Apples from the onboard product "Tasting Heimat" are now delivered in a single service unit instead of two. This is one of the results of the regularly held joint workshops with the catering company aimed at optimizing the loading process.

All data on kerosene savings refer to Lufthansa Airlines' and Lufthansa CityLine's flight operations across all locations.

Status completed in implementation on hold/stopped

Goal	Measure	Timeline	Status	Description
Compensation of flight-related greenhouse gas emissions	CO <sub>2</sub> compensation along the entire customer journey	2022		Whether during the booking process, as a ticket (Green Fares), in the B2B segment (Corporate Fares), on the flight or afterwards via compensaid: passengers are given the option of CO <sub>2</sub> compensation everywhere, as via long-term environmental protection projects or direct CO <sub>2</sub> minimisation via SAF.
	CO <sub>2</sub> compensation as a contractual service (PartnerPlus Progress)	2022		For contract periods starting in January 2022, the CO <sub>2</sub> emissions of flights booked through the Corporate Value Fares component of Lufthansa will be offset in the PartnerPlus Progress contract form.
	CO <sub>2</sub> reduction through sustainable aviation fuels (SAF)	2022		Since July 2022, the PartnerPlus Benefit corporate incentive program has offered the individual option of purchasing SAF with Benefit points to reduce CO <sub>2</sub> emissions.



# Environmental Program

## Field of action: Energy and resource efficiency

Goal	Measure	Timeline	Status	Description
Reduction of emissions and waste in cabin operation	Introduction of biodegradable plastic for food packaging	2022		In 2022, a partnership was established with the start-up "traceless materials", which has developed a biodegradable plastic alternative from agricultural waste products. As a result, up to 100 tonnes of plastic can be saved in onboard products in the future.
	Reduction of food waste on board	2022		By continuously analyzing flight-specific demand for food, the required amount of supplies and thus the precise loading to be ordered can be predicted more accurately. This can reduce waste by up to 45 percent.
	Closed recycling loop for PET bottles	2022 until 2023		After a successful launch in Frankfurt, the recycling loop for PET bottles handed out on board will also be closed in Munich. In Frankfurt, a total of 88 tonnes of PET were recycled in 2022.
	Participation in IATA recycling initiative	2022		The initiative of the international roof organization of airlines aims to increase the recycling rate on board, among other things, through best practice exchange.
	Vegan/vegetarian menu option in Business Class	2022		On medium-haul flights, a vegan or vegetarian option is offered on the menu. In the future, a meat-free option can also be ordered on other flight lengths.
Increasing resource efficiency	Energy and resource-saving building technology at the FOC	2022		A series of measures were completed in 2022. These include the installation of two energy-efficient heating pumps and water-saving aerators, as well as the reduction of flow temperatures and the throttling of ventilation.
	Conversion to LED lamps in the FOC	2022 until 2023		With the completion of the conversion, the average energy consumption is reduced by two-thirds or 7,128 kWh.
	Consistently switching off lights in the FOC	2022		As there are no fixed shut-down times due to the 24-hour operation, security personnel were called upon to switch off the lights whenever an office is unused. In addition, all employees were urged to save energy, and stickers in the restrooms and meeting rooms remind them to turn off the lights.

Status completed in implementation on hold/stopped

Goal	Measure	Timeline	Status	Description
Increasing resource efficiency	Replacement of check-in machines and computers at the gate in Terminal 2	2022		The check-in machines and computers at the gates have been replaced with more energy-efficient devices.
	Insulating glazing for roof of the technical hangar 1	2022		The single-glazed shed roof has so far caused significant heat loss in the hangar. The new insulated glazing is expected to require less heating. The ceiling load capacity is not sufficient for the installation of a solar system.
	Sustainable marketing articles in sales	2022		In the future, no disposable items will be used to promote destinations among travel agency employees. In 2022, spice jars were used instead.
	Paperless Office MUC	2022 until 2025		In its vision statement, Lufthansa Airlines has expressed its goal for Munich to work in a more resource-efficient and paperless manner by 2025. Measures on the way there include consistent digitization, central ordering of paper (see below), as well as new standard settings such as black-and-white and double-sided printing with the rollout of new printers.
	Introduction of a central office supplies store	2022 until 2023		Unlike the previous 260 individual orders per year, centralized and more efficient ordering can now be done with less logistical effort. 100% recycled paper and other eco-criteria have been set as the standard. From 2023 onwards, Lufthansa CityLine will also participate in the office supplies shop, following Lufthansa Airlines Munich's lead.
	Collection for the KORKampagne of the NABU	2022		18 full crates of natural cork were collected in Munich in 2022 – both from private sources and the onboard service (about three corks per long-haul flight). In the recycling project of the NABU, integration workshops produce insulation materials from the cork. The collection is also planned to be permanently introduced in Frankfurt.
	More efficient current transformers in technical hangar 4	2022 until 2024		Two older power converters will be replaced by 2024. Savings per device and year: around 350 kWh.
	Use of the online version instead of printed IATA manuals	2020 until 2022		After Lufthansa CityLine had electronic access to the online platform in 2022, printed books will be ordered again for 2023. The reason: IATA has significantly increased the licenses for electronic access. Each airline would have to purchase its own floating license worth around 11,000 US dollars per year, while procuring the paper books costs just over 1,000 US dollars. Prevented savings: 3,700 sheets of paper per year.



