SWISS Environmental Report 2023

Environmental statement in accordance with the requirements of the Eco Management and Audit Scheme (EMAS)

A STAR ALLIANCE MEMBER

SWISS

Contents

1 SWISS
1.1 Introduction

Flying connects people, cultures and countries – enabling global exchanges and trade. It is impossible to imagine a world without air transport today. However, the tremendous importance of the aviation industry is matched by tremendous responsibility – towards society, our customers, employees and the environment. SWISS takes comprehensive measures to reduce its environmental impact, treats its employees responsibly, and is committed to numerous social issues. The integrated environmental strategy focuses on reducing emissions, conserving resources, taking measures towards circularity, and promoting new technologies.

In this environmental statement, we set out what we worked on in the 2023 reporting year, what successes we achieved, and where our biggest challenges lie.

"Our ambitious sustainability targets are a central component of our corporate strategy. We are proud to be pioneering the scaling of new technologies such as solar fuel along with our extensive commitment to reducing CO_2. As the leading Swiss airline, we see it as our duty to fulfil our responsibility to customers, employees, service providers and Switzerland, and to further expand our pioneering role in the area of sustainability."

Dieter Vranckx, Chief Executive Officer

1.2 About SWISS

Swiss International Air Lines (SWISS) is the national airline of Switzerland. It connects Switzerland to Europe and the rest of the world with direct flights from the national airports of Zurich and Geneva. The premium airline deploys one of the most modern fleets in Europe for this purpose. Swiss WorldCargo, its cargo division, markets the cargo holds of passenger aircraft and offers a comprehensive range of airport-to-airport services for high-value, time-critical and care-intensive goods. With line maintenance and other checks, SWISS Technik carries out a significant proportion of aircraft maintenance in Zurich and Geneva itself.

As the Swiss national airline, SWISS stands for the country's traditional values, and is committed to providing the highest product and service quality. SWISS is a part of the Lufthansa Group and a member of the Star Alliance.

Corporate key figures 2023

16,458,744
Passengers

130,480
Number of flights

84.5 %
Seat load factor

8,602
Number of staff

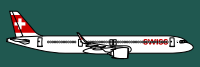
1,279
Pilots

4,156
Cabin Crew Members

3,167
Ground

Fleet overview

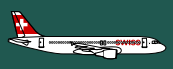
9 × Airbus A220-100



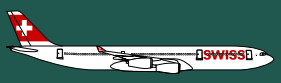
4 × Airbus A321neo

21 × Airbus A220-300

14 × Airbus A330-300

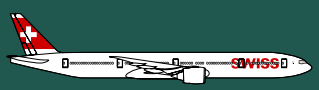


12 × Airbus A320-200



4 × Airbus A340-300

6 × Airbus A320neo



12 × Boeing 777-300ER

6 × Airbus A321

SWISS also supplements its fleet with aircraft operated by wet-leasing partners (Helvetic Airways, Air Baltic and Edelweiss Air), including crews.

1.3 Strategic focus on sustainability

Our commitment to more sustainable air transport is a central pillar of our corporate strategy. SWISS creates social, societal and economic value through its business model. Our Corporate Responsibility initiatives are part of our daily business processes, and are continuously evaluated and optimised as part of our strategy development. Economic responsibility is the foundation of our activities. Because only companies that are competitive can successfully assume responsibility.

SWISS pursues three priorities as part of its sustainability agenda:

Emissions management
Holistic reduction of our ecological footprint. As well as CO_2 and non-CO_2 emissions, this also includes waste, noise and energy consumption.

Technology development
Promoting the scaling and market entry of climate protection technologies.

Social commitment
Responsibility as an employer and company.

1.4 Stakeholders

Air transport is part of Switzerland's public transport system and an important economic and location factor. Accordingly, SWISS is interwoven with society in many different ways, which is why stakeholder management plays a central role.

Through continuous dialogue, we ensure that we understand the expectations of the various stakeholder groups. Together with the Lufthansa Group, we regularly conduct large-scale stakeholder surveys to identify the key issues from the perspective of the interest groups.

- **Staff**
- **Social partners**

- **Customers**

- **Residents**
- **Public and Media**

- **System partners**

- **Shareholders**

- **Authorities**
- **Politics**

- **Non-governmental organisations (NGOs)**
- **Associations**

- **Suppliers**
- **Contractual partners**

- **Science and Research**

2 Context
2.1 Our system

2.1.1 Environmental management system
SWISS is aware of its responsibility towards the environment and future generations, and places a strong focus on the environment as part of its comprehensive sustainability strategy. SWISS has set itself ambitious goals. Our environmental management system includes a clear organisational structure for the holistic management and implementation of our measures based on comprehensive data management. Continuous improvement is firmly anchored in our corporate culture as well as being an integral part of our environmental management system. In 2024, the SWISS environmental management system for the Zurich and Geneva locations was, for the first time, certified and validated in accordance with ISO Standard 14001 and the EMAS Regulation.

