

Environmental Statement

2024 Issue

Reporting Year 2023



Lufthansa



Lufthansa CityLine





Table of Contents

Our company

Foreword	3
Voices of the environmental coordinators	4
About us	5
Lufthansa Airlines	5
Lufthansa CityLine	6
Lufthansa Group	7
Stakeholders of the Lufthansa Group	8

Our responsibility

The people involved	10
Our system	12
Our scope of application	14
Our values	16

Our expertise

Communication and environmental education	17
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Our progress

Our highlights	18
Environmental programme	20
Environmental balance sheet and key figures	24
Data delimitation and calculation methodology	31

Declaration of validity

EMAS certificate and validation confirmation	32
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Imprint

Imprint and contact	33
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Foreword

Dear readers,

With this year’s edition of our Environmental Statement, we have reached another milestone: the complete joint validation of our two companies Lufthansa Airlines and Lufthansa CityLine, including our two locations in Frankfurt am Main and Munich. This allows us to pool our local expertise. As a result, we can leverage synergies even better and maximise the effectiveness of our measures to reduce our CO₂ emissions and conserve resources.

Thanks to the tireless efforts of our environmental coordinators and our constantly growing network of collaboration partners, we were able to make decisive progress on numerous key topics in the reporting year. The highlights certainly include our research collaboration on power-to-liquid aviation fuels, the effective measures we have taken to improve fuel efficiency and our progress towards more resource-efficient service on board our aircraft. We have also developed new training formats to further sensitise our workforce to the importance of environmental awareness in day-to-day operations. You can find out more about these and further topics in this environmental statement.

In parallel to these successes and the encouraging recovery in demand for air travel, we are also facing challenges. These include operational and weather-related irregularities as well as the challenging geopolitical situation, which continue to affect our business operations. We would also like to address the political challenges in connection with the EU’s Fit for 55 climate protection package: it is essential for the future of European aviation that politics and business work together to shape a path towards more sustainable air travel that preserves the competitiveness of European airlines.

We are aware of our responsibility and are consistently pursuing our goal of achieving a neutral carbon footprint by 2050. By 2030, we want to halve our net CO₂ emissions compared to 2019. We will be measured against this target and will continue to work passionately to achieve it moving forward.

We hope you enjoy reading this report!



Jens Ritter
Chief Executive Officer
Lufthansa Airlines

Wolfgang Diefenbach
Managing Director
Lufthansa CityLine GmbH

Jens Fehlinger
Managing Director
Lufthansa CityLine GmbH



Voices of the environmental coordinators

A total of 40 environmental coordinators have been assigned in all departments at Lufthansa Airlines and Lufthansa CityLine. They form the core of our environmental management system. With an elevated level of personal commitment, they carry the environmental concept into the organisation and are committed to continuous improvements in all business processes.



Peter Willenborg
Green Mobility Trainee,
Lufthansa Group

“I’m working as a Green Mobility Trainee in the Lufthansa Airlines sustainability team for six months. Here I’m learning a lot about the strategic course Lufthansa is setting to make flying more climate friendly. Specifically, I am working on the further development of a cost model for sustainable aviation fuels (SAF). I’m impressed by how hard everyone is working to find smart solutions and I’m proud to be a part of this during my traineeship.”



Teresa Kress
Health & Employee
Experience Manager,
Lufthansa CityLine

“I’ve been environmentally conscious for a long time and when I received the job offer from Lufthansa CityLine, I was initially sceptical. But then I came across the environmental report and was amazed at how much is already being done. In my role as an environmental coordinator, I really want to help sensitise employees to the issue of environmental protection and make our work processes more resource efficient.”



Janina Marie Berger
Purser I & Manager Cabin Reliability & Sustainability,
Lufthansa Airlines

“As cabin crew, we have a variety of opportunities to influence how we can improve our actions economically and ecologically. It’s the small steps we all take that count.”

“Many small steps can have a big impact – that’s a crucial point in the environmental management system. As an environmental coordinator, it’s important to me to communicate this to my colleagues and raise awareness. There’s so much more we can do – I want to be part of that.”

Janet Romeiser
Manager Partner and Provider Management,
Lufthansa Airlines

“High quality standards and environmental protection are not mutually exclusive – on the contrary: today, they go hand in hand.”

Marc Ringler
Team Lead Tool Dispensing, Lufthansa CityLine



Christiana von Dewitz
Manager Sustainability Onboard &
Lounges, Lufthansa Group

“Environmental protection is more important than ever, and I want to actively take responsibility for this together with my colleagues. That’s why we are committed to promoting environmental measures in our work processes. For example, we consciously pay attention to conserving resources and avoiding waste. I’m pleased to see that more and more colleagues are doing everything they can to make a positive contribution to our company’s sustainability performance.”



Company key figures

Lufthansa Airlines

Lufthansa Airlines is the largest 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 connecting flights all over the world.

The two hubs are the basis for flight operations with the short- and long-haul fleets. Flying, technical, operational and administrative staff are stationed here. The organisational units based at the hubs are station management, aircraft maintenance, and the operational planning and control of passenger flight operations.

Frankfurt am Main is Lufthansa Airlines' largest hub. Around two thirds of the flight volume is handled via this airport. There is also a direct link here to the corporate functions and other Lufthansa Group companies. Together with its partner airlines, Lufthansa Airlines also handles the majority of air traffic in Munich.

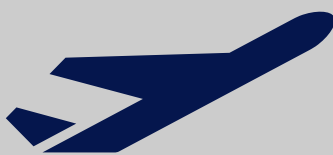
71
countries (-8%)



210
destinations (-5%)



303,406
flights (+11%)



31,123
employees (+6%)



46,787,509
passengers (+15%)



144,717
million seat-kilometres
offered (+13%)



Aircraft types



Airbus A380



Boeing B747



Boeing B787



Airbus A340



Airbus A350



Airbus A330



Airbus A320 family

253
Total (-5%)



Company key figures

Lufthansa CityLine

As a wholly owned subsidiary of Deutsche Lufthansa AG and partner of Lufthansa Airlines, Lufthansa CityLine specialises in European destinations. It provides fast and convenient passenger connections to the Munich and Frankfurt hubs and links European regions to Lufthansa Airlines’ global route as a hub airline. The modern and efficient Airbus A320neo joined the fleet in 2023. Lufthansa CityLine has been operating cargo aircraft for Lufthansa Cargo since 2022 and has thus opened a new business segment.

As a medium-sized company, Lufthansa CityLine is characterised by lean structures and the integrated organisation of flight operations, technology and administration. These areas are brought together at the Munich location, the largest operational base. An additional technical centre is in Frankfurt am Main.

5,278
million seat-kilometres
offered (+9 %)



Aircraft types

5



Airbus A320neo

12



Airbus A319-100

6



Embraer E190

28



Bombardier CRJ900

4



Airbus A321F

55

Total (+10 %)



2,272
employees (+10 %)

6,811,833
passengers (+11 %)

28
countries (+0 %)

116
destinations (+4 %)

92,211
flights (+4 %)





Lufthansa Group

The Lufthansa Group is a global aviation company with over 300 subsidiaries and shareholdings. It plays a leading role in the European market and is divided into two core business segments: Passenger Airlines and Aviation Services. Aviation Services comprises Logistics, MRO, and further companies such as Lufthansa Aviation Training and Lufthansa Systems.

Passenger airlines



The Passenger Airlines segment includes the network airlines Lufthansa Airlines, SWISS, Austrian Airlines and Brussels Airlines. As part of their multi-hub strategy, they offer their passengers a comprehensive range of flights via the airlines’ hubs in Frankfurt, Munich, Zurich, Vienna and Brussels. The regional airlines Lufthansa CityLine, Lufthansa City Airlines and Air Dolomiti as well as the holiday airline Discover Airlines are closely associated with Lufthansa Airlines. Eurowings is also part of the Passenger Airlines business segment. The airline offers a comprehensive range of point-to-point connections on European short and medium-haul routes.

MRO



Lufthansa Technik is a leading global provider of maintenance, repair and overhaul services for civil, commercially operated aircraft. Lufthansa Technik AG serves over 800 customers around the world, including airlines, aircraft manufacturers, leasing companies, VIP jet operators, governments and armed forces.

Logistics



The Logistics business segment of Lufthansa Cargo AG comprises various specialised companies, including the Jettainer Group for the management of airfreight containers, the time:matters Group for particularly urgent shipments, heyworld and CB Customs Broker for customised solutions in the e-commerce sector and a specialist for customs and customs clearance. Lufthansa Cargo AG also holds a fifty percent stake in the cargo airline AeroLogic.

Group-wide reporting

- The Lufthansa Group publishes key aspects and facts on the topic of sustainability annually in the summarised non-financial statement as an integral part of the Annual Report.
- The sustainability factsheet and other sustainability-related reports, such as the progress report on the UN Global Compact, the report on the “Task Force on Climate-related Financial Disclosures”, the SASB report (Sustainability Accounting Standards Board) and the CDP report, are published on the Lufthansa Group website.

At a glance

Head office

Cologne

Hubs

Frankfurt am Main, Munich, Zurich, Vienna and Brussels

Sales (billion euros)

35.4

96,677 employees

162 nationalities



721 aircraft in the group fleet



946,132 flights

122.5 million passengers

All figures relate to the year 2023 or the reporting date of 31 December 2023.



Stakeholders of the Lufthansa Group



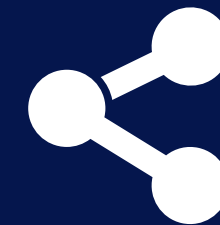
- Customers
- Consumers



- Investors
- Shareholders
- Analysts
- Rating agencies



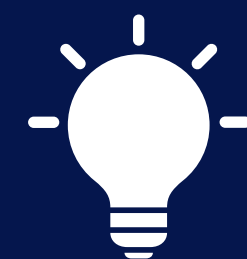
- Government
- Legislation
- Politics
- Authorities



- Residents
- General public
- Social networks



- Non-governmental organisations (NGOs)
- Industry associations
- Associations



- Science
- Research and education



- Employees
- Employee representation



- Suppliers
- Contracting parties



The continuous dialogue with stakeholders makes an important contribution to the further development of the Lufthansa Group's sustainability strategy. It helps to better understand the expectations and wishes of the various stakeholder groups and to incorporate them into the company's actions. To this end, the Lufthansa Group uses various formats that enable an open and trusting exchange. Sustainability topics are also addressed in internal and external communication media such as social media channels.

In the reporting year, the Lufthansa Group also conducted a broad-based survey of its interest groups' assessments of the importance of sustainability issues for the Lufthansa Group. Potential effects of business activities on people and nature as well as entrepreneurial risks and opportunities for the company were also surveyed. More than 10,000 representatives from all external stakeholder groups as well as all employees and management of the Lufthansa Group were invited to participate in the anonymous survey. The insights gained were incorporated into the materiality analysis, which was also conducted in 2023.



Key sustainability topics

The materiality analysis prescribed by the German CSR Directive Implementation Act (CSR-RUG) serves to prioritise sustainability topics according to their financial relevance for the business and the impact of these business activities on the environment and society. According to this analysis, the material topics for the Lufthansa Group have not changed. Environmental and climate protection and the interests of customers and employees continue to be important. Business ethics, compliance, respect for human rights and responsible supply chain management are also relevant.