# Environmental Program

## Field of action: Energy and resource efficiency

Goal	Measure	Timeline	Status	Description
Saving resources due to digitalisation	Digitalisation of emergency checklists	2022 until 2023		The initial test runs for the digital provision of the required checklists were successful, and the permanent implementation is imminent.
	Electronic signature for contracts	2022		Lufthansa CityLine will sign all service contracts with DocuSign, eliminating printouts completely. Savings per year: around 5,000 sheets of paper. In addition, transportation routes are eliminated.
	Digital documentation of the employee performance reviews	2022		The technical requirements for digital documentation of annual employee interviews at Lufthansa CityLine have been established. The implementation has started in the HR department and other departments are expected to follow. The savings in the administration department with full implementation: around 3,000 sheets of paper per year.
	New edition "Jobrad"	2022		BikeLeasing was won as a new partner. This allows employees to lease an e-bike through their employer.
	Digital mail service	2022		In Lufthansa CityLine's flight operations, outgoing mail that cannot be sent via email will be transmitted completely digitally after successful testing of the ePost Mailer. The printing and enveloping will be handled by the postal services in the receiving center. This eliminates a large part of the logistical effort involved in letter transport.
	Waiver of shipment of original documents (maintenance)	2022		So far, original documents requiring proof from Lufthansa CityLine's technical department were sent between Frankfurt and Munich in aluminum cases. The use of an electronic form now makes this obsolete.
	Digital shift handover (maintenance)	2022		A digital tool is now available for shift handovers that all parties can use. Previously, printouts with multiple pages per employee had to be passed on (information on hall occupancy and materials, work packages, lists of employees).
Expansion of the environmental management system	OPS Sustainability Program	2022 until 2030		Efficiency-enhancing measures to reduce CO <sub>2</sub> emissions are continuously implemented and assessed across the entire operational production chain across the group. Currently, around 90 projects are in the planning stage.

Goal	Measure	Timeline	Status	Description
Expansion of the environmental management system	Extension of the environmental management system to the Frankfurt site	2022 until 2023		Preparations for an initial validation of Lufthansa Airlines at the Frankfurt site according to EMAS in 2023 are underway, and an environmental program for the site is being developed.
	Increased exchange with those responsible for the environment at the site and beyond	2022		With the goal of learning from each other and leveraging synergies, the environmental officer regularly meets with sustainability and environmental officers from Munich Airport and partner companies of the Lufthansa Group.
Strengthening environmental communication	Communication campaign "Umwelten voraus"	2022		A campaign of Lufthansa Airlines' external communication has highlighted measures for more sustainability and climate-friendliness.
	Green Lounge at Munich Airport	2022 until 2024		The requirements for a passenger lounge that systematically considers sustainability aspects, including construction, furnishings, and food, have been defined. The implementation is currently being prepared.
	Environmental lounge for employees	2022 until 2023		A first environmental lounge with numerous information materials on sustainability at Lufthansa has been set up in the FOC. Another lounge for employees in Terminal 2 is planned.
	Expansion of environmental training	2022		The environmental training that has been used at Lufthansa CityLine for some time is now also available for ground staff at Lufthansa Airlines. In 15 minutes, it provides practical tips for more environmental protection in day-to-day operations.
	Reopening and further development of the Green Gate in the satellite of Terminal 2	2022 until 2023		After the closure due to COVID-19, the special experience world that playfully informs passengers about efficiency, environmental and animal protection, as well as sustainability, has reopened. Some technical and content-related developments have already been made, with further ones planned for 2023.
	Waste collection campaign for World Cleanup Day	2022		Around 2,500 Lufthansa employees from 26 countries participated in the cleanup day to remove waste from the environment, filling a total of 2,400 trash bags. The environmental management in Munich organized a joint collection campaign at Munich Airport. For every filled trash bag, the Lufthansa Group donated to the aid organization HelpAlliance, resulting in a total of 10,000 euros in donations.

Status completed in implementation on hold/stopped





# Environmental Program

## Field of action: Energy and resource efficiency

Goal	Measure	Timeline	Status	Description
Strengthening environmental communication	Communication campaign for the 9-euro ticket	2022		A short video “9 questions about the 9-euro ticket” provided case studies on saving money and emissions on the way to work. A competition (“How do you spend your time on public transport?”) encouraged people to get involved.
	Training concept for the Due Diligence Act on Supply Chains	2022		Lufthansa CityLine has launched a training that addresses environmental aspects and their importance in the evaluation of the already introduced supplier questionnaires.
	Acquisition of new members for the “Umwelt AG” of the cabin	2022		Overall, six new members were added to Lufthansa CityLine’s “Umwelt AG” working group. There is an intense exchange with the environmental management team.
	Education of flight attendants with a focus on environmental topics	2022		As part of further training, 26 new Supervision Flight Attendants (SFA) were trained as multipliers on environmental topics at Lufthansa CityLine and received in-depth training on environmental issues in daily operation.
	Presentation of the environmental management system at the Welcome Day	2022		During the welcome event for new employees at Lufthansa CityLine, 15 minutes are scheduled as standard, during which the environmental officer presents the environmental management system, raises awareness for the topic, and motivates to participate.