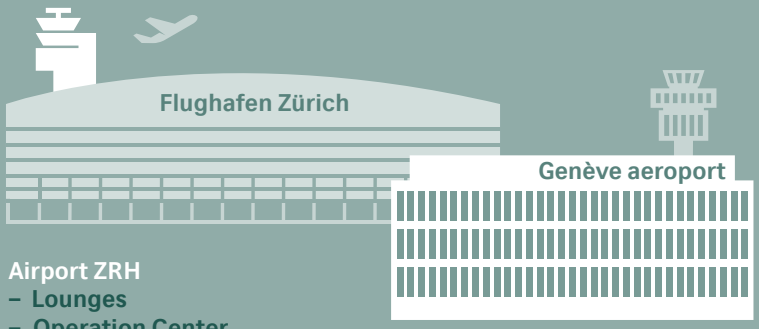
2.1.2 Sustainability organisation
Corporate responsibility thrives on the commitment and involvement of each individual employee. Whether in the air or on the ground, in a hangar or in an office, all our employees are encouraged to contribute to making our processes and products as sustainable as possible.

Our corporate responsibility initiatives are an integral part of our daily business processes. The Board of Directors defines the sustainability strategy and objectives together with the Management Board and reviews their implementation. Responsibility for sustainability is anchored throughout the company at all levels. Various committees ensure cross-departmental coordination and the utilisation of synergies.

2.2 SWISS locations

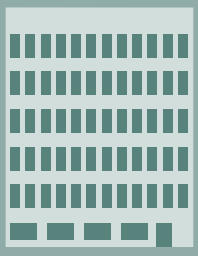
Locations considered
The environmental management system applies to the activities, products and services of all SWISS organisational units at and from the Zurich and Geneva locations, and in particular covers the core business, the transport of passengers and freight in flight operations.

Locations Zurich and Geneva



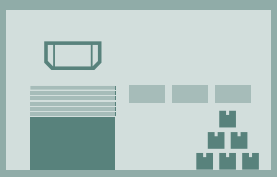
Airport ZRH
- Lounges
- Operation Center
- Terminal 1

Airport GVA
- Lounges



Administration buildings
- Office building Obstgartenstrasse (Zurich)
- Flight Center and Geneva Center

Technics
- Hangar (Zurich and Geneva)
- Workshop (Zurich)
- Warehouse (Zurich)



Cargo
- Cargo Warehouse (Geneva) and Cargo Warehouse East (Zurich)
- Operation Center 4 (Zurich)
- Postal Exchange Building (Zurich)

City Ticket Office Zurich Paradeplatz

2.3 Our principles

SWISS has adopted the following basic principles and priorities to reduce its environmental impact. Suppliers and partners are contractually obliged to comply with similar standards and principles through the Supplier Code of Conduct and an ESG clause.

We strive to continuously reduce our environmental impact.

We foster the scaling and promotion of relevant technologies.

We incorporate sustainability into our corporate management.

All departments and all our people are actively involved in driving the transformation to more sustainable air travel.

We comply in full with all the relevant national and international environmental regulations.

We foster targeted collaborations and synergies with the Lufthansa Group, our partners and our customers.

We rely on data-based management and scientifically recognised principles and standards.

We communicate and inform transparently about our present status, our progress and our challenges ahead.

3 Significant environmental aspects

The three key environmental aspects of CO_2 emissions, waste and noise are analysed below as part of the environmental statement:

CO_2 emissions **Waste** **Noise**

3.1 CO_2 emissions

Flight operations
Most of our direct CO_2 emissions come from flight operations. We are therefore focussing strongly on reducing our CO_2 emissions from flight operations, and have set ourselves ambitious targets. We want to achieve net zero CO_2 emissions by 2050. On the way there, we want to halve our 2019 net CO_2 emissions by 2030. The Lufthansa Group, including SWISS, has also defined a specific CO_2 reduction target for 2030 in line with the goals of the Paris Agreement, which was validated by the independent Science Based Targets Initiative (SBTi) in August 2022.

Achieving the CO_2 targets set is a major challenge, and will only be possible through a large number of measures within the company and additional emission reductions outside the value chain. The implementation of these targets and measures in various areas is carried out together with SWISS customers and partners. In summary, SWISS relies on the use of modern aircraft, the continuous optimisation of flight operations, the use of Sustainable Aviation Fuels, and additional investments in climate protection projects.

The development and scaling of new technologies is key to achieving the CO_2 targets in aviation. SWISS therefore places a special focus on the promotion of key technologies. Around 80 % of the CO_2 emissions produced by international aviation come from flights of over 1500 kilometres for which there are no practical alternatives (Air Transport Action Group [ATAG]). According to current knowledge, long-haul aircraft will still have to run on liquid fuel in 2050. This shows the great importance of sustainable fuels, which save more than 80 % of the CO_2 emissions of fossil kerosene. Technological advances in the area of operational efficiency and alternative propulsion systems (e.g. electric and hydrogen aircraft, mainly on short and medium-haul routes) will also contribute to reducing CO_2 emissions. Like other sectors that are difficult to defossilise, the aviation industry and SWISS will also be dependent on negative emission technologies (NET) that enable the removal of unavoidable CO_2 emissions from the atmosphere.

SWISS is aware that the overall impact of air traffic on the climate is not limited to the effect of CO_2 emissions. In addition to carbon dioxide (CO_2) and nitrogen oxides (NOx), emissions from air traffic contain other non-CO_2 emissions that also have an impact on the climate, especially particulate matter (soot and sulphur, triggers for cloud formation) and aerosols.