Key topics for the Lufthansa Group

Aspects	Environmental concerns	Customer concerns	Employee concerns
Issues <ul style="list-style-type: none">Performance indicators	Climate protection <ul style="list-style-type: none">CO₂ emissionsStatus of CO₂ reduction target verified by the SBTi	Operational stability <ul style="list-style-type: none">Departure punctualityRegularity	Attractiveness as an employer <ul style="list-style-type: none">Engagement IndexWage agreement coverage ratioExternal rankings employer ratings
	Active noise abatement <ul style="list-style-type: none">Percentage of aircraft that meet the 10dB criterion of ICAO Chapter 4	Product and services <ul style="list-style-type: none">Net Promoter Score	Diversity and equality of opportunity <ul style="list-style-type: none">Share of women in management positionsNumber of nationalities employed in the Lufthansa Group
	Waste management		Transformation capability
			Health and safety at work <ul style="list-style-type: none">Health IndexNumber of work-related injuries
Aspects	Social concerns ¹	Business ethics and compliance	
Issues <ul style="list-style-type: none">Performance indicators	Corporate citizenship <ul style="list-style-type: none">help alliance gGmbH	Fighting corruption and bribery <ul style="list-style-type: none">Training ratioNumber of compliance-related reports	Respect for human rights <ul style="list-style-type: none">Important part of the corporate culture – embedded in the Code of Conduct
			Responsible political engagement
Interdisciplinary aspect ²	Responsible supply chain management		

¹ Immaterial as defined in Section 289c Paragraph 3 German Commercial Code (HGB), voluntary presentation at specific request of addressees.

² Interdisciplinary aspect represented in quantitative terms in the non-financial declaration.

Environmental concerns

The Lufthansa Group's environmental strategy is based on a sense of responsibility and consideration of stakeholder interests. The main environmental impacts of flight operations include climate effects from emissions and noise pollution during take-off and landing. The Lufthansa Group is represented in various associations and organisations that address environmental and climate protection issues. To implement its environmental strategy, the Lufthansa Group pursues an environmental programme aimed at emissions reduction, noise abatement, energy and resource management, commitment to re-search and environmental management systems.

Dialogue with airport neighbours and other interest groups

The Lufthansa Group engages in dialogue forums with residents near airports and works on noise abatement measures in multilateral working groups.

Business ethics and compliance

Responsible behaviour in accordance with the law and international standards is an integral part of the Lufthansa Group's corporate culture. Our Code of Conduct provides the framework for acting with integrity and requires compliance with laws as well as internal rules and voluntary commitments. In 2023, the Lufthansa Group Code of Conduct was updated to reflect changing regulatory requirements and stakeholder expectations.

Incorporation of the CSR Directive Implementation Act into risk management

In accordance with the CSR-RUG, the Lufthansa Group's corporate risk management also includes CSR-relevant aspects and their risks for external stakeholders. Risks are transferred to the summarised non-financial statement in accordance with CSR-RUG if they have a serious negative impact and their occurrence is highly probable. In 2023, the CSR content was updated with its mitigating instruments and measures. As in the previous year, there are no CSR risks of such high materiality that they were included in the individual analysis.

Noise legislation

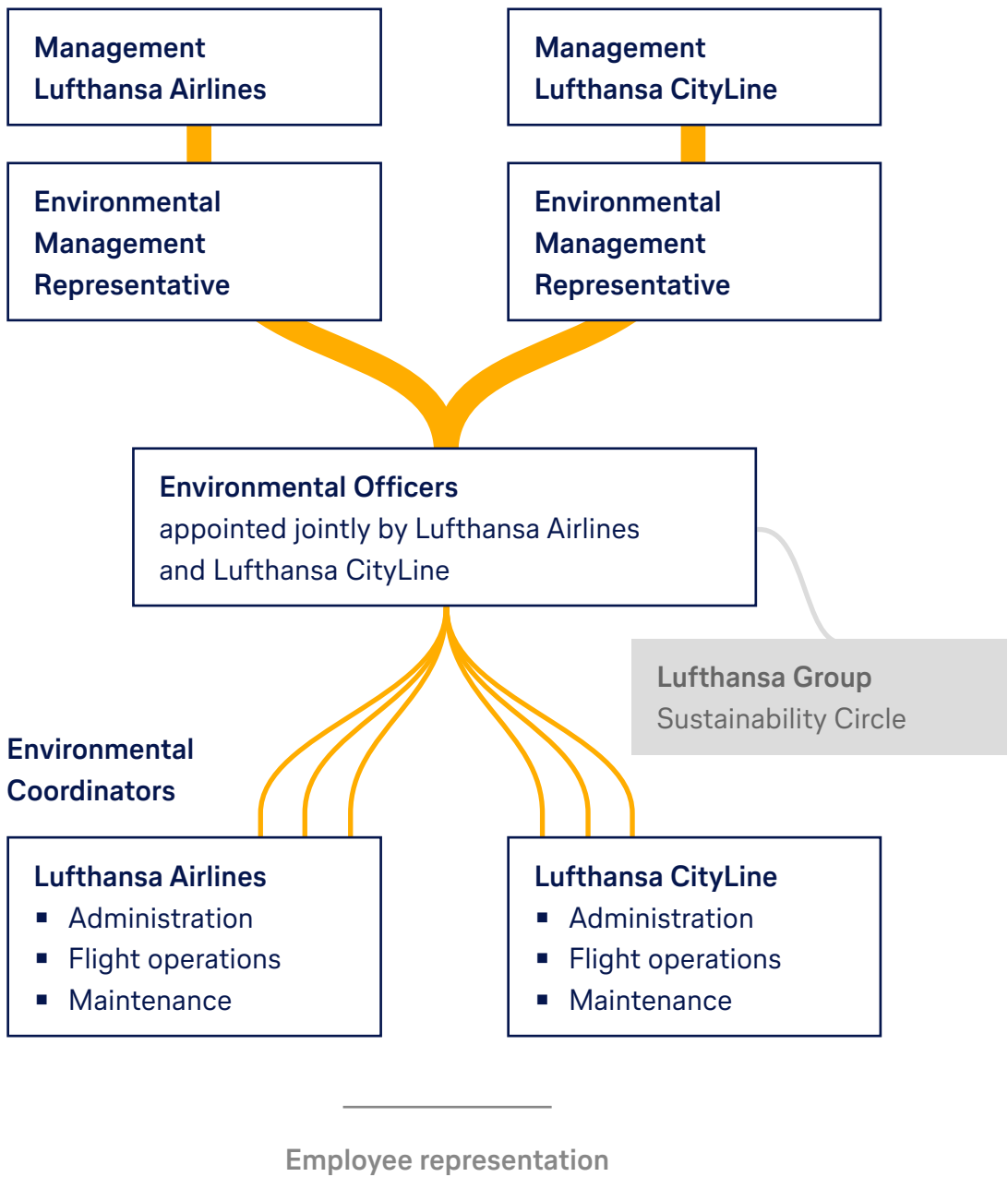
Stricter noise regulations can lead to increased costs for airlines or airports, for from retrofitting aircraft or bans on certain types of aircraft. At the European level, the pending amendment to the Environmental Noise Directive is relevant. At federal level, the limit values of the Aircraft Noise Protection Act were reviewed in 2017.



The people involved

The joint environmental organisation of Lufthansa Airlines and Lufthansa CityLine serves to coordinate and maintain the integrated environmental management system. It defines cross-company responsibilities, such as the role of environmental officers and management representatives. Employee representatives are also involved. Appropriate communication and dialogue measures serve to inform and actively involve employees.

Our environmental organisation



Management representatives and environmental officers

The practical coordination of all environmental activities and the strategic development of corporate environmental protection are the responsibility of the environmental management representatives and the two environmental officers of Lufthansa Airlines and Lufthansa CityLine. Together they tackle the challenges specific to the company and the hubs.



Dominik Moeslein and Markus Stiegen
Environmental Management Representatives for Lufthansa Airlines and Lufthansa CityLine

Isabell Stutzenberger and Maximilian Adam
Environmental Officers for Lufthansa Airlines and Lufthansa CityLine



Jens Ritter
Chief Executive Officer
Lufthansa Airlines

The company management monitors the effectiveness of the management system and provides the necessary human and financial resources. The environmental officers are appointed jointly.



Wolfgang Diefenbach and Jens Fehlinger
Managing Directors of Lufthansa CityLine



The environmental organisation is supported by around 40 environmental coordinators in the different departments at Lufthansa Airlines and Lufthansa CityLine. They ensure that the environmental organisation is broadly positioned and that environmental concerns are consistently pursued.



Bundled expertise

Responsibility for environmental protection and sustainability for all companies and operating units of Lufthansa Airlines has been bundled in the Business Development & Sustainability department since 2022. In this department, which reports directly to the Chairman of the Executive Board of Lufthansa Airlines, the environmental officers work together with other sustainability managers. By 2024, the team has expanded by creating specific responsibilities for sustainable aviation fuels (SAF), efficiency measures and communication. In addition, the two management representatives for the environment for Lufthansa Airlines and Lufthansa CityLine have been confirmed in their roles and reinforce the involvement of management in the environmental system.



“For me, it is very inspiring to shape Lufthansa Airlines’ sustainability strategy with a wide variety of colleagues and to drive its implementation forward. The topic motivates us all to give our best – being part of this movement is something very special.”

Melanie Schneider
Senior Manager Sustainability Strategy,
Lufthansa Airlines



“As an engineer, I realise that there is still a lot of work to be done to achieve scalable and efficient production of SAF. However, thanks to the various technologies, we have created the basis for a future of sustainable aviation. Now it’s a matter of making the best possible use of this technical knowledge.”

Nora Metzner
Manager Sustainability Strategy (Sustainable Aviation Fuels),
Lufthansa Airlines

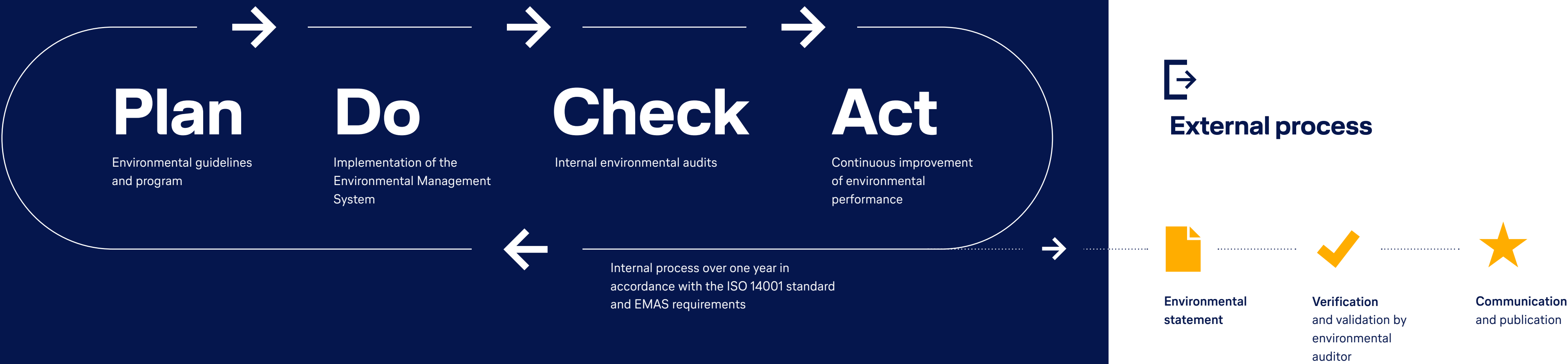


“We are developing measures to systematically increase fuel efficiency in our flight operations. In doing so, we are taking many small steps, which together have a huge impact.”