## Field of action: Active noise abatement (selection)

In 2022, Lufthansa Airlines and Lufthansa CityLine did not implement any new environmental measures in the field of noise protection. We continued to implement the measures that have been taken so far on an ongoing basis. In addition, measures that lead to a change in the flight path and thus to a saving of kerosene often also contribute to this field of action.

Status completed in implementation on hold/stopped



## Environmental Balance Sheet

The environmental and transport performance indicators of Lufthansa Airlines and Lufthansa CityLine reflect the increase in passenger demand and the resulting ramp-up of production after the pandemic.

The transport performance (in tonne-kilometres) of Lufthansa Airlines has almost doubled compared to the previous year, while at Lufthansa CityLine it has increased by 80 percent. However, the absolute fuel consumption has not increased to the same extent. At Lufthansa Airlines, it is 80 percent higher than the previous year, while at Lufthansa CityLine, it is 56 percent higher. This recovered efficiency gain is shown in the decoupling graphics. With increased capacity utilization, the specific consumption has decreased and is even below the pre-crisis level of 2019 for Lufthansa Airlines in the passenger sector (3.50 litres versus 3.65 litres per 100 passenger-kilometres).

In summary, the consumption has increased compared to the previous year, but in the longer-term comparison of annual values, an efficiency improvement can be observed.



# 3.5 l / 100 pkm

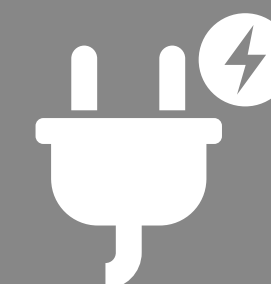
Specific fuel consumption

With the increased capacity utilization, the specific consumption has decreased and is even below the pre-crisis level of 2019 for Lufthansa Airlines in the passenger sector (3.50 litres versus 3.65 litres per 100 passenger-kilometres).

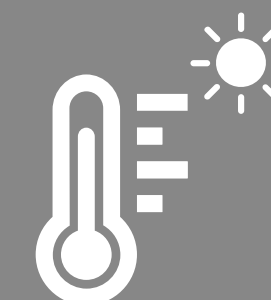
# -32.5 %

Lufthansa CityLine was able to reduce the amount of gasoline and diesel fuel consumed by its operational ground vehicles by around one-third compared to 2019 (44,836 litres versus 66,445 litres).

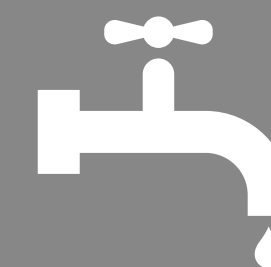
Compared to 2019, the energy and water consumption in the companies' buildings was significantly reduced.



## -19 % Electricity



## -12 % Heating



## -35 % Water



# Company and transport performance indicators

## Lufthansa Airlines Munich

Company key figures MUC	Unit	2022	2021	2020	2019	+/- PY in %
Employees	Number	8,762	9,258	9,959	9,851	-5
thereof: Cockpit	Number	1,543	1,587	1,600	1,645	-3
Cabin	Number	5,161	5,530	5,730	6,164	-7
Aircraft	Number	81	50	30	98	62
Operational ground fleet*	Number	136	131	44	43	4
<b>Transport key figures across locations</b>						
	Unit	2022	2021	2020	2019	+/- PY in %
Aircraft	Number	242	195	101	280	24
Flights	Number	274,360	152,438	124,913	394,102	80
Passengers	Number	40,604,283	18,668,488	14,167,547	58,806,557	118
Seat kilometres offered, SKO	Mio. pkm	127,909	75,454	57,177	187,666	70
Freight kilometres offered, FTKO	Mio. tkm	4,526	2,840	2,243	5,956	59
Tonne-kilometres offered, TKO	Mio. tkm	17,507	10,486	8,036	24,935	67
Passenger kilometres, PKT	Mio. pkm	105,063	46,350	36,406	159,393	127
Freight tonne kilometres, FTKT	Mio. tkm	2,325	1,940	1,375	3,371	20
Tonne-kilometres, TKT	Mio. tkm	12,906	6,605	5,042	19,433	95

\* Increase due to integration of aircraft maintenance

More information on data delimitation and calculation methodology as well as footnote resolution on page 31.