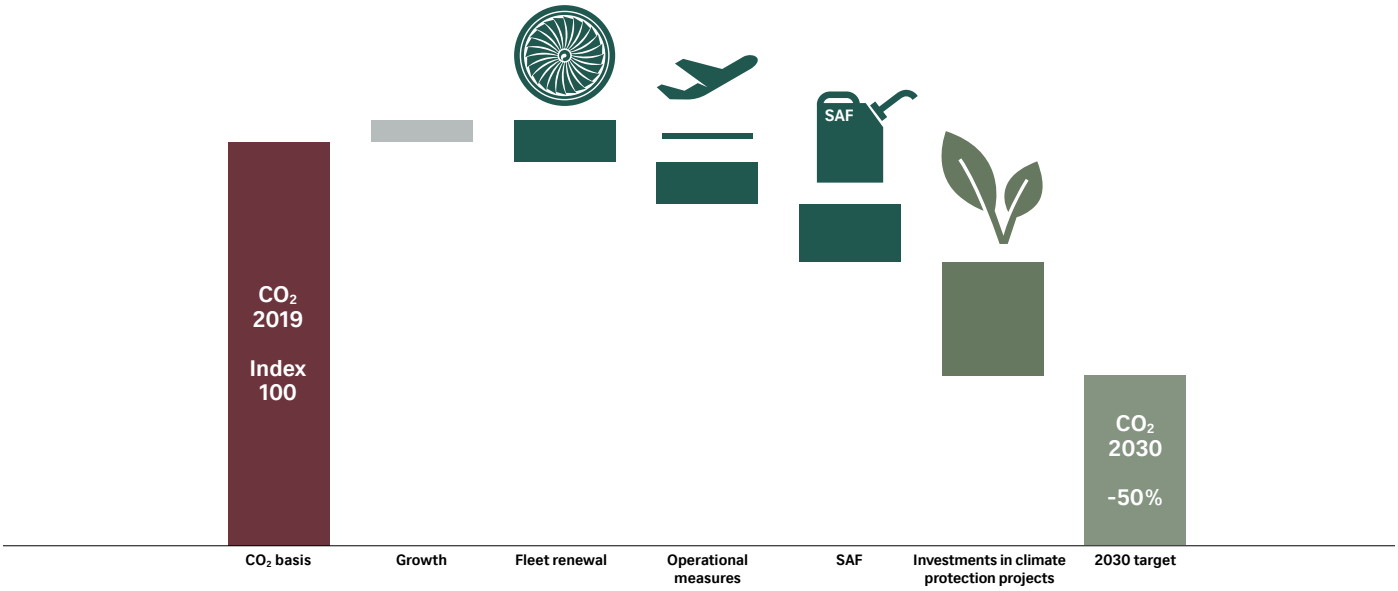
As the non-CO_2 effects vary greatly depending on changing conditions such as the current weather, the time of day and the season, among other factors, and as there is still no reliable and internationally recognised standard for quantifying the non-CO_2 effects of air transport operations, SWISS currently refrains from reporting these for its flight operations.

Together with the Lufthansa Group, SWISS supports research projects that investigate the non-CO_2 effects and their mitigation, and promotes measures to reduce the overall climate impact of air traffic.

Ground operations
As part of an integrated approach, SWISS is also focussing on making ground operations more sustainable. The plan is to switch to electromobility, in particular on the ground, by 2030. SWISS has been using 100 % green electricity in its main building in Kloten since 2019.

CO_2 targets
SWISS has set itself ambitious goals for reducing CO_2. We want to halve our 2019 net CO_2 emissions by 2030. We rely on four levers in particular, which are explained below.

SWISS CO_2 roadmap 2030



Fleet renewal

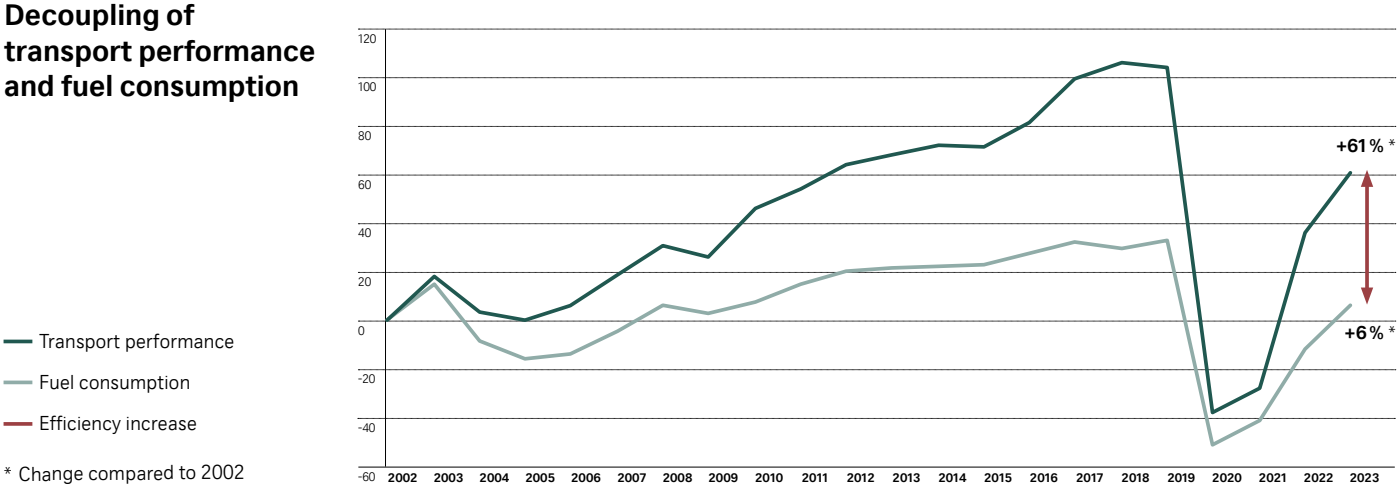
Continuous investment in modern and fuel-efficient aircraft and engine technologies is an important lever for reducing emissions from flight operations. By investing billions in new aircraft, SWISS now has one of the most modern fleets in Europe. SWISS continued to modernise its fleet in 2023 and put the third and fourth Airbus A321neo into service. SWISS now has ten aircraft from the A320neo family (as of December 2023). A total of 25 aircraft from the A320neo family are to be integrated into the fleet.