Michael Rambach
Manager Sustainability Strategy (Operations Efficiency),
Lufthansa Airlines



Continuous improvement process



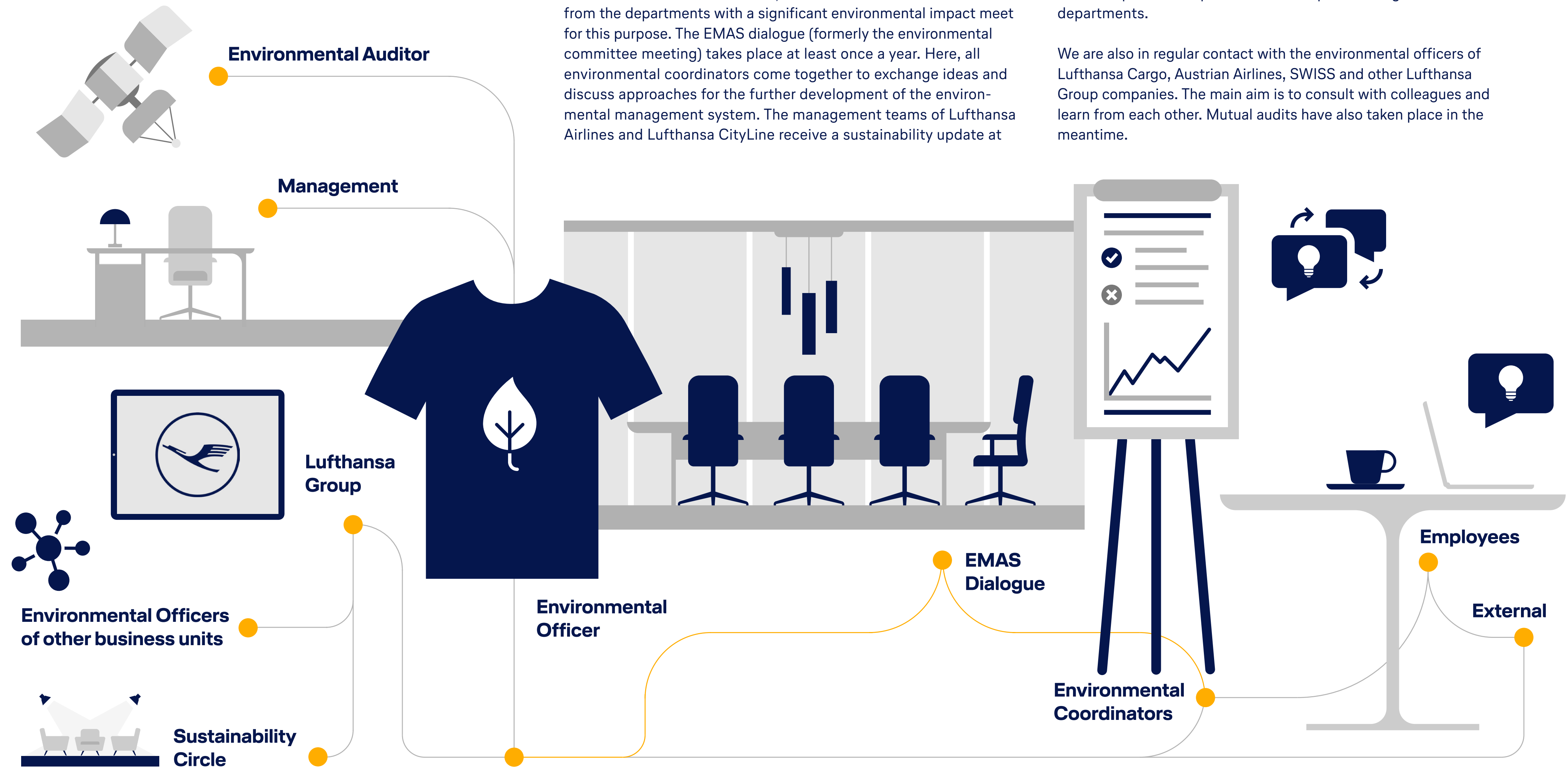
The joint environmental management of Lufthansa Airlines and Lufthansa CityLine is now an established routine system at both companies. A key objective of the management system is continuous improvement, which follows the principle of Plan-Do-Check-Act. In doing so, we orientate ourselves on the essential components of an environmental management system according to EMAS. We have formulated our shared understanding of values within the company and towards our partners and suppliers in our environmental guidelines. The primary environmental impacts

of flight operations include climate effects from CO₂ emissions caused by the combustion of jet fuel. Arrivals and departures at airports are also associated with noise pollution for residents. Further environmental impacts include the use of resources such as energy and water during in-flight service as well as in the supporting activities of flight operations: aircraft maintenance and administration. Waste is also generated on the ground and in the air, which needs to be reduced and recycled. This results in environmentally relevant fields of action for which we have defined

measures in our environmental programme. Internal monitoring audits are used to achieve continuous improvement in each specialised area. We review our progress using detailed environmental indicators. We ensure the quality of our work and make our commitment accessible to our stakeholders and the interested public with the help of annual audits by an environmental auditor and the publication of this environmental report.



Committees and networking



In our everyday operations, numerous formats ensure a professional dialogue and the involvement of relevant groups of individuals at various levels. Once a month, the environmental coordinators from the departments with a significant environmental impact meet for this purpose. The EMAS dialogue (formerly the environmental committee meeting) takes place at least once a year. Here, all environmental coordinators come together to exchange ideas and discuss approaches for the further development of the environmental management system. The management teams of Lufthansa Airlines and Lufthansa CityLine receive a sustainability update at

least once a quarter. Other event formats such as the sustainability evening serve to inform managers about strategic environmental topics and to promote an in-depth exchange between the departments.

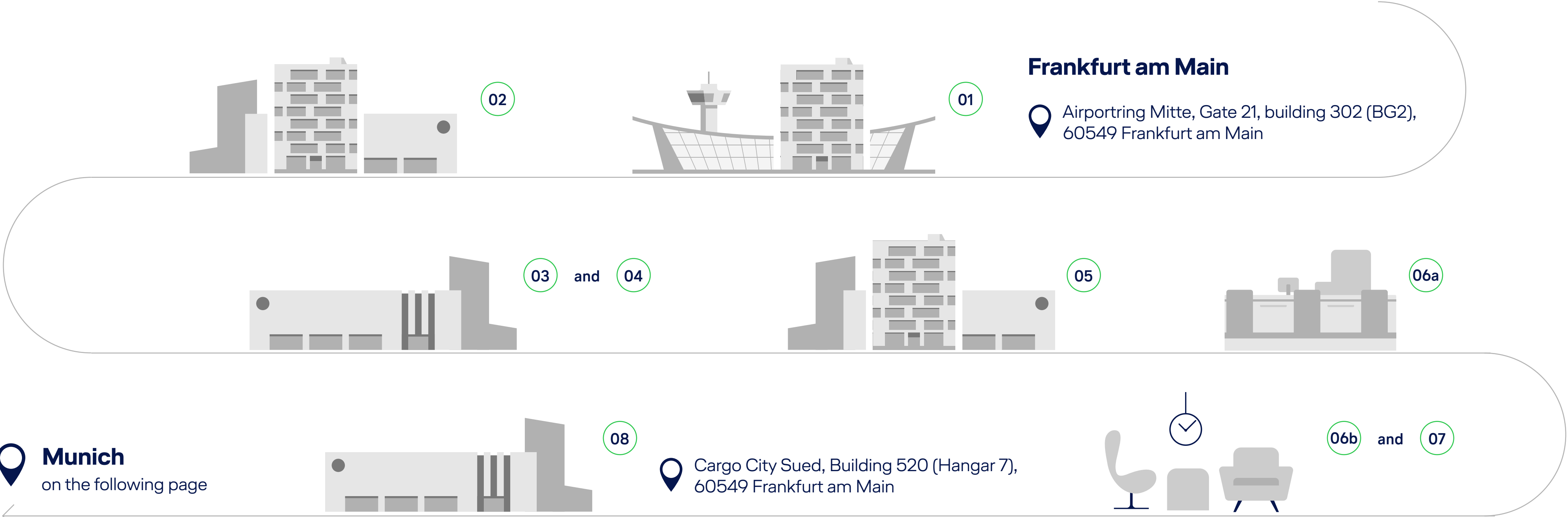
We are also in regular contact with the environmental officers of Lufthansa Cargo, Austrian Airlines, SWISS and other Lufthansa Group companies. The main aim is to consult with colleagues and learn from each other. Mutual audits have also taken place in the meantime.



Our locations

This Environmental Statement relates to the business segments and the associated operational processes of Lufthansa Airlines and Lufthansa CityLine. The focus is on the two airports Frankfurt am Main (FRA) and Munich (MUC), where the operational bases

of both companies are located. Both companies have rented buildings and facilities for administration, aircraft maintenance, lounges and crew training from the airport companies.



Lufthansa Airlines

- 01 Office building 302 (BG2)**
The BG2 is the base of Lufthansa Airlines and comprises the main administrative areas as well as flight operations at the FRA hub.
- 02 Further administrative buildings/areas**
Lufthansa Airlines uses various additional shares in office buildings and areas on the Frankfurt Airport site. These are summarised here.

- 03 Maintenance Hangar 5**
This hangar is home to the Lufthansa Airlines aircraft maintenance centre. Long-haul aircraft are serviced here in particular.
- 04 Maintenance Hangar 6**
Lufthansa Airlines' short-haul aircraft are serviced in this hangar.
- 05 Further maintenance buildings/areas**
Workshops, storage and office space for aircraft maintenance are located in additional rented areas at the airport site.

Lufthansa CityLine

- 06a Terminal 1**
Lufthansa and partner airlines' flights are handled in Terminal 1. This includes the check-in, baggage drop-off and boarding gate areas.
- 06b Lounges**
Thirteen lounges are available to travellers in premium travel classes in Terminal 1.
- 07 First Class Terminal**
Adjacent to Terminal 1 is the exclusive First Class Terminal for First Class travellers and HON Circle members.