## Lufthansa CityLine

Corporate key figures across locations	Unit	2022	2021	2020	2019	+/- PY in %
Employees	Number	2,071	2,066	2,143	2,186	0
thereof: Cockpit	Number	602	616	624	630	-2
Cabin	Number	846	842	863	896	0
Apprentices	Number	19	23	30	33	-17
Operational ground fleet	Number	44	44	46	46	0
<b>Transport key figures across locations</b>						
	Unit	2022	2021	2020	2019	+/- PY in %
Aircraft	Number	50	53	52	55	-6
Flights	Number	89,105	57,767	52,229	116,132	54
Passengers	Number	6,154,697	3,451,889	2,693,795	8,068,161	78
Seat kilometres offered, SKO	Mio. pkm	4,832	3,313	3,585	10,636	46
Freight kilometres offered, FTKO	Mio. tkm	84	23	47	211	265
Tonne-kilometres offered, TKO	Mio. tkm	612	377	424	1,313	62
Passenger kilometres, PKT	Mio. pkm	3,699	2,200	2,243	8,581	68
Freight tonne kilometres, FTKT	Mio. tkm	29	1	20	111	3088
Tonne-kilometres, TKT	Mio. tkm	399	221	245	974	81



# Environmental figures Lufthansa Airlines

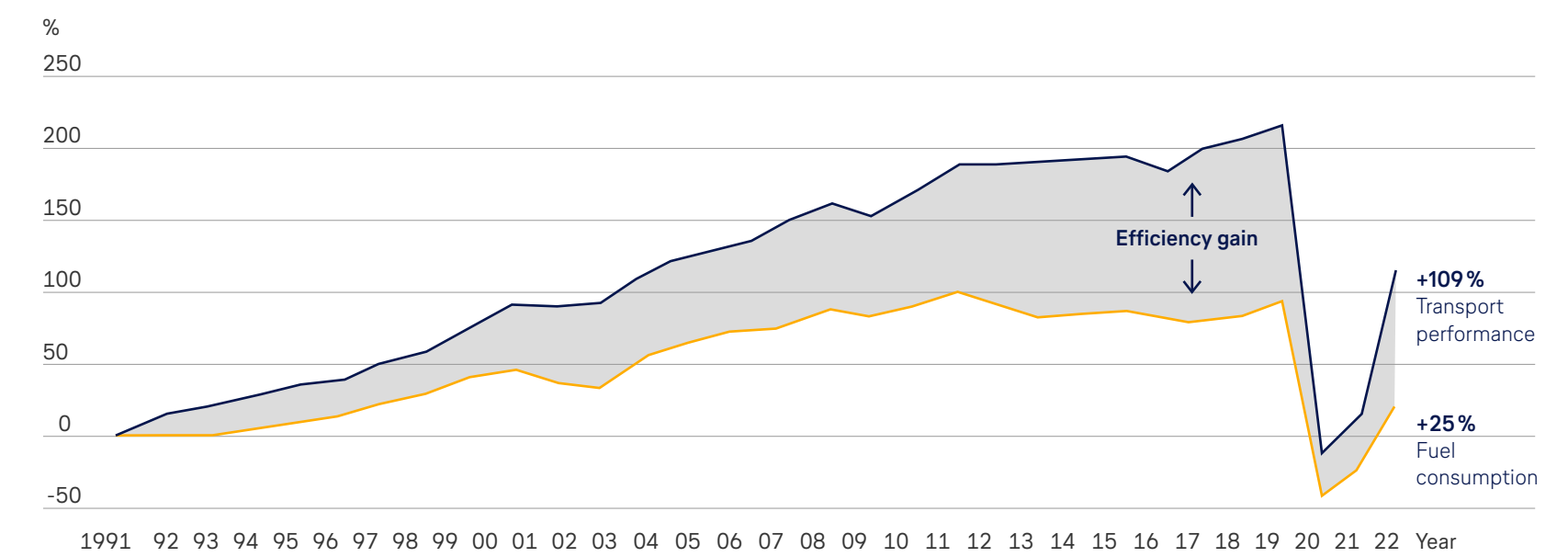
Environmental figures Lufthansa Airlines	Unit	2022	2021	2020	2019	+/- PY in %
<b>Fuel consumption (flight operations)<sup>1,2,4</sup></b>						
Fuel consumption, absolute	t	3,553,821	1,990,749	1,615,259	5,548,178	79
Fuel consumption, specific, passenger transport	l/100pkm	3.50	3.78	4.00	3.65	-7
Fuel consumption, specific, freight transport	l/FTKT	0.34	0.39	0.41	0.34	-13
<b>Carbon dioxide emissions (flight operations)<sup>1,3,4</sup></b>						
Carbon dioxide emissions, absolute	t	11,194,537	6,270,859	5,088,066	17,476,759	79
Carbon dioxide emissions, specific, passenger transport	kg/100pkm	8.79	9.48	10.06	9.18	-7
Carbon dioxide emissions, specific, freight transport	kg/tkm	0.84	0.97	1.04	0.84	-13
<b>Nitrogen oxide emissions (flight operations)<sup>1,3,4</sup></b>						
Nitrogen oxide emissions, absolute	t	50,166	28,366	23,488	85,331	77
Nitrogen oxide emissions, specific, passenger transport	g/100pkm	39.21	43.18	48.35	44.72	-9
Nitrogen oxide emissions, specific, freight transport	g/100tkm	3.86	4.31	4.53	4.20	-10
<b>Carbon monoxide emissions (flight operations)<sup>1,3,4</sup></b>						
Carbon monoxide emissions, absolute	t	8,332	4,395	3,096	10,314	90
Carbon monoxide emissions, specific, passenger transport	g/100pkm	6.86	7.41	6.85	5.63	-7
Carbon monoxide emissions, specific, freight transport	g/100tkm	0.48	0.50	0.46	0.40	-3
<b>Fuel Dumps<sup>1,2,4</sup></b>						
Events, total	Number	28	2	3	15	1300
Medical reasons	Number	12	0	2	9	-
Technical reasons	Number	14	1	1	6	1300
Other reasons	Number	2	1	0	0	100
Fuel volume	t	892	80	107	470	1015
<b>Fuel consumption (operational ground vehicles) MUC<sup>5</sup></b>						
Fuel consumption*	l	153,958	75,194	23,690	87,663	105
Fuel consumption per vehicle	l	1,158	574	538	2,039	102
<b>Material consumption MUC</b>						
Paper <sup>7</sup>	t	13	11	10	29	10
Proportion of recycled paper	%	56	60	38	78	-6
Paper per employee	kg	1.43	1.23	1.05	2.97	16
Hazardous substances**	t	20	-	-	-	-
Hazardous substances per aircraft**	kg	250	-	-	-	-
<b>Mobility</b>						
Business trips** (extrapolation)	Coupon	32,000	75,000	-	-	-57
Jobtickets MUC	Number	295	273	446	523	8