Operational measures

SWISS drives the continuous optimisation of flight operations and is actively involved in national and international projects to improve flight procedures and routes. This involves the systematic and data-based identification and realisation of efficiency potential along the entire flight activity chain, from planning and control through to execution and review. On the one hand, we rely on digital decision-making aids. For example, a platform for better planning and control of daily flight operations has been developed in collaboration with Google Cloud. Another integral part of our operational measures is the development and application of fuel-saving processes, whereby our pilots are shown their scope for action for emission reduction efforts via various channels and learning formats. There is also a strong focus on weight-reducing measures.

The consistent implementation of its environmental strategy, based on a mix of measures including fleet modernisation, technological innovations and process optimisation in the air and on the ground, has led to a significant increase in efficiency and a substantial reduction in noise and CO_2 emissions at SWISS in recent decades. While SWISS has increased its transport performance by around 61 % since 2002, fuel consumption has risen by just 6 % over the same period.

Decoupling of transport performance and fuel consumption

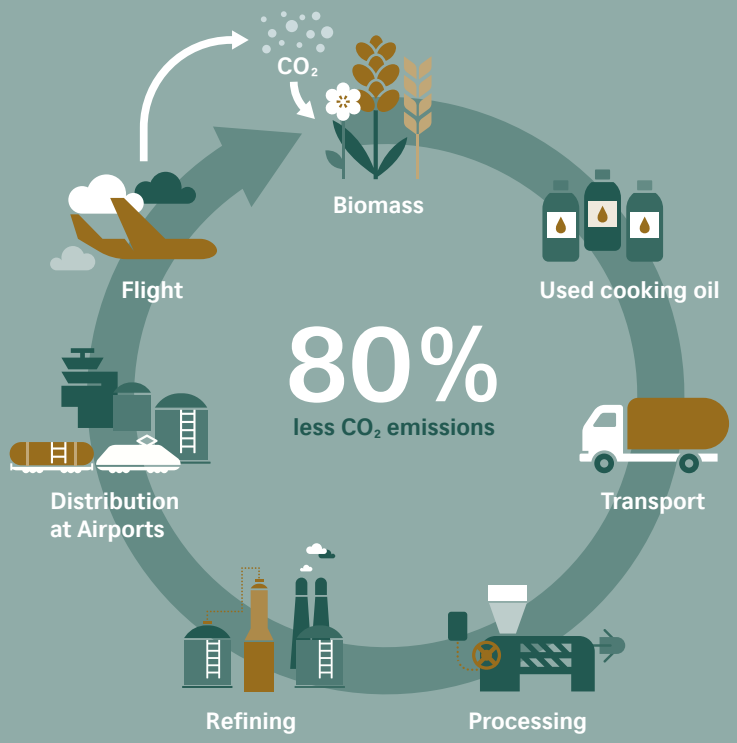


* Change compared to 2002

Sustainable Aviation Fuels (SAF)

The key to achieving the CO_2 targets for aviation lies in the use of Sustainable Aviation Fuels (SAFs). Sustainable Aviation Fuel (SAF) is the generic term for all aviation fuels that are produced without fossil raw materials. Compared to fossil fuels, the SAF available today reduces CO_2 emissions by at least 80 per cent. Sustainable fuels are still only available in small quantities, and the prices are significantly higher than for conventional kerosene. SWISS is therefore working with the Lufthansa Group, its partners and customers to promote the development and availability of SAF through targeted measures and collaborations.

Process of biogenic SAF available today



Investments in climate protection projects and new technologies

Investments in climate protection projects and new technologies can be used to offset unavoidable CO_2 emissions elsewhere. This contributes to achieving the climate goals of the Paris Agreement, according to which as many greenhouse gas emissions as possible are to be avoided today. Together with its customers, SWISS and the Lufthansa Group support climate protection projects worldwide to avoid and permanently remove CO_2 emissions. The portfolio carefully selected by the Lufthansa Group in 2023 comprised fifteen high-quality climate protection projects. When selecting the climate protection projects, the Lufthansa Group relies on high-quality standards and strict criteria that are based on the guidelines of the Allianz Foundation for Development and Climate. In the area of climate protection projects, SWISS is increasingly focussing on approaches and technologies for the permanent removal of CO_2 from the atmosphere, also known as negative emission technologies. In order to achieve the net-zero target, aviation will have to rely on offsetting CO_2 emissions via negative emission technologies. It is therefore important to promote this form of climate protection endeavour and to drive forward and scale up corresponding natural and technological approaches today.