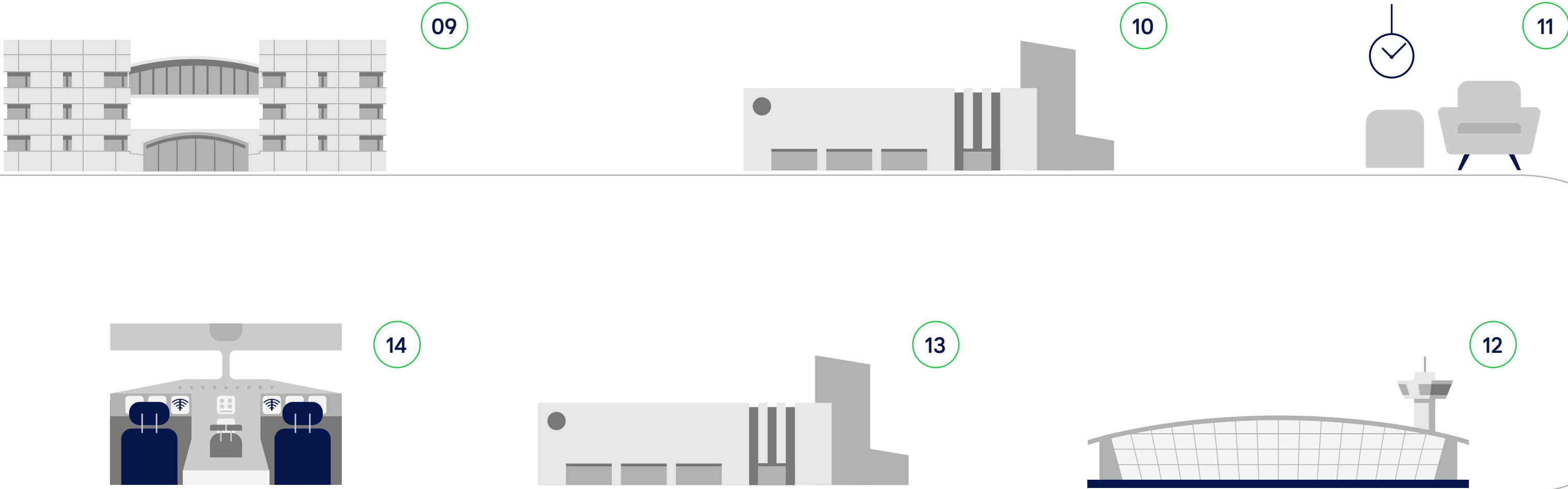
- 08 Maintenance Hangar 7**
Lufthansa CityLine's Frankfurt Technical Station uses the hangar together with Lufthansa Airlines' aircraft maintenance.



Our locations

Munich

Suedallee 15,
85356 Munich Airport



09 Flight Operations Centre (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**
- 10 Maintenance Hangar 1**
The large hangar accommodates Lufthansa Airlines' aircraft maintenance.
 - 11 Lounges**
There are seven lounges for passengers of Lufthansa and its partner airlines in Terminal 2 and the satellite of Terminal 2.
 - 12 Administration building**
Lufthansa Airlines Munich is using additional administrative space in the extension to Terminal 2.

- Lufthansa CityLine**
- 13 Maintenance Hangar 4**
Lufthansa CityLine's Munich technical station maintains its own hangar with office space.
 - 14 Training centre**
The training centre of Lufthansa Aviation Training and Lufthansa CityLine houses aircraft mock-ups and training rooms for emergency and service training.



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. To minimise the environmental impact of our industry both locally and globally, we are committed to introducing guidelines for environmental care. These are an expression of our responsibility and form the basis of the joint environmental management of Lufthansa Airlines 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 updated on an ongoing basis in line with developments in research and technology as well as social debate.

➤ 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 led 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 wastewater whenever possible and keep these 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 are continually working 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 continually 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 considered.

➤ 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 these and derive targets and measures for improvement. We monitor the results of the implementation and optimise these.

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

Consideration of the resulting environmental impact is an indispensable component of our economic decision-making processes. 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.

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.

We use innovations and modern technologies to conserve resources and improve environmental compatibility where economically and socially justifiable.

➤ 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 make suggestions on how they can support us in our efforts.

➤ Our principle is openness.

We take concerns about the 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

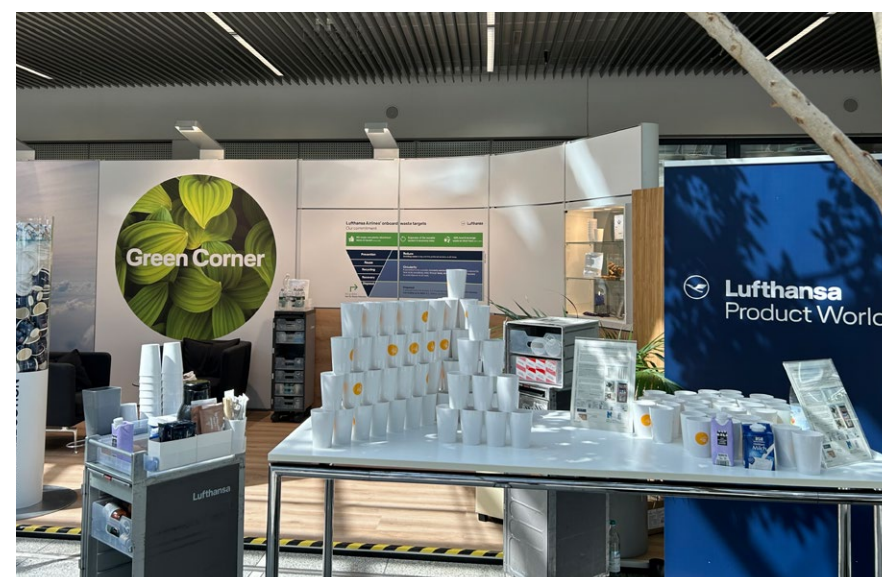
Jens Fehlinger
Managing director
Lufthansa CityLine GmbH



01



02



03



04



Our expertise

“Environmental protection is everyone’s responsibility” – this is what our environmental guidelines say. If our employees know what environmental and climate impacts are associated with the individual company processes and what strategic goals we are pursuing in the field of environmental protection and resource conservation, they are better able to participate and contribute their own ideas.

Information, communication and training therefore play a significant role in our environmental management system. Together with the communications departments, the experts from the sustainability team are also committed to providing transparent information and continuously involving employees.

01 #sustainably explained

We use various formats, both online and on-site, to inform our employees about climate and environmental protection in our companies. Short videos and “knowledge nuggets” are available on the intranet under the hashtag #sustainablyexplained, as are detailed articles on the key topics of sustainable aviation fuels, efficiency measures and fleet modernisation. At events such as the sustainability evening, our managers gain in-depth insights into strategically relevant topics and exchange ideas.

02 All in the Green Corner

The Green Corner is available in the Lufthansa Product World, an exhibition area around current cabin products at Frankfurt and Munich airports, and as a digital library on the crews’ tablets. We use it to bundle sustainability information aimed at cabin crew. In addition to environmental tips and standards for the in-flight area, this includes, in particular, procedural information on recycling.

03 To the ears

Our popular podcast format is well received by the employees of Lufthansa Airlines and Lufthansa CityLine. Environmental and climate protection are also a topic here. Last year, podcast episodes were recorded with the management representative for the environment Dominik Moeslein for the series “Cabin asks questions” and with the environmental officer Isabell Stutzenberger for the series CABcast.

04 We are there

Coming together, informing and discussing – the sustainability team is present at internal and external events with this aim in mind. For example, the sustainability experts attend the Welcome Days organised by Lufthansa Airlines and Lufthansa CityLine and are available for discussions at special exhibitions in the Green Corners. The sustainability team also seeks dialogue with the public at external trade fairs such as the GreenTech Festival.



Our highlights

Selected measures from the 2023 environmental programme of Lufthansa Airlines and Lufthansa CityLine.

Technology cooperation for aviation fuels of the future

Together with the German Aerospace Centre (DLR), Airbus, MTU Aero Engines and Munich Airport, Lufthansa Airlines has signed a letter of intent for a broad-based research cooperation on power-to-liquid (PtL) aviation fuels. The planned cooperation is intended to combine the strengths of leading aviation companies and science to accelerate the technology selection, market launch and industrial scaling of PtL aviation fuels in Germany. The entire value chain is

being considered. For example, maintenance requirements or the benefits for local air quality can also be addressed in the technology cooperation. There are also plans to evaluate the use of pure PtL – without the addition of fossil kerosene – to gain insights for the approval process. The cooperation partners also want to investigate the extent to which PtL fuels have the potential not only to save substantial amounts of carbon dioxide, but also to have a positive impact on non-CO₂ emissions.

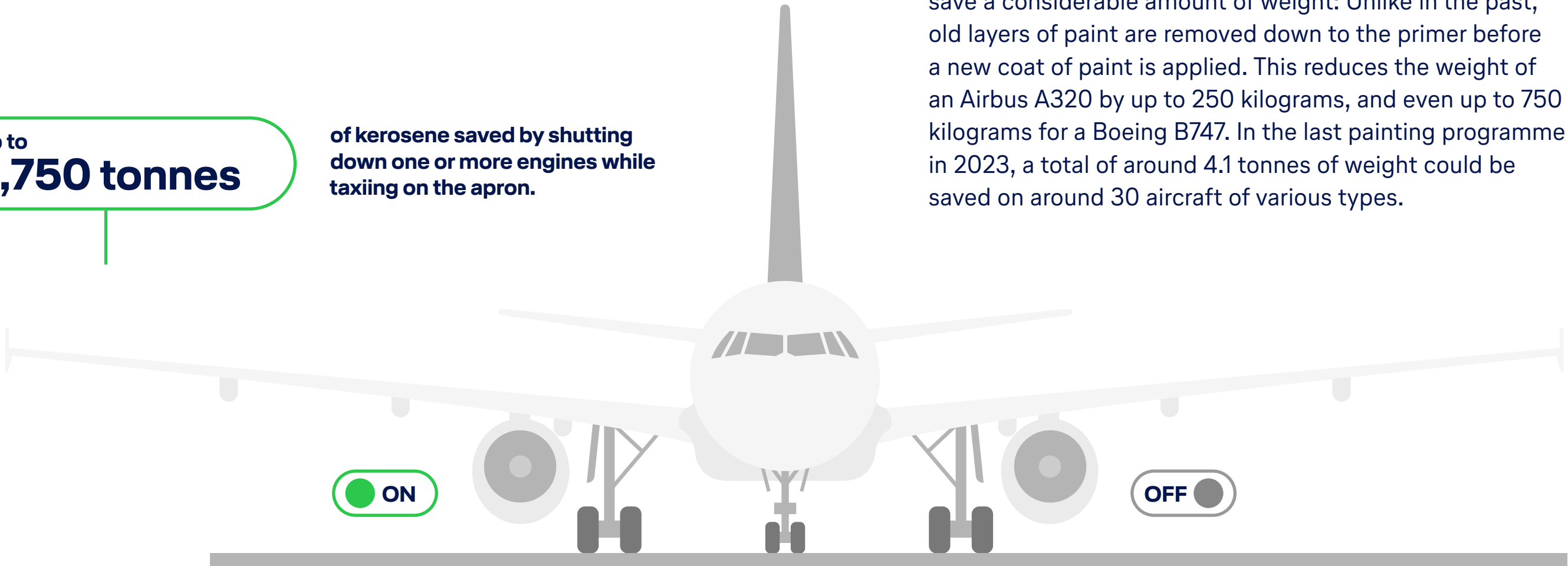


Switch off engines earlier

Fuel can also be saved on the taxiway: The “reduced engine taxi-in” procedure involves switching off one or more engines after landing on the apron. It is already used as a recommendation as part of the Green Procedures. These are procedural instructions that allow flight operations to be as efficient as possible after a safe landing. It was introduced as the standard procedure for the A320 fleet in autumn 2023. We have communicated this efficiency topic with our own campaign. This application can save around 2,500 tonnes of kerosene per year in flight operations as a whole. An additional 250 tonnes of kerosene can now be saved through the use of these two measures.

Up to
2,750 tonnes

of kerosene saved by shutting down one or more engines while taxiing on the apron.



Pre-order meals

Since the beginning of 2023, our passengers on intra-European flights have been able to pre-order meals before departure and enjoy them on board. Pre-ordering is done digitally via the Pre-Flight Shop. Here, they can choose from a wide range of fresh, high-quality products. This allows us to fulfil individual customer wishes and also better plan the production and loading of fresh products. This reduces the amount of food and packaging waste on board.