\* Increase through integration of aircraft maintenance

\*\* Previous year's figures not available

More information on data delimitation and calculation methodology as well as footnote resolution on page 31.

**DECOUPLING OF TRANSPORT CAPACITY AND FUEL CONSUMPTION\***  
(Change compared to 1991 in percent, data for the Lufthansa Airlines)



\*All scheduled and charter flights operated by Lufthansa Passenger Airline.

Excluded from this are services provided by third parties, as no influence can be exerted on their performance.



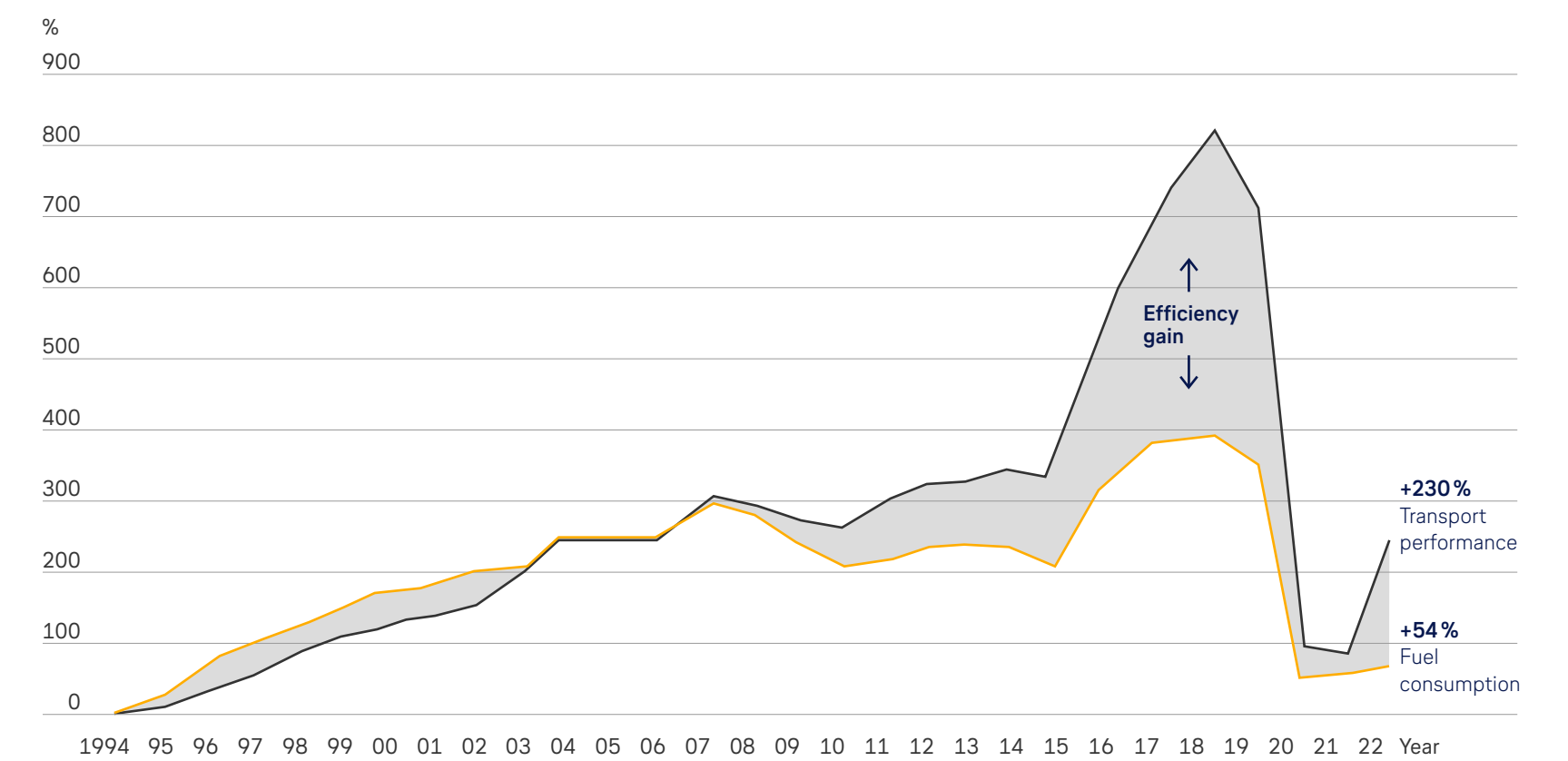
# Environmental figures Lufthansa CityLine