Further information on our climate protection projects can be found at the following link: swiss.compensaid.com/projects/portfolio

3.2 Waste

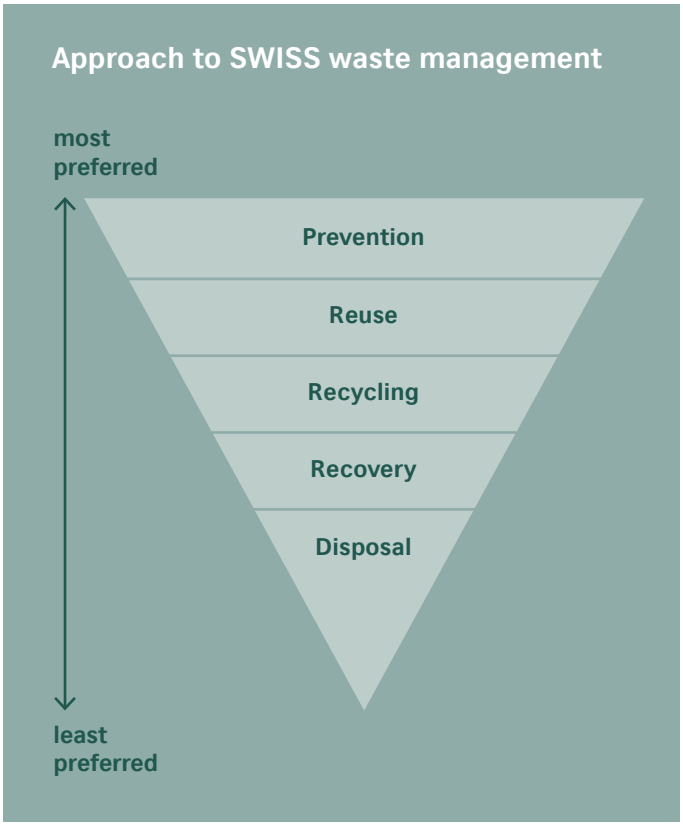
The responsible use of resources is a central component in SWISS's environmental strategy. Our approach to waste management is based on waste prevention, followed by reuse and recycling, feeding into other forms of (energy) recovery and, finally, disposal.

In air transport, the strict legal requirements regarding hygiene and safety as well as weight and space restrictions on aircraft pose complex challenges when it comes to resource management and waste.

SWISS has set itself the goal of making all plastic and aluminium items on board part of the circular economy and removing single-use plastic and aluminium from the customer experience wherever possible. SWISS's primary goal is not to become 100 % plastic- or aluminium-free, but to decide where their use makes sense based on holistic life cycle assessments. It is important to note that heavier materials on board an aircraft lead to increased fuel consumption and, as a consequence, to higher CO_2 emissions. In addition to the higher weight and increased CO_2 emissions, rapid wear and tear or intensive cleaning requirements are also taken into account, which result in increased resource requirements.

SWISS is aiming to reduce food waste on short-haul flights by 50 % (by weight) by 2025 compared to 2019. As a first step towards optimising waste management on long-haul flights, SWISS is working with the Lufthansa Group and its catering partners to improve the transparency of data on food waste.

More solutions are to be found to promote the circular economy for reusable items that have reached the end of their life in flight operations.



3.3 Noise

SWISS is committed to reducing aircraft noise. The primary aim is to reduce aircraft noise at source and to develop optimised flight procedures together with the system partners.

To achieve this, we are focusing on measures in five areas:
- Investments in quieter aircraft
- Noise-reducing technologies for the existing fleet
- Development of optimised flight procedures and flight routes
- Dialogue with airport neighbours and other interest groups
- Participation in noise research

Thanks to SWISS's continuous fleet renewal, noise is constantly being reduced at the source, and with that the noise foot-print of the aircraft. The Airbus A220 short-haul aircraft is only half as loud to the human ear as comparable types. SWISS has been replacing the Airbus A320 family with the much quieter A32xneo since 2019. These fall into the currently most restrictive noise category, ICAO Annex 16, Chapter 14. Two additional aircraft of this type joined the fleet in the 2023 reporting year. All other aircraft operated by SWISS comply with the requirements of ICAO Annex 16, Chapter 4 as a minimum. SWISS is also working with the airports and Skyguide air traffic control to optimise approach and departure procedures as far as possible.