Too good to dispose of

On flights to Frankfurt and Munich, it has been possible since May 2023 to buy fresh products left over from the in-flight service. As these products can no longer be served on other flights, they will be sold at a reduced price of a standardised 3.50 euros shortly before landing. This means less food needs to be disposed of and thus less waste.

A fresh coat of paint for aircraft

Thanks to a new process for applying aircraft paint, we can save a considerable amount of weight: Unlike in the past, old layers of paint are removed down to the primer before a new coat of paint is applied. This reduces the weight of an Airbus A320 by up to 250 kilograms, and even up to 750 kilograms for a Boeing B747. In the last painting programme in 2023, a total of around 4.1 tonnes of weight could be saved on around 30 aircraft of various types.

Environmental Coordinator Event 2023

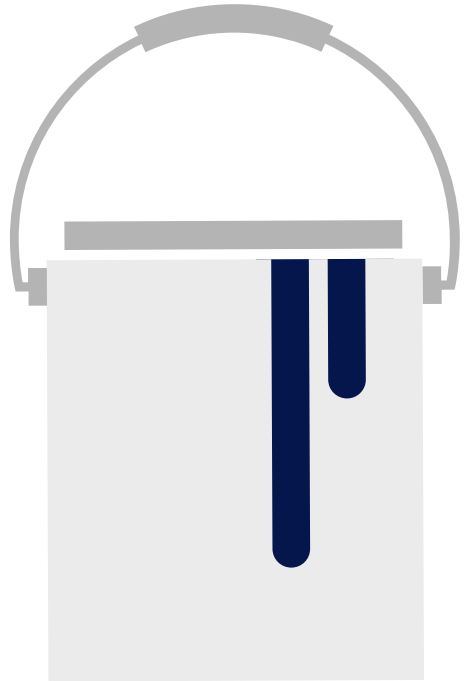
In addition to their regular hybrid exchange, the environmental coordinators from Lufthansa Airlines and Lufthansa CityLine met in Munich in October 2023 for a two-day personal exchange. The agenda included technical topics and common goals for further cooperation. The Rehab Republic association also gave the group inspiring insights into other areas of sustainability in both their professional and private lives.

Optimisation of freshwater volumes on board the Boeing fleets

Following the A350 fleet, the freshwater requirements of the B747 and B787 fleets are now also being optimised. Fleet and route-specific data on consumption were collected for this purpose. This means that water filling can be better adapted to actual requirements. The associated weight reduction leads to savings of around 700 tonnes of kerosene per year.

OPS Sustainability Programme supports CO₂ reduction targets

All Lufthansa Group flight operations participate in the OPS Sustainability Programme, which aims to contribute to a sustainable reduction in operational CO₂ emissions by 2030. Efficiency-enhancing measures to reduce CO₂ emissions are being continuously implemented and balanced across the Group along the entire operational production chain. Some measures are already listed and explained in this year’s environmental programme.



Around
4.1 tonnes

of weight are saved by removing previous layers of paint.



Environmental programme

Field of action: Fuel efficiency (selection)

Goal	Measure	Timeline	Status	Description
Reducing flight-related greenhouse gas emissions	Optimisation of fuel calculation for apron taxiways	2023 until 2024		Statistics on taxiways and consumption allow fuel demand to be calculated more precisely.
	Optimised flight route planning	2023 until 2024		A more precise calculation of the optimum flight speed, altitude and distance can further reduce fuel consumption for vertical flight paths.
	Introduction of the OMEGA application to determine potential fuel savings	2023		The “Ops Monitor and Efficiency Gap Analyzer” application – OMEGA for short – is used to analyse executed flights. Statistically comparing planned, actual and ideal values for the various flight phases makes it possible to identify new potential savings and analyse the effectiveness of efficiency measures.
	OPS Sustainability Programme	2022 until 2030		Efficiency-enhancing measures to reduce CO ₂ emissions are continuously implemented and analysed along the entire operational production chain across the Group. Certain measures are explained below.
	Sustainability as a thematic component of training programmes (Cockpit)	since 2023		Measures for efficient flight procedures and fuel savings are increasingly addressed as part of recurring training and retraining for the cockpit.
	Switching off engines on the runway after landing	since 2023		Since autumn 2023, the standard procedure for the A320 fleet has been to switch off one engine on the taxiway after landing. This “reduced engine taxi-in” procedure also serves as a recommendation as part of the Green Procedures for all fleets. This saves around 2,750 tonnes of kerosene per year.
	New procedure for applying aircraft paint	2023		In the new procedure, the existing layers of paint on the aircraft are removed before the new paint is applied. This reduces the weight of an A320 by up to 250 kilograms and a B747 by up to 750 kilograms.
	Optimisation of the amount of fresh water on the Boeing fleets	since 2023		By analysing fleet and route-specific data, the amount of fresh water used on the B747 and B787 fleet can gradually be reduced. This will lead to fuel savings of around 700 tonnes per year.

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
Reducing flight-related greenhouse gas emissions	Technology cooperation for PtL aviation fuels	2023 until 2027		Lufthansa Airlines has signed a letter of intent with various partners such as the German Aerospace Centre (DLR) for a research cooperation on power-to-liquid (PtL) aviation fuels. The aim is to accelerate technology selection, market launch and industrial scaling, while focussing on the entire value chain.
	Expansion of intramodality	2023		We have further expanded train-flight connections since 2023. Since then, the destinations Augsburg, Wolfsburg, Siegburg and Essen from Frankfurt can also be booked by train in combination with a flight. There are also new intermodal connections (flight/bus) on the Zurich-Geneva and Brussels-Lille routes.
	Weight-reduced tablet holder	since 2023		Installing a modified tablet holder in the cockpit of the B787 fleet saves around 8 kilograms of weight per aircraft.
	Reduction of approach distances in Munich	since 2023		In cooperation with the German Air Traffic Control (DFS), we have succeeded in shortening the planning distances for approaches to Munich Airport. This reduces the amount of fuel required and the noise for residents. The new approach distances are now specified in the air traffic manual.
Compensation of flight-related greenhouse gas emissions	Offers for more sustainable air travel	since 2022		We are continuously introducing new products and options in both the B2B and B2C segments that enable our passengers to reduce and offset the CO ₂ emissions associated with their air travel. Here, we rely on voluntary offsetting via climate protection projects and reduction through the purchase of sustainable aviation fuels.
	More sustainable tariffs for private customers	2023		The GreenFares introduced in 2023 include compensation for flight-related CO ₂ emissions with a share of 20 per cent Sustainable Aviation Fuel (SAF) and 80 per cent compensation via climate protection projects. After short-haul flights, the tariff was extended to selected long-haul flights. In 2023, around one million Lufthansa Group passengers selected this option.
	More sustainable tariffs for corporate customers	2023		Since 2023, PartnerPlus Progress Corporate Value Fares and Sustainable Corporate Fares with offsetting through SAF and climate protection projects can be selected as part of the contract form. In addition, the collected benefit points (for SMEs) can be used for offsetting.



Environmental programme

Field of action: Energy and resource efficiency (selection)

Goal	Measure	Timeline	Status	Description
Reduction of emissions and waste	Second use for unused life jackets	2023		Obsolete, unused life jackets do not have to be discarded: Lufthansa CityLine used around 100 of them in its own crew training in 2023. A recycling option is being sought for other decommissioned life jackets.
	Bio-cleaner for aircraft tables	since 2023		Mechanics at Lufthansa CityLine have been using a biodegradable universal cleaner to clean tables in the aircraft since 2023. The previously approved cleaning detergent caused unwanted discolouration, which is why a more environmentally friendly alternative was sought. The new biodegradable cleaner also saves money because discoloured tables no longer need to be replaced.
	Better planning of fresh meals on board	since 2023		Since 2023, passengers on intra-European flights have been able to use the pre-flight shop to choose which fresh meals they would like to eat on board before travelling. This allows production and loading to be planned more precisely and reduces food waste.
	Sale of fresh leftover on-board products	2023		Since May 2023, fresh products that were not sold on board have been made available shortly before landing at a standardised reduced price of €3.50. This means they do not have to be disposed of at the end of the flight.
	Recycling guide for crews	since 2023		A holistic concept for the recycling process on board and at the catering service providers is intended to help reduce the amount of waste from the on-board service and increase recycling rates. The result of initial joint workshops is a recycling guide for the crews with information on the recycling cycle and instructions on how best to stow tableware and recyclable materials. This minimises non-recyclable waste.
	Plastic-free paper cups on board	2023 until 2024		After a successful test in 2023, a fully recyclable paper cup will replace the current plastic cup in in-flight service.
	Recycling of engine spark plugs	2023		Mechanics at Lufthansa Airlines collect used engine spark plugs and hand them over to Lufthansa Technik. The precious metal iridium these contain is then recycled.

Goal	Measure	Timeline	Status	Description
Reduction of emissions and waste	Disposal of headphones in Economy Class on request	since 2023		Since autumn 2023, headphones have only been issued on request on long-haul flights in the Economy Class. This has already reduced the amount of electronic waste on board by 10 per cent. Once issued on board, headphones must be disposed of, even if they are unused. Further measures to reduce electronic waste will follow.
	Waste separation in the office building in Frankfurt	since 2023		The test introduction of separate disposal of residual, paper, and plastic waste on one floor of Lufthansa Airlines' BG2 office building has been completed successfully. A gradual expansion to other areas is now planned. Separate waste bins at each desk will be abolished as part of this process.
Saving resources due to digitalisation	Electronic student file for cockpit staff	2022 until 2024		With the introduction of the electronic file, training content can be stored digitally, and check forms can be completed online.
	Electronic technical logbook (eTLB)	2023		Maintenance activities have been recorded electronically since mid-2023, saving around 9 tonnes of paper per year. Paper-based maintenance documents on board can also be dispensed, resulting in weight savings of up to 4.7 kilograms per aircraft.
	Digital Cleanup Days	2023		Digital campaigns as part of World Cleanup Day reached numerous employees in 2023. These included informative presentations and hands-on activities, such as the release of digital storage capacities.

Status completed in implementation on hold/stopped



Environmental programme

Field of action: Energy and resource efficiency (selection)

Goal	Measure	Timeline	Status	Description
Increasing resource efficiency	More precise tank quantity calculation through post-flight analysis	2023		Post-flight analyses are used to evaluate data on actual fuel requirements. This allows the pilots to calculate the amount of fuel required more precisely. This saves fuel and weight on every flight.
	Less plastic waste from milk on board	since 2023		To reduce plastic packaging, milk is being served in larger containers on board since 2023. The single-serving coffee cream has been abolished. Additionally, alternatives such as oat drinks are offered.
	Vegan offer in lounges	2023		In January 2023, guests were able to enjoy plant-based delicacies in the lounges in Frankfurt and Munich as part of “Veganuary”.
	Electrification of the vehicle fleets in Frankfurt and Munich	2019 until 2030		The project planning has been finalised and the first electric vehicles are already in operation at our airports. The electrification of our vehicle fleets is progressing with the reciprocal expansion of the electric charging infrastructure and the targeted conversion of the vehicle fleets for Technik and stations. Tests are currently being conducted with innovative vehicle designs that are intended to fulfil the special requirements in operation.
	Electromobility for VIP customers	2023		At Munich Airport, five e-charging stations were put into operation in 2023 for the already partially electrified vehicle fleet of VIP services. The first electric vehicles for transporting VIP customers are also in use at Frankfurt Airport.
	Electrification of towing and de-icing vehicles	since 2023		The ground handling service providers LEOS and EFM (subsidiaries and affiliates of Lufthansa) have been using the first electrically powered towing and de-icing vehicles in Frankfurt and Munich since 2023. This also reduces local (noise) emissions.
	More efficient fan heaters for Technik hangar 5	2023		A total of 25 more efficient fan heaters were installed in Technik hangar 5 in Frankfurt in 2023. They reduce the electricity required for heating by around 45 per cent per year.
	Greenhouse gas emission values in the network result calculation	since 2023		Climate-relevant emission values were included in the network results calculation to provide a comprehensive view of the economic efficiency of flight routes.