Environmental figures Lufthansa Airlines	Unit	2022	2021	2020	2019	+/- PY in %
<b>Fuel consumption (flight operations) <sup>1,2,4</sup></b>						
Fuel consumption, absolute	t	195,510	125,121	127,645	368,475	56
Fuel consumption, specific, passenger transport	l/100pkm	6.31	7.08	6.78	4.95	-11
Fuel consumption, specific, freight transport	l/FTKT	0.39	0.92	0.37	0.33	-58
<b>Carbon dioxide emissions (flight operations) <sup>1,3,4</sup></b>						
Carbon dioxide emissions, absolute	t	615,855	394,132	402,083	1,160,693	56
Carbon dioxide emissions, specific, passenger transport	kg/100pkm	15.88	17.82	17.07	12.46	-11
Carbon dioxide emissions, specific, freight transport	kg/tkm	0.97	2.33	0.94	0.82	-58
<b>Nitrogen oxide emissions (flight operations) <sup>1,3,4</sup></b>						
Nitrogen oxide emissions, absolute	t	2,269	1,407	1,570	5,013	61
Nitrogen oxide emissions, specific, passenger transport	g/100pkm	57.65	63.67	65.52	52.31	-9
Nitrogen oxide emissions, specific, freight transport	g/100tkm	4.64	6.50	4.94	4.71	-29
<b>Carbon monoxide emissions (flight operations) <sup>1,3,4</sup></b>						
Carbon monoxide emissions, absolute	t	775	451	423	1,003	72
Carbon monoxide emissions, specific, passenger transport	g/100pkm	20.21	20.41	18.40	11.19	-1
Carbon monoxide emissions, specific, freight transport	g/100tkm	0.94	2.14	0.51	0.38	-56
<b>Fuel consumption (operational ground vehicles) <sup>5</sup></b>						
Fuel consumption	l	44,836	40,730	44,380	66,445	10
Fuel consumption per vehicle	l	1019	926	965	1444	10
<b>Material consumption</b>						
Paper <sup>7</sup>	t	4	2	3	5	48
Proportion of recycled paper**	%	78	80	-	-	-2
Paper per employee	kg	1.72	1.16	1.31	2.35	48
Hazardous substances	t	33	26	21	44	29
Hazardous substances per aircraft	kg	703	483	401	801	46
<b>Mobility</b>						
Business trips** (extrapolation)	Coupon	39,000	25,000	-	-	56
Jobtickets	Number	135	136	153	172	-1

\*\* Previous year's figures not available

More information on data delimitation and calculation methodology as well as footnote resolution on page 31.

**DECOUPLING OF TRANSPORT CAPACITY AND FUEL CONSUMPTION\***  
(Change compared to 1994 in percent, data for the Lufthansa CityLine fleet)

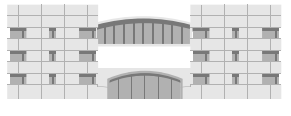


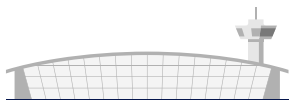


\* All scheduled and charter flights operated by Lufthansa CityLine.  
Excluded from this are services provided by third parties, as no influence can be exerted on their performance.



# Environmental figures


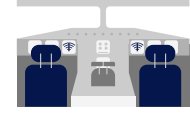

## Buildings

Buildings in MUC <sup>6</sup>		Unit	2022	2021	2020	2019	+/- PY in %
<b>01 FOC</b>							
	Electricity	MWh	2,638	2,441	2,590	3,159	8
	District-heating <sup>□</sup>	MWh	1,899	2,162	1,938	2,492	-12
	Water	m <sup>3</sup>	9,022	5,485	5,264	13,505	64
	Wastewater	m <sup>3</sup>	12,201	6,541	4,865	14,952	87
	Effective area	m <sup>2</sup>	11,755	11,755	11,755	11,755	0
	Built-up area	m <sup>2</sup>	11,015	11,015	11,015	11,015	0
	Waste <sup>8</sup>	t	230	160	194	265	44
	Thereof: Recovery	t	230	157	191	258	46
	Landfilling	t	0	3	3	7	-99
<b>02 Hangar 1</b>							
	Electricity	MWh	3,641	3,314	3,389	4,418	10
	District-heating	MWh	9,148	8,148	8,573	10,452	12
	Water	m <sup>3</sup>	4,939	4,905	4,678	8,317	1
	Wastewater	m <sup>3</sup>	4,939	4,905	4,678	8,317	1
	Effective area	m <sup>2</sup>	52,744	52,744	52,744	52,744	0
	Built-up area	m <sup>2</sup>	35,449	35,449	35,449	35,449	0
	Effective area	m <sup>2</sup>	7,443	7,443	7,443	7,443	0
	Waste <sup>8</sup>	t	76	47	-	-	62
<b>03 Lounges</b>							
	Electricity <sup>□</sup>	MWh	1,767	1,139	1,015	2,415	55
	Electricity per passenger	KWh	1.05	2.01	1.53	0.87	-48
	Effective area	m <sup>2</sup>	10,377	10,377	10,377	10,377	0
	Waste <sup>8</sup>	t	352	483	861	1,614	-27
	Thereof: Recovery	t	340	478	855	1,596	-29
	Landfilling	t	12	5	7	17	158
	Waste per passenger	kg	0.21	0.85	1.30	0.58	-75
<b>04 Administration building</b>							
	Electricity <sup>□</sup>	MWh	294	240	152	697	23
	Effective area	m <sup>2</sup>	5,385	5,385	5,385	5,385	0