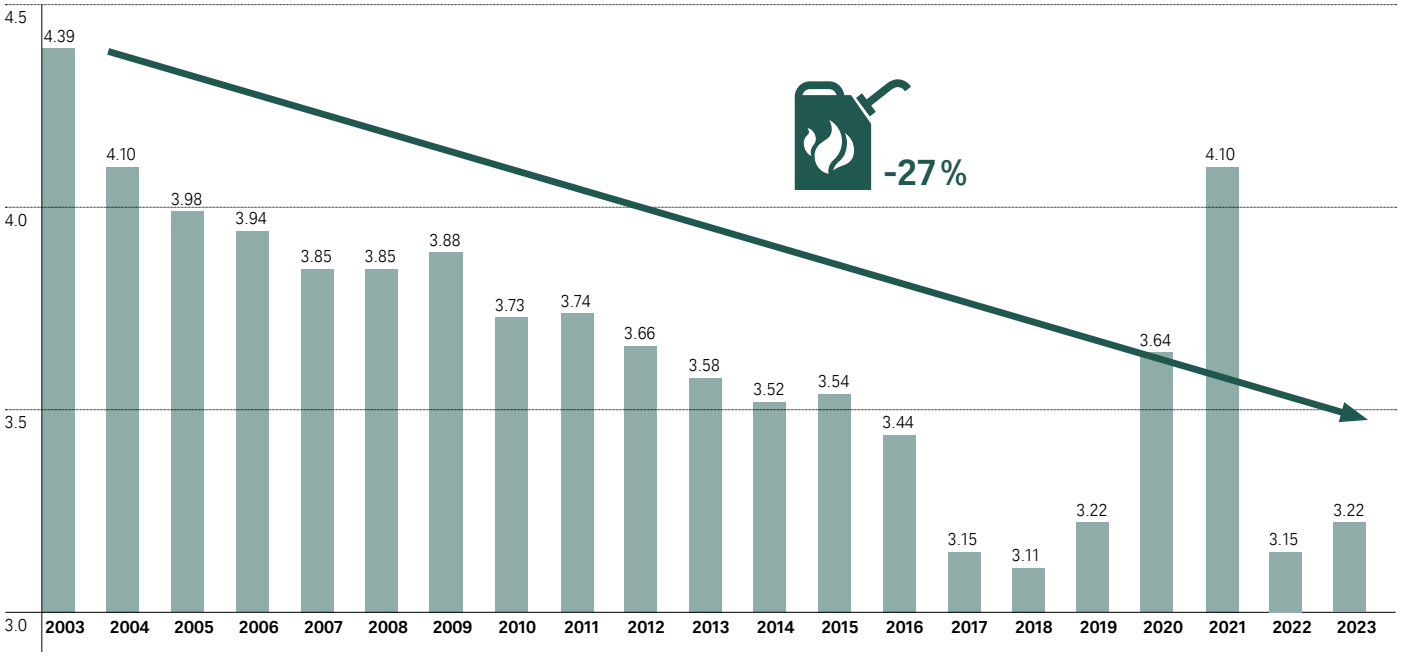
4 Our commitment in 2023

Various interdisciplinary sustainability projects were launched or implemented in 2023. Selected initiatives are explained in more detail below.

Optimisation of flight operations
In the 2023 reporting year, various projects were initiated to increase fuel efficiency and reduce CO_2 emissions in day-to-day operations. New procedures were developed, such as taxiing with one engine switched off. New principles in flight planning make it possible to take off with a more targeted amount of fuel, thereby avoiding unnecessary reserves and thus weight, without compromising flight safety. In addition, systematically recording the water consumption of our Boeing 777s has enabled us to optimise the amount of water used, saving an average of 165 litres of water per flight and reducing CO_2 emissions accordingly.

Optimisation of flight operations control through artificial intelligence
In collaboration with Google Cloud, SWISS worked with the Lufthansa Group to develop the "Operations Decision Support Suite" (OPSD) control tool. OPSD uses artificial intelligence to optimise the complex interplay of aircraft movements and routes, aircraft deployment, maintenance cycles, passenger bookings, and much more. Using historical and current data, OPSD generates possible development scenarios from given options for action and weighs them up against each other in terms of several dimensions. This helps to avoid CO_2 emissions.

Development of specific fuel consumption



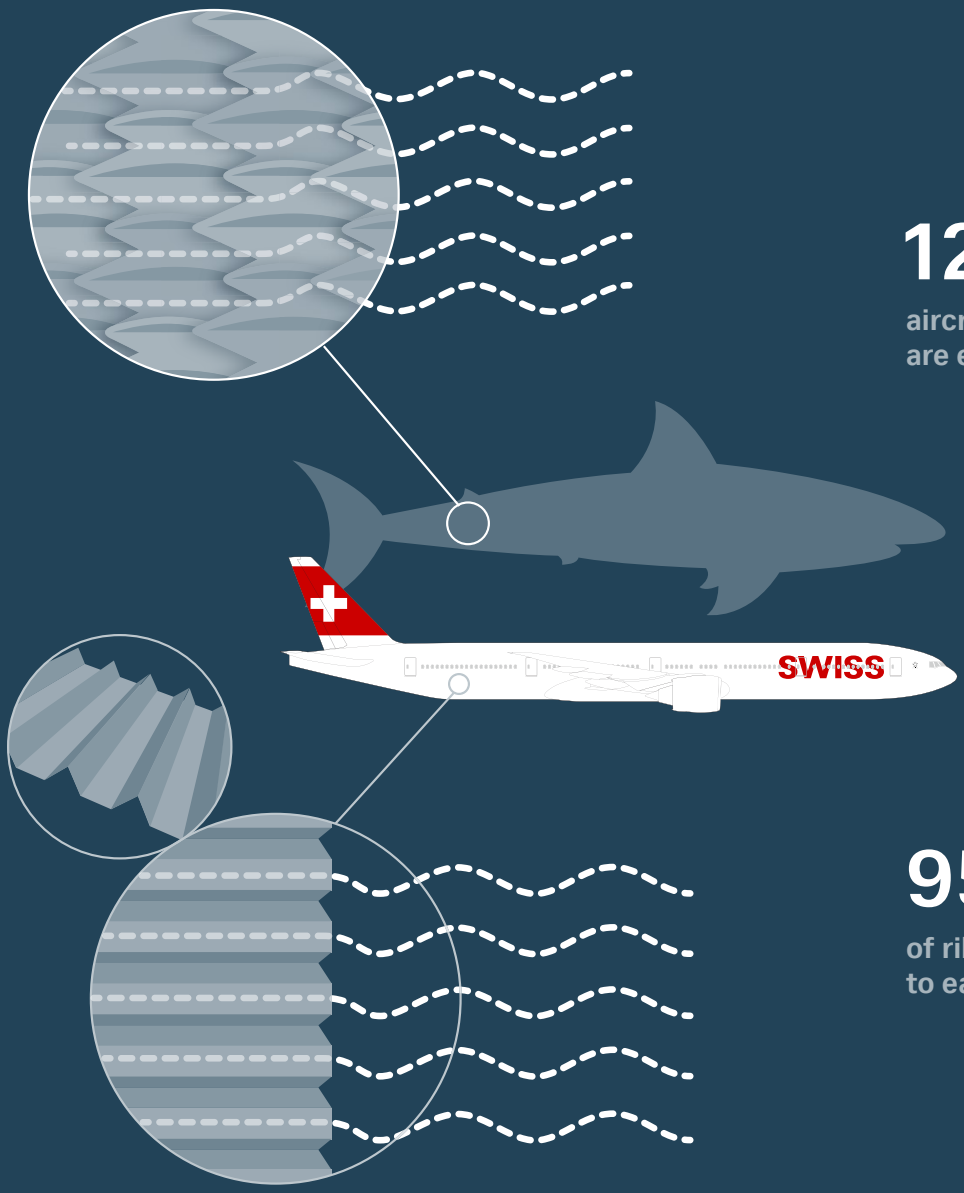
Specific fuel consumption in litres per 100 passenger-kilometres