Goal	Measure	Timeline	Status	Description
Increasing resource efficiency	More efficient utilisation of aircraft capacity	since 2023		As part of the continuous optimisation process, the booking management team works to ensure high-capacity utilisation of flights and thus implement efficient flight planning. In addition, overbooking rates and measures to fill available seats are continually analysed and implemented.
Strengthening environmental communication	Sustainability information at Welcome Fair for new employees	2023		Following the example of Lufthansa CityLine's Welcome Days, the sustainability team had its own market stand at Lufthansa Airlines' first welcome fairs in 2023. This measure will be continued.
	Digital environmental information during onboarding	2023		The onboarding app provides relevant and up-to-date company information for new employees digitally – making printouts unnecessary. Environmental topics are also made available here in compact form.
	Green Lounge at Munich Airport	2022 until 2024		The concept for the construction of a Green Lounge at Munich Airport is currently being revised.
	Corporate environmental protection in basic and advanced cabin training courses	since 2023		Lufthansa Airlines and Lufthansa CityLine have integrated additional content relating to operational environmental protection into the basic courses and further training for pursers and supervising flight attendants.
	With sustainable fuel to the UN World Climate Conference	2023		A special package was offered to participants of the 28th UN World Climate Conference in Dubai: they were able to fully offset their CO ₂ emissions on Lufthansa Group flights with sustainable aviation fuel. The package also included services such as bike hire on site and hotel transfers in an electric limousine.
	B2B events about sustainability	2023		With special customer events, the Lufthansa Group's global sales organisation has involved B2B customers in the sustainability strategy and informed them about operational activities in this area.

Status completed in implementation on hold/stopped



Environmental programme

Field of action: Energy and resource efficiency (selection)

Goal	Measure	Timeline	Status	Description
Strengthening environmental communication	Meeting of environmental coordinators	2023		The environmental coordinators came together for a two-day personal and professional exchange in Munich in October 2023. Inspiring input was provided by the Rehab Republic association from Munich.
	ESG Masterclasses	since 2023		“ESG Masterclasses” have been available to Lufthansa Group employees since 2023 in cooperation with the learning platform aware. These provide in-depth training on the topics of social commitment, climate change, reducing emissions when flying and political framework conditions.
	Green Explorers	2023 until 2024		In autumn, around 150 participants from across the Lufthansa Group started the established talent programme and added innovative ideas and concrete measures to the group-wide sustainability strategy.
Expansion of the environmental management system	Integration of Lufthansa Airlines at the Hub Frankfurt	2023		Following the initial validation of the Frankfurt site, all processes have been harmonised. In a system that spans all locations and companies, work continues on the steady improvement of environmental performance.

Field of action: Active noise abatement (selection)

In 2023, Lufthansa Airlines and Lufthansa CityLine did not implement new environment-related measures that can be directly assigned to the area of active noise abatement. However, measures that lead to a change in the flight path or procedures on the ground often also contribute to this area of action. We are continuing to implement the measures taken to date.



Environmental balance sheet and key figures

The environmental balance sheet of Lufthansa Airlines and Lufthansa CityLine once again reflects the increased passenger demand and rising production. At the same time, it shows that we were able to increase efficiency in flight operations. In addition to a higher load factor, the fact that specific consumption remained constant is particularly noteworthy.

We improved our environmental data collection further last year. This has resulted in corrections in some cases, with improved and more in-depth data quality available in more recent reporting years. In some cases, this results in inaccuracies in comparability with previous years' data.

Since 2019, our base year for the climate targets, we have achieved significant improvements in some areas. For example, we were able to reduce paper consumption by almost 50 per cent in individual sectors. In the lounges in Munich, the specific waste volume fell by around two-thirds. In Hangar 5 in Frankfurt, the energy savings achieved through infrastructural measures are visible, with electricity consumption reduced by around 30 per cent. The introduction of the "Deutschlandticket" is also having an impact, particularly at Lufthansa Airlines in Munich: around a third of employees have a Jobticket for their commute using public transport.



Digitalisation and process improvements have helped our organisations reduce their paper use by around half compared to 2019.



Around 30 per cent of employees in Munich chose the Jobticket in 2023.



Electricity consumption in Hangars 5 and 6 was reduced by around 28 and 24 percent, respectively, compared to 2019.



Company and transport performance indicators

Lufthansa Airlines

Company indicators across locations	Unit	2023	2022	2021	2020	+/- PY in %
Employees	Number	31,123	29,305	31,292	33,002	6
Aircraft	Number	253	242	195	101	5
Operational ground fleet	Number	514	493	205	118	4
Company key figures FRA	Unit	2023	2022	2021	2020	+/- PY in %
Employees □	Number	21,421	20,238	21,747	22,680	6
thereof: Cockpit	Number	2,935	2,900	3,094	3,163	1
Cabin	Number	12,866	12,422	13,519	13,873	4
Maintenance	Number	1,289	1,305	1,343	1,418	-1
Apprentices	Number	27	20	21	45	35
Aircraft	Number	168	161	145	71	4
Operational ground fleet	Number	358	356	74	74	1
Company key figures MUC	Unit	2023	2022	2021	2020	+/- PY in %
Employees	Number	9,362	8,762	9,258	9,959	7
thereof: Cockpit	Number	1,609	1,543	1,587	1,600	4
Cabin	Number	5,344	5,161	5,530	5,730	4
Maintenance	Number	512	473	482	522	8
Apprentices	Number	29	0	0	0	-
Aircraft	Number	85	81	50	30	5
Operational ground fleet □	Number	156	137	131	44	14
Transport key figures across locations	Unit	2023	2022	2021	2020	+/- PY in %
Flights	Number	303,406	274,360	152,438	124,913	11
Passengers	Number	46,787,509	40,604,283	18,668,488	14,167,547	15
Seat-kilometres offered, SKO	Mil. pkm	144,717	127,909	75,454	57,177	13
Freight-tonne-kilometres offered, FTKO	Mil. tkm	5,334	4,526	2,840	2,243	18
Tonne-kilometres offered, TKO	Mil. tkm	20,042	17,507	10,486	8,036	14
Passenger-kilometres, PKT	Mil. pkm	122,703	105,063	46,350	36,406	17
Freight-tonne-kilometres, FTKT	Mil. tkm	2,617	2,325	1,940	1,375	13
Tonne-kilometres, TKT	Mil. tkm	14,977	12,906	6,605	5,042	16

□ Corrected due to new data basis

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

Lufthansa CityLine

Company indicators across locations	Unit	2023	2022	2021	2020	+/- PY in %
Employees	Number	2,272	2,071	2,066	2,143	10
thereof: Cockpit	Number	664	602	616	624	10
Cabin	Number	925	846	842	863	9
Maintenance	Number	411	391	381	410	5
Apprentices	Number	23	19	23	30	21
Aircraft	Number	55	50	53	52	10
Operational ground fleet	Number	44	44	44	46	0
Transport key figures across locations	Unit	2023	2022	2021	2020	+/- PY in %
Flights	Number	92,211	89,105	57,767	52,229	3
Passengers	Number	6,811,833	6,154,697	3,451,889	2,693,795	11
Seat-kilometres offered, SKO	Mil. pkm	5,278	4,832	3,313	3,585	9
Freights-kilometres offered, FTKO	Mil. tkm	141	84	23	47	67
Tonne-kilometres offered, TKO	Mil. tkm	720	612	377	424	18
Passenger-kilometres, PKT	Mil. pkm	4,269	3,699	2,200	2,243	15
Freight-tonne-kilometres, FTKT	Mil. tkm	57	29	1	20	94
Tonne-kilometres, TKT	Mil. tkm	484	399	221	245	21