<sup>□</sup> Corrected due to new data basis

<sup>○</sup> The consumption data can currently only be updated in estimates

More information on data delimitation and calculation methodology as well as footnote resolution on page 31.

Buildings in MUC <sup>6</sup>		Unit	2022	2021	2020	2019	+/- PY in %
<b>05 Hangar 4</b>							
	Electricity	MWh	1,307	1,303	1,138	1,414	0
	District-heating	MWh	4,379	3,929	4,742	4,340	11
	Water	m <sup>3</sup>	1,540	1,027	1,871	2,150	50
	Effective area	m <sup>2</sup>	15,815	15,815	15,815	15,815	0
	Built-up area	m <sup>2</sup>	13,009	13,009	13,009	13,009	0
	Waste <sup>8</sup>	t	24	51	63	89	-53
	Thereof: Recovery	t	9	47	59	84	-81
	Landfilling	t	15	3	4	5	338
<b>06 Training centre</b>							
	Electricity	MWh	123	128	135	160	-4
	District-heating <sup>○</sup>	MWh	148	148	148	127	0
	Water <sup>○</sup>	m <sup>3</sup>	344	344	344	357	0
	Effective area	m <sup>2</sup>	2,077	2,077	2,077	2,077	0
	Built-up area	m <sup>2</sup>	2,077	2,077	2,077	2,077	0
<b>Buildings in FRA<sup>6</sup></b>							
<b>07 Hangar 7</b>							
	Electricity	MWh	67	293	201	404	-77
	District-heating	MWh	80	437	359	422	-82
	Water	m <sup>3</sup>	129	151	101	197	-15
	Effective area <sup>□</sup>	m <sup>2</sup>	382	382	382	382	0
	Built-up area	m <sup>2</sup>	1,414	1,414	1,414	1,414	0
	Waste <sup>8</sup>	t	14	7	16	31	96
	Thereof: Recovery	t	14	3	4	6	420
	Landfilling	t	0	4	11	25	-100



# Data Definition and Calculation Methodology

## Data definition

The reporting on transport performance, kerosene consumption and emissions from flight operations for the years 2019 to 2022 is based on the following data definition, unless otherwise stated:



**[1] Includes all scheduled and charter flights** operated by Lufthansa Airlines (excluding Air Dolomiti) and Lufthansa CityLine. Excluded from this are services provided by third parties, as the performance of these performance of these services cannot be influenced.

## Calculation methodology



**[2] Absolute kerosene consumption**  
Kerosene consumption is calculated on the basis of actual flight operations, i.e. taking into account the actual utilization and routing according to the gate-to-gate principle. This means that all flight phases are covered – from taxiing on the ground to detours and holding patterns in the air.



**[3] Absolute emissions**  
The calculation of the absolute emissions of air transport is based on the actual transportation performance and thus on the real utilization as well as the actual consumption of kerosene in the reporting year. The transportation performance is measured in tonne-kilometres, i.e. the payload transported over a distance.

The standard of an average of 100 kilograms is used for passengers and their baggage, and for freight the weight measured. Each aircraft-engine combination in the fleet is considered separately and calculated using programs from the respective engine and aircraft manufacturers. The programs take into account the annual average flight profile of each subfleet. This makes it possible to determine emissions based on altitude, distance, thrust, and load. This is particularly necessary for nitrogen oxides (NOX), carbon monoxide (CO), and unburned hydrocarbons (UHC). However, CO<sub>2</sub> emissions do not require a special aircraft-specific calculation, as they are calculated based on the density of the burned kerosene. Burning one tonne of kerosene produces around 3.15 tonnes of CO<sub>2</sub>, depending on the actual density.



**[4] Specific consumption and emissions**  
The calculation of specific consumption and emissions puts the absolute values in relation to the transport performance. For example, the indicator litres per 100 passenger kilometres (l/100 pkm) is calculated based on the actual utilization and actual consumption of kerosene. The distances used refer to great circle distances. In combined transport (freight and passenger transport on one aircraft), the passenger- or cargo-specific values of fuel consumption are based on their share of the total payload. Since 2013, the DIN EN 16258 standard has provided guidelines for the standardized calculation of greenhouse gas emissions for transport processes. Lufthansa Group adheres to this guideline regarding the allocation of payload. A unified, internationally harmonized, and accepted method would be welcomed by Lufthansa Group.