Research into the climate impact of air traffic
In addition to carbon dioxide (CO_2), aviation causes other emissions that have an impact on the climate, especially particulate matter (soot and sulphur), nitrogen oxides (NOx) and aerosols, as well as indirect effects such as contrails. The effects of so-called non-CO_2 emissions are still the subject of research and scientific debate. Not every flight generates the same non-CO_2 emissions and effects. SWISS and the Lufthansa Group are participating in various research projects to better understand the effects and derive measures to reduce the overall climate impact. As part of the European CICONIA research programme, SWISS is involved in research into non-CO_2 effects, and is developing "Concepts of Operations" with the aim of minimising the overall climate impact of flights. The Lufthansa Group has been involved in climate research for almost 30 years, and has equipped several long-haul aircraft with measuring instruments and probes that provide daily data for research into the Earth's atmosphere and for the specification of climate models.

Innovative AeroSHARK technology reduces CO_2

SWISS is the first airline in the world to use the new "AeroSHARK" surface technology, which reduces drag and thus CO_2 emissions. Additional aircraft were equipped with the technology in 2023. Since May 2024, all Boeing 777 aircraft have been flying with this innovative technology.

AeroSHARK technology



12

aircrafts of our SWISS fleet are equipped with AeroSHARK

950 m^2

of riblet film will be applied to each aircraft

Partnership with Synhelion

Through a strategic partnership with the pioneering Swiss company Synhelion, SWISS is promoting the development and market launch of solar fuels. In 2023, further important milestones were reached in the construction of the first industrial demonstration plant in Jülich, Germany. The facility will open in summer 2024. At the same time, Synhelion is planning its first commercial plant in Spain. SWISS is the first airline in the world to use solar fuel in flight operations.