Environmental figures

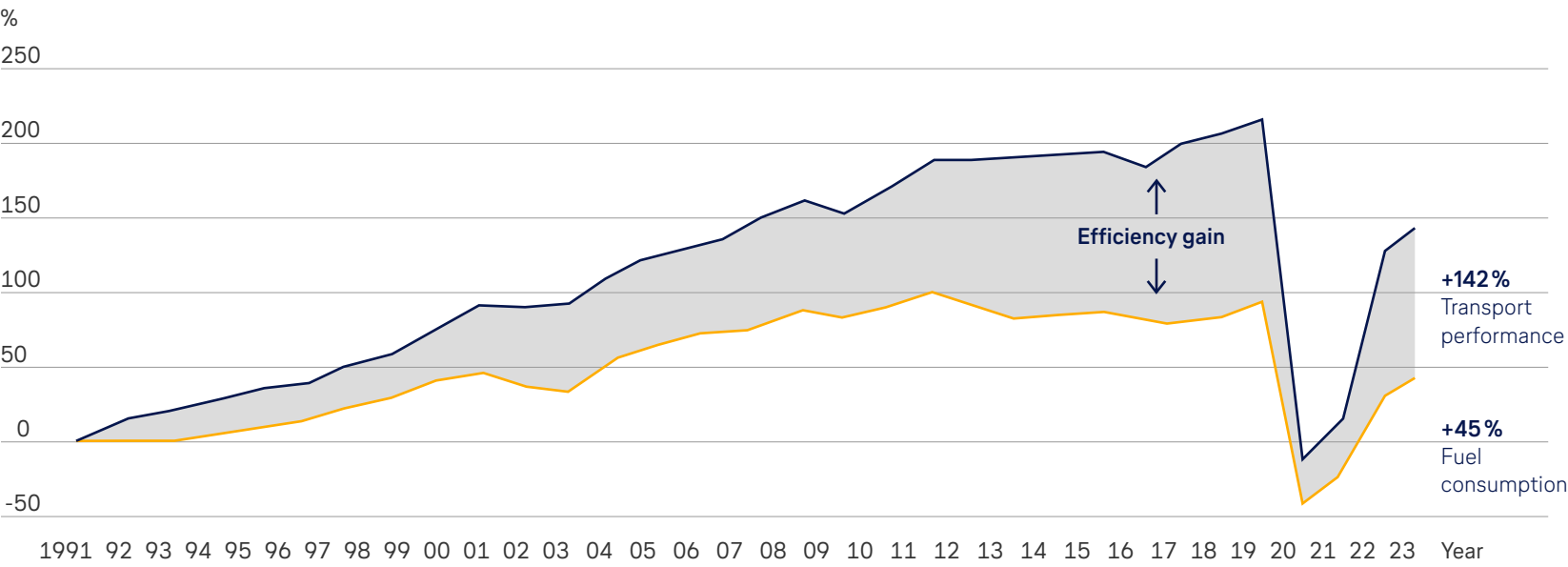
Lufthansa Airlines

Environmental figures Lufthansa Airlines	Unit	2023	2022	2021	2020	+/- PY in %
Fuel consumption (flight operations) ^{1,2,4}						
Fuel consumption, absolute	t	4,122,785	3,553,821	1,990,749	1,615,259	16
Fuel consumption, specific, passenger transport	l/100 pkm	3.51	3.50	3.78	4.00	0
Fuel consumption, specific, freight transport	l/FTKT	0.33	0.34	0.39	0.41	-2
Carbon dioxide emissions (flight operations) ^{1,3,4}						
Carbon dioxide emissions, absolute	t	12,986,772	11,194,537	6,270,859	5,088,066	16
Carbon dioxide emissions, specific, passenger transport	kg/100 pkm	8.81	8.79	9.48	10.06	0
Carbon dioxide emissions, specific, freight transport	kg/tkm	0.83	0.84	0.97	1.04	-2
Nitrogen oxide emissions (flight operations) ^{1,3,4}						
Nitrogen oxide emissions, absolute	t	59,189	50,166	28,366	23,488	18
Nitrogen oxide emissions, specific, passenger transport	g/100 pkm	39.90	39.21	43.18	48.35	2
Nitrogen oxide emissions, specific, freight transport	g/tkm	3.90	3.86	4.31	4.53	1
Carbon monoxide emissions (flight operations) ^{1,3,4}						
Carbon monoxide emissions, absolute	t	9,083	8,332	4,395	3,096	9
Carbon monoxide emissions, specific, passenger transport	g/100 pkm	6.45	6.86	7.41	6.85	-6
Carbon monoxide emissions, specific, freight transport	g/tkm	0.45	0.48	0.50	0.46	-7
Fuel dumps ^{1,2,4}						
Events, total	Number	19	28	2	3	-32
Medical reasons	Number	7	12	0	2	-42
Technical reasons	Number	7	14	1	1	-50
Other reasons	Number	5	2	1	0	150
Fuel volume	t	710.50	891.80	80.00	106.90	-20
Fuel consumption (operational ground vehicles) FRA ⁵						
Fuel consumption □	l	344,270	262,278	133,435	129,437	31
Fuel consumption per vehicle □	l	962	737	1,803	1,749	31
Fuel consumption (operational ground vehicles) MUC ⁵						
Fuel consumption	l	228,667	153,958	75,194	23,690	49
Fuel consumption per vehicle □	l	1,466	1,124	574	538	30

□ Corrected due to new data basis

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 per cent, data for the Lufthansa Airlines fleet)



* All scheduled and charter flights operated by Lufthansa Airlines.
Services provided by third parties are excluded from this as no influence can be exerted on their performance.



Environmental figures

Lufthansa Airlines

Environmental figures Lufthansa Airlines	Unit	2023	2022	2021	2020	+/- PY in %
Material consumption FRA						
Paper ⁷	t	19.98	25.76	8.47	13.27	-22
Proportion of recycled paper	%	33%	39%	55%	63%	-14
Paper per employee	kg	0.93	1.27	0.39	0.59	-27
Material consumption MUC						
Paper ⁷	t	14.79	12.52	11.42	10.49	18
Proportion of recycled paper	%	56%	56%	60%	38%	0
Paper per employee	kg	1.58	1.43	1.23	1.05	11
Mobility						
Business trips ^Δ (extrapolation)	Coupon	56,000	32,000	75,000	-	75
Jobtickets FRA ^{□ Δ}	Number	21,421	20,238	-	-	6
Jobtickets MUC	Number	3,110	295	273	446	954

□ Corrected due to new data basis
Δ Previous year's figures not available

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



Environmental figures

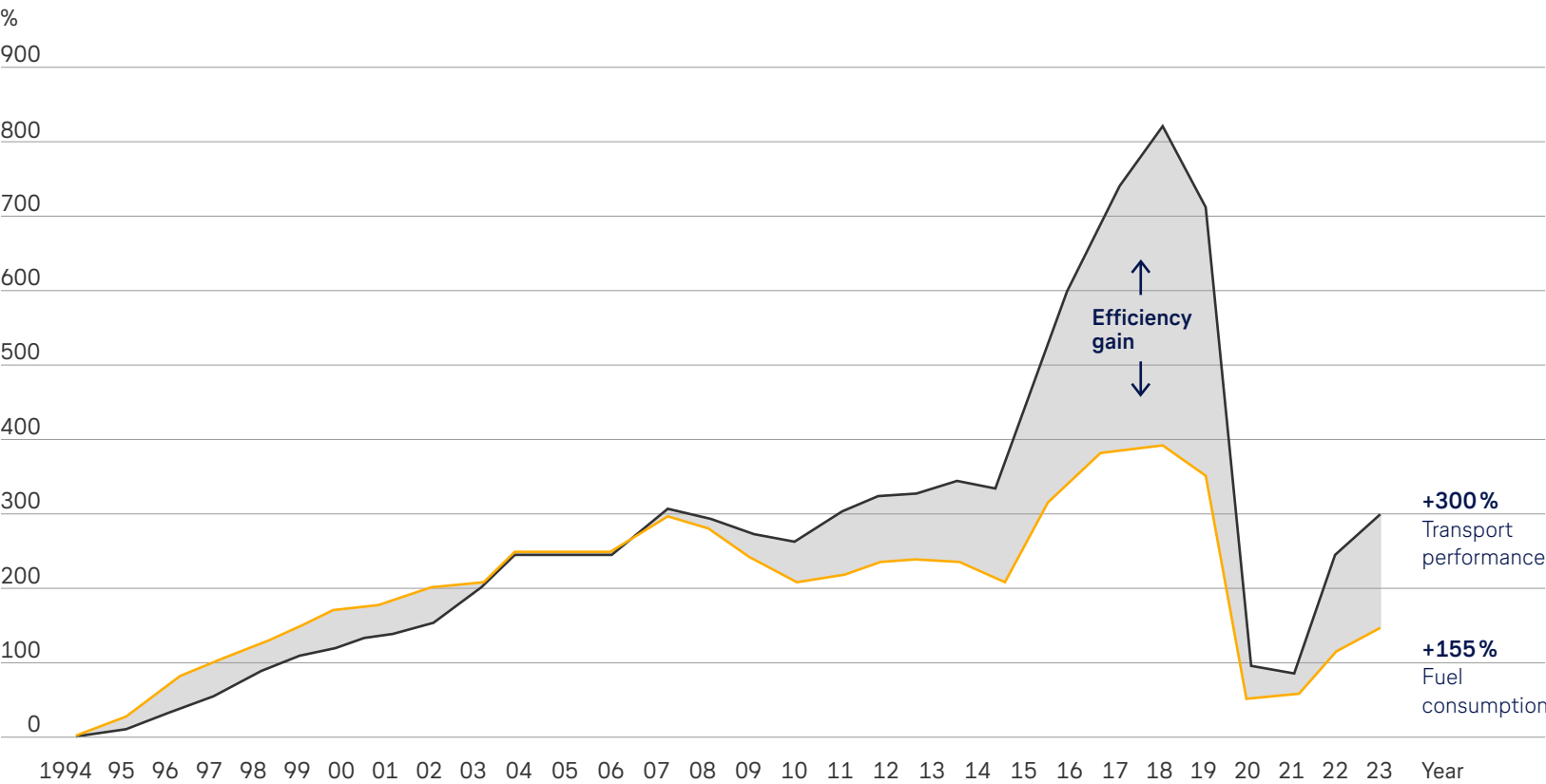
Lufthansa CityLine

Environmental figures Lufthansa CityLine	Unit	2023	2022	2021	2020	+/- PY in %
Fuel consumption (flight operations) ^{1,2,4}						
Fuel consumption, absolute	t	210,625	195,510	125,121	127,645	8
Fuel consumption, specific, passenger transport	l/100 pkm	5.64	6.31	7.08	6.78	-11
Fuel consumption, specific, freight transport	l/FTKT	0.40	0.39	0.92	0.37	4
Carbon dioxide emissions (flight operations) ^{1,3,4}						
Carbon dioxide emissions, absolute	t	663,468	615,855	394,132	402,083	8
Carbon dioxide emissions, specific, passenger transport	kg/100 pkm	14.19	15.88	17.82	17.07	-11
Carbon dioxide emissions, specific, freight transport	kg/tkm	1.01	0.97	2.33	0.94	4
Nitrogen oxide emissions (flight operations) ^{1,3,4}						
Nitrogen oxide emissions, absolute	t	2,478	2,269	1,407	1,570	9
Nitrogen oxide emissions, specific, passenger transport	g/100 pkm	51.40	57.65	63.67	65.52	-11
Nitrogen oxide emissions, specific, freight transport	g/tkm	5.00	4.64	6.50	4.94	8
Carbon monoxide emissions (flight operations) ^{1,3,4}						
Carbon monoxide emissions, absolute	t	816	775	451	423	5
Carbon monoxide emissions, specific, passenger transport	g/100 pkm	17.73	20.21	20.41	18.40	-12
Carbon monoxide emissions, specific, freight transport	g/tkm	1.04	0.94	2.14	0.51	11
Fuel consumption (operational ground vehicles) FRA ⁵						
Fuel consumption	l	43,272	44,836	40,730	44,380	-3
Fuel consumption per vehicle	l	983	1,019	926	965	-3
Material consumption						
Paper ⁷	t	2.62	3.56	2.40	2.80	-27
Proportion recycling paper ^Δ	%	73 %	78 %	80 %	-	-7
Paper per employee	kg	1.15	1.72	1.16	1.31	-33
Hazardous substances	t	32	33	26	21	-4
Hazardous substances per aircraft [□]	kg	579	661	483	401	-12
Mobility						
Business trips ^Δ (extrapolation)	Coupon	45,000	39,000	25,000	-	15
Jobtickets	Number	118	135	136	153	-13

□ Corrected due to new data basis
Δ 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.
Services provided by third parties are excluded from this as no influence can be exerted on their performance.



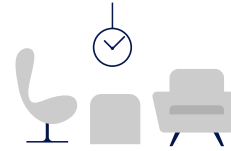



Environmental figures

Frankfurt am Main buildings

Buildings in FRA ⁶		Unit	2023	2022	2021	2020	+/- PY in %
01 BG2							
	Electricity	MWh	4,230	5,353	4,489	3,570	-21
	District heating	MWh	5,055	7,179	7,397	6,603	-30
	Water	m³	29,905	52,006	46,645	47,404	-42
	Wastewater	m³	29,905	52,006	46,645	47,404	-42
	Effective area □	m²	15,532	15,532	15,532	15,532	0
	Built-up area □	m²	3,008	3,008	3,008	3,008	0
	Waste ⁸	t	239	196	12	142	22
	thereof: Recovery	t	239	196	7	142	22
	Landfilling	t	0	0	5	0	-
02 Other administrative buildings/areas □△							
	Electricity	MWh	9,681	9,099	7,300	7,788	6
	District heating	MWh	22,651	20,222	2,883	1,454	12
	Water	m³	25,317	22,688	-	-	12
	Wastewater	m³	8,730	8,802	3,701	3,806	-1
	Effective area	m²	59,830	59,830	5,830	59,830	0
	Built-up area	m²	76,879	76,879	76,879	76,879	0
	Waste ⁸	t	683	634	595	155	8
	thereof: Recovery	t	678	633	594	155	7
	Landfilling	t	5	1	1	0	292
03 Hangar 5							
	Electricity	MWh	2,318	2,987	2,397	2,564	-22
	District heating	MWh	9,277	9,323	9,671	9,137	0
	Water	m³	12,219	8,696	5,767	7,074	41
	Wastewater	m³	12,219	8,696	5,767	7,074	41
	Effective area □	m²	31,116	31,116	31,116	31,116	0
	Built-up area □	m²	29,847	29,847	29,847	29,847	0
	Waste □ ⁸	t	151	153	96	124	-1
	thereof: Recovery	t	137	110	83	97	24
	Landfilling	t	15	42	14	27	-65
04 Hangar 6							
	Electricity	MWh	3,349	3,472	3,458	3,415	-4
	District heating	MWh	9,457	9,504	9,859	9,314	0
	Water	m³	4,439	4,640	3,202	1,550	-4
	Wastewater	m³	4,439	4,640	3,202	1,550	-4
	Effective area □	m²	29,100	29,100	29,100	29,100	0
	Built-up area □	m²	25,595	25,595	25,595	25,595	0
	Waste ⁸	t	83	124	92	97	-33
	thereof: Recovery	t	83	124	91	97	-33
	Landfilling	t	0	0	1	0	-