**[5] Fuel (vehicles)**  
The data on fuel consumption of the service vehicles is obtained from the actual amount of fuel filled up, which is documented through fuel card billing.



**[6] Electricity, heat and water consumption**  
The buildings of Lufthansa Airlines at the Munich site and Lufthansa CityLine are all rented from the airport operator companies in Munich and Frankfurt am Main. These companies transmit the consumption data annually. In some cases, consumption data is not shown separately due to the lack of metres and are therefore not included in this report.



**[7] Material input**  
The paper consumption is requested from the supplier and corresponds to the amount of copying paper used in the reporting year.



**[8] Waste**  
The waste data and key figures are compiled annually from the transfer notes and invoices from the waste disposal companies and then evaluated.

## Accuracy

For reasons of clarity, the figures in the tables and graphs have been rounded. The changes compared with the previous year, however, refer to the exact values in each case. For this reason, it may happen that a table entry, although unchanged compared to the previous year, still shows a relative change. Due to rounding of proportional percentage figures, it may also happen that their addition, compared to the addition of non-rounded percentage figures, leads to differing results. For example, proportional percentage figures cannot be added up to 100 percent due to rounding, even though this would be logically expected.



# Validation

## CERTIFICATE



**Lufthansa Airlines**

**Sites**  
 Lufthansa Airlines München, 15 Südallee,  
 Munich-Airport, 85356  
 Lufthansa CityLine GmbH, 15 Südallee,  
 Munich-Airport, 85356  
 and  
 Lufthansa CityLine GmbH, Cargo City Süd, Geb. 520,  
 Frankfurt/Main, 60549

Registration-No.: DE-155-00158

Date of first registration  
 13<sup>th</sup> January 2000

This certificate is valid until  
 31<sup>st</sup> May 2024


This organisation has established an environmental management system according to EU-Regulation Nr. 1221/2009 and EN ISO 14001:2015 (section 4 to 10) to promote the continual improvement of environmental performance, publishes an environmental statement, has the environmental management system verified and the environmental statement validated by a verifier, is registered under EMAS ([www.emas-register.de](http://www.emas-register.de)) and therefore is entitled to use the EMAS-Logo.



Munich, 2<sup>nd</sup> March 2023



Dr. Manfred G. G. G.  
 Chief Executive Officer



## Erklärung des Umweltgutachters zu den Begutachtungs- und Validierungstätigkeiten nach Anhang VII der Verordnung (EG) Nr. 1221/2009 sowie nach Änderungs-VO 2017/1505 und 2018/2026

Der Unterzeichnende, **Dr.-Ing. Reiner Beer** EMAS-Umweltgutachter mit der Registrierungsnummer DE-V-0007, akkreditiert oder zugelassen für den Bereich 51.10 (NACE-Code Rev. 2), bestätigt, begutachtet zu haben, ob die gesamte Organisation/ wie in der Umwelterklärung der Organisation

**Lufthansa Airlines mit  
 Lufthansa Airlines München  
 am Standort  
 Südallee 15, 85356 München-Flughafen  
 Lufthansa Cityline GmbH  
 an den Standorten  
 Südallee 15, 85356 München-Flughafen  
 Cargo City Süd, Gebäude 520, 60549 Frankfurt am Main  
 (mit der Reg.-Nr. DE-155-00158)**

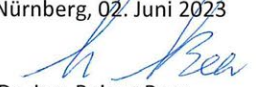
angegeben, alle Anforderungen der Verordnung (EG) Nr. 1221/2009 des Europäischen Parlaments und des Rates vom 25.11.2009 und Änderungs-VO 2017/1505 vom 28.08.2017 und 2018/2026 vom 19.12.2018 über die freiwillige Teilnahme von Organisationen an einem Gemeinschaftssystem für Umweltmanagement und Umweltbetriebsprüfung (EMAS) erfüllt.

Mit der Unterzeichnung dieser Erklärung wird bestätigt, dass

- die Begutachtung und Validierung in voller Übereinstimmung mit den Anforderungen der Verordnung (EG) Nr. 1221/2009 und Änderungs-VO 2017/1505 und 2018/2026 durchgeführt wurden,
- das Ergebnis der Begutachtung und Validierung bestätigt, dass keine Belege für die Nichteinhaltung der geltenden Umweltvorschriften vorliegen,
- die Daten und Angaben der aktualisierten Umwelterklärung der Organisation / des Standortes ein verlässliches, glaubhaftes und wahrheitsgetreues Bild sämtlicher Tätigkeiten der Organisation/ des Standortes innerhalb des in der Umwelterklärung angegebenen Bereichs geben.

Diese Erklärung kann nicht mit einer EMAS-Registrierung gleichgesetzt werden. Die EMAS-Registrierung kann nur durch eine zuständige Stelle gemäß der Verordnung (EG) Nr. 1221/2009 erfolgen. Diese Erklärung darf nicht als eigenständige Grundlage für die Unterrichtung der Öffentlichkeit verwendet werden.

Nürnberg, 02. Juni 2023



Dr.-Ing. Reiner Beer  
 Umweltgutachter  
100% Recyclingpapier





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