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

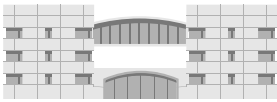

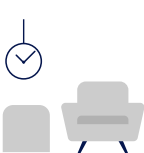

Buildings in FRA ⁶		Unit	2023	2022	2021	2020	+/- PY in %
05 Other technical buildings/areas □△							
	Electricity	MWh	10,328	9,621	10,544	10,264	7
	District heating	MWh	22,443	21,127	25,228	22,853	6
	Water	m³	17,490	10,474	-	-	67
	Wastewater	m³	17,490	10,474	-	-	67
	Effective area	m²	81,224	81,224	81,224	81,224	0
	Built-up area	m²	56,673	56,673	56,673	56,673	0
	Waste ⁸	t	628	638	486	699	-1
	thereof: Recovery	t	471	505	381	423	-7
	Landfilling	t	157	133	105	276	18
06 Terminal and Lounges							
	Number of lounge guests	Number	3,094,537	3,105,519	3,151,494	3,156,321	0
	Electricity □△	MWh	4,406	-	-	-	-
	Thereof: Lounges	MWh	2,524	2,265	1,530	1,508	11
	Electricity per lounge guest	KWh	0.82	0.73	0.49	0.48	12
	District heating ○	MWh	4,520	2,731	2,731	-	66
	Water △	m³	44,059	-	-	-	-
	Wastewater △	m³	44,059	-	-	-	-
	Effective area □	m²	38,092	38,092	38,092	38,092	0
	Built-up area □	m²	220,000	220,000	220,000	220,000	0
	Waste △ ⁸	t	12	13	5	-	-10
	thereof: Recovery	t	12	13	5	-	-10
	Landfilling	t	0	0	0	-	-
07 First Class Terminal							
	Number of guests	Number	74,717	63,735	17,760	12,933	17
	Electricity △	MWh	359	-	-	-	-
	Electricity per guest	KWh	4.80	-	-	-	-
	Effective area □	m²	3,435	3,435	3,435	3,435	0
	Built-up area □	m²	5,237	5,237	5,237	5,237	0
08 Hangar 7 (CLH)							
	Electricity	MWh	54	67	293	201	-19
	District heating	MWh	73	80	437	359	-8
	Water	m³	120	129	151	101	-7
	Effective area □	m²	399	399	399	399	0
	Built-up area	m²	1,414	1,414	1,414	1,414	0
	Waste ⁸	t	2	14	7	16	-85
	thereof: Recovery	t	1	14	3	4	-96
	Landfilling	t	1	-	4	11	-

□ Corrected due to new data basis
△ Previous year's figures not available
○ The consumption data can currently only be updated in estimates




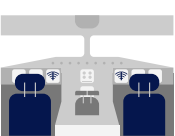
Environmental figures

Munich buildings

Buildings in MUC ⁶		Unit	2023	2022	2021	2020	+/- VJ in %
09 FOC							
	Electricity	MWh	2,688	2,638	2,441	2,590	2
	District heating	MWh	1,904	1,899	2,162	1,938	0
	Water	m³	10,120	9,022	5,485	5,264	12
	Wastewater	m³	13,299	12,201	6,541	4,865	9
	Effective area	m²	11,755	11,755	11,755	11,755	0
	Built-up area	m²	11,015	11,015	11,015	11,015	0
	Waste ⁸	t	214	230	160	194	-7
	thereof: Recovery	t	214	230	157	191	-7
	Landfilling	t	0	0	3	3	-100
10 Hangar 1							
	Electricity	MWh	4,091	3,641	3,314	3,389	12
	District heating	MWh	10,668	9,148	8,148	8,573	17
	Water	m³	6,637	4,939	4,905	4,678	34
	Wastewater	m³	6,637	4,939	4,905	4,678	34
	Effective area	m²	52,744	52,744	52,744	52,744	0
	Built-up area	m²	35,449	35,449	35,449	35,449	0
	Waste ⁸	t	105	76	47	-	-39
	thereof: Recovery	t	93	-	-	-	-
	Landfilling	t	13	-	-	-	-
11 Lounges							
	Number of lounge guests	Number	1,955,760	1,676,012	565,439	664,028	17
	Electricity	MWh	2,089	1,767	1,139	1,015	18
	Electricity per guest	KWh	1.07	1.05	2.01	1.53	1
	Effective area	m²	10,377	10,377	10,377	10,377	0
	Waste ⁸	t	442	352	483	861	26
	thereof: Recovery	t	427	340	478	855	26
	Landfilling	t	15	12	5	7	24
	Waste per guest	kg	0.23	0.21	0.85	1.30	8
12 Administration building							
	Electricity	MWh	192	294	240	152	-35
	Effective area	m²	5,385	5,385	5,385	5,385	0

⁶ 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 ⁶		Unit	2022	2021	2020	2019	+/- VJ in %
13 Hangar 4							
	Electricity	MWh	1,208	1,307	1,303	1,138	-8
	District heating	MWh	4,143	4,379	3,929	4,742	-5
	Water	m³	1,397	1,540	1,027	1,871	-9
	Effective area	m²	15,815	15,815	15,815	15,815	0
	Built-up area	m²	13,009	13,009	13,009	13,009	0
	Waste ⁸	t	22	24	51	63	-9
	thereof: Recovery	t	21	9	47	59	140
	Landfilling	t	0	15	3	4	-98
14 Training centre							
	Electricity	MWh	128	123	128	135	4
	District heating ^o	MWh	148	148	148	148	-
	Water ^o	m³	148	344	344	344	-
	Effective area	m²	2,077	2,077	2,077	2,077	0



Data delimitation and calculation methodology

Data delimitation

The reporting on transport performance, fuel consumption and emissions from flight operations for the years 2020 to 2023 is based on the following data delimitation, unless otherwise stated:



[1] Included are all scheduled and charter flights operated by Lufthansa Airlines (excluding Air Dolomiti and Discover Airlines) or Lufthansa CityLine. This does not include third-party services, as no influence can be exerted on their performance. Cross-location data refers to the Frankfurt am Main and Munich hubs, as well as the respective flight operations of Lufthansa Airlines and Lufthansa CityLine.

Calculation methodology



[2] Jet fuel in absolute terms

Fuel consumption is calculated based on actual flight operations, which means it considers actual capacity utilisation and routing according to the gate-to-gate principle. This means that all flight phases are recorded, from taxiing on the ground to detours and holding patterns in the air.



[3] Emissions in absolute terms

Absolute emissions from flight operations are calculated based on the actual transport performance and therefore on the actual load factor and the actual absolute kerosene consumption in the reporting year. The transport performance is measured in tonne-kilometres, meaning the payload transported over a distance. For passengers and their baggage, the standard of 100 kilograms on average is

applied, for freight the weighed weight is used. Each aircraft-engine combination in the fleet is considered separately and calculated using programmes from the respective engine and aircraft manufacturers. The annual average flight profile of each individual sub-fleet is included in the programmes. This enables emissions to be determined as a function of flight altitude, distance, thrust and load. This is particularly necessary for nitrogen oxides (NO_x), carbon monoxide (CO) and unburnt hydrocarbons (UHC). CO₂ emissions, on the other hand, do not require any special aircraft-specific calculation, as these are calculated using the density of the fuel burnt. The combustion of one tonne of jet fuel produces around 3.15 tonnes of CO₂, 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 figure of litres per 100 passenger-kilometres (l/100 pkm) is calculated based on the actual load factor and the fuel actually consumed. The distances used are based on large circle distances. In combined transport (freight and passenger transport on one aircraft), fuel consumption is allocated to determine passenger- or freight-specific values based on their share of the total payload. The ISO 16258 standard has provided a guideline since 2013 for the standardised calculation of greenhouse gas emissions for transport processes. The Lufthansa Group adheres to this guideline regarding the allocation of payload. The ISO 14083:2023 standard will be used as a basis from the 2024 reporting year. The unit of specific freight transport emissions of nitrogen oxides was corrected.



[5] Vehicles (fuel)

The operational vehicles of the station, limousine service and maintenance divisions are analysed. Some of the previous year's figures for the vehicle fleets of individual areas are not available. The data on the fuel consumption of the vehicles is based on the actual amount of fuel used, which is documented by fuel card statements.



[6] Electricity, heat and water consumption

The Lufthansa Airlines and Lufthansa CityLine buildings are all rented from the airport companies in Munich and Frankfurt am Main. They submit the consumption data annually. In some cases, consumption is not shown separately in the rental agreement or due to a lack of meters and is therefore not included in this report. At the Frankfurt hub in particular, Lufthansa Airlines has in some cases only rented small areas in buildings. The full consumption data for these buildings is used in the report and summarised ("Other buildings/spaces").



[7] Material input

Paper consumption is requested from the supplier and corresponds to the amount of copy paper used in the reporting year.



[8] Waste

The waste data and key figures are compiled and analysed annually from the transfer notes and invoices from the waste disposal companies.

Accuracy

The figures in the tables and charts have been rounded for reasons of presentation. However, the changes compared to the previous year or the pro rata percentage figures refer to the exact values in each case. For this reason, it is possible that a figure in the table may have remained the same compared to the previous year, but a relative change is still shown. Due to the rounding of proportional percentages, it is also possible that their addition may lead to different results compared to the addition of non-rounded percentages. For example, due to rounding, pro rata percentages may not add up to 100 per cent, although this would be logical.



Declaration of validity

CERTIFICATE

Lufthansa Airlines

Sites

Lufthansa Airlines München, Südallee 15, 85356 München-Flughafen
Lufthansa CityLine GmbH, Südallee 15, 85356 München-Flughafen
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Lufthansa Airlines Frankfurt am Main, Airportring Mitte, Tor 21, Geb. 302, 60549 Frankfurt am Main

Registration-No.: DE-155-00158

Date of first registration
13th January 2000

This certificate is valid until
31st May 2027

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) and therefore is entitled to use the EMAS-Logo.

München und Oberbayern

Munich, 13th June 2024


Dr. Manfred Göbl
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:

Standort 1:
Lufthansa Airlines München, Südallee 15, 85356 München-Flughafen

Standort 2:
Lufthansa Airlines Frankfurt am Main, Airportring Mitte, Tor 21, Geb. 302, 60549 Frankfurt am Main

Standort 3:
Lufthansa Cityline GmbH, Südallee 15, 85356 München-Flughafen

Standort 4:
Lufthansa Cityline GmbH, Cargo City Süd, Geb. 520 (Halle 7), 60549 Frankfurt am Main

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 Anforderungender 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 konsolidierten 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, 03.06.2024


Dr.-Ing. Reiner Beer
Umweltgutachter

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