Sun-to-liquid technology will enable almost carbon-neutral flying in the future

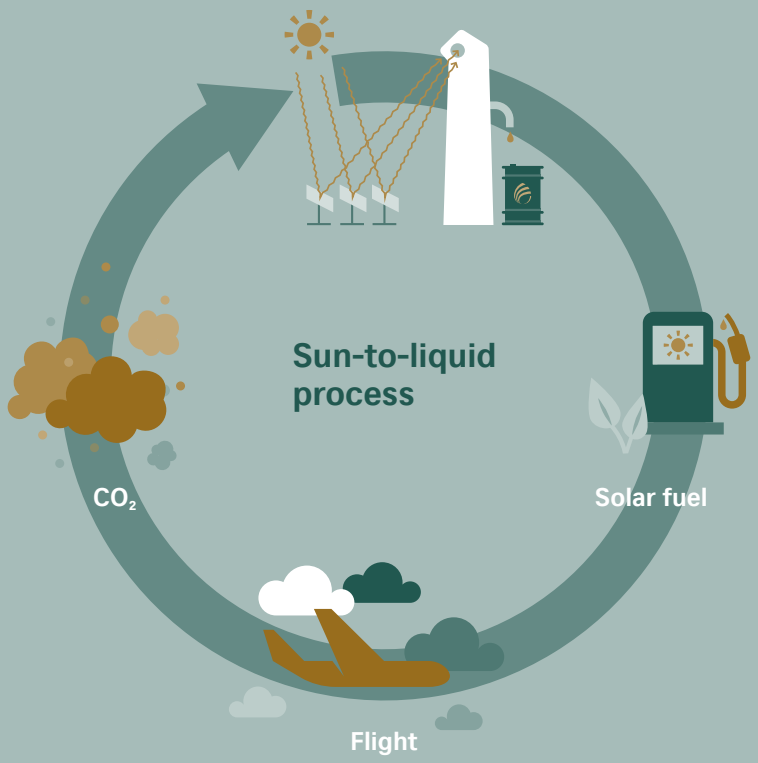
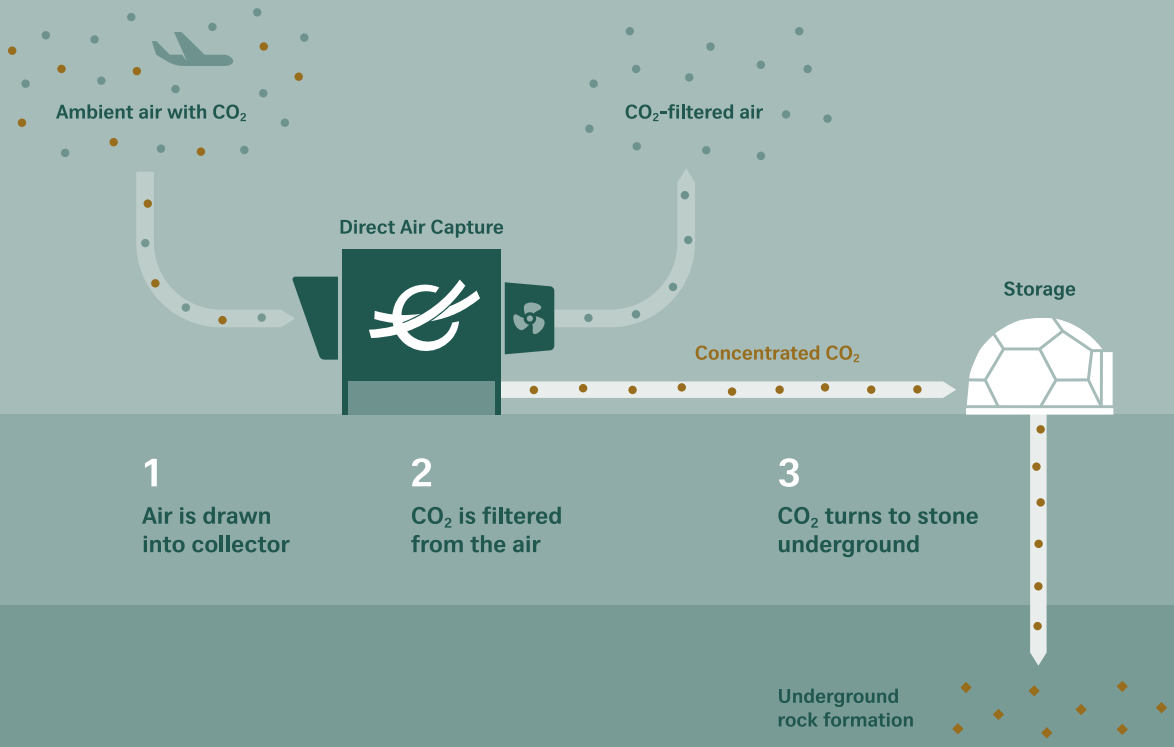


Image source: Synhelion

Partnership with Climeworks

SWISS and the Lufthansa Group are the first companies in the aviation industry to enter into a strategic partnership with the Swiss start-up Climeworks. Climeworks has developed an innovative technology for removing carbon dioxide from the air (Direct Air Capture, DAC). DAC technology will be central to achieving the net-zero target in order to remove remaining CO_2 emissions from the atmosphere and store them permanently. DAC technologies also offer a scalable way to source atmospheric CO_2 as a raw material for the production of next-generation synthetic fuels. With this partnership, SWISS is committed to scaling up this important aviation technology and at the same time helping to promote Swiss innovation. SWISS and Climeworks have concluded an off-take agreement until 2030 and have agreed purchase rights beyond that date.

Direct Air Capture process by Climeworks




Climeworks Mammoth plant in Iceland


Jan Wurzbacher, Co-Founder and Co-CEO Climeworks and SWISS CEO Dieter Vranckx

Options for more sustainable flying are being expanded
SWISS offers its private and business customers various options for offsetting the emissions from their air travel by using sustainable fuels (SAF) and/or by investing in climate protection projects. SWISS has further expanded its offering for more sustainable flying in 2023 and introduced the "Green Fare" on European flights. With this fare, compensation for flight-related CO_2 emissions is already included in the price. By the end of 2023, over 100,000 flights had been booked with the Green Fare. Furthermore, since September 2023, all domestic SWISS flights between Zurich and Geneva already include compensation for flight-related CO_2 emissions in the price.

In 2023, around 5 % of our passengers opted for one of the offers for more sustainable flying. Our freight division Swiss WorldCargo has also introduced various new offers for more sustainable goods transport.

An overview of the various offers for more sustainable flying can be found at the following link:
swiss.com/ch/en/discover/sustainable-choices

Optimisation of flight operations
In 2023, SWISS, together with the other Lufthansa Group airlines, began developing a structured action plan for all disposable plastic and aluminium items. The first projects to reduce single-use plastic are now in use. For example, the headphones in Business Class are now wrapped in paper instead of plastic film.

The amount of food required on continental flights is determined using an algorithm based on historical data. As a result, the proportion of perishable products thrown away was reduced by an average of over 50 % in 2023 compared to the base year 2019. In addition, food waste on SWISS 2023 was further reduced by the "To go" offer, in which all fresh products available to purchase on board are offered at reduced prices on the last evening flight.

In 2023, SWISS introduced a standard process in collaboration with a partner for textile recycling in order to routinely recycle or repurpose textiles from aircraft that are no longer needed. For instance, passenger blankets can be processed into insulation material or cleaning cloths. As well as the passenger blankets, other textiles were also utilised for textile recycling in the reporting year, in which cotton yarn is recovered. SWISS has also introduced the recycling and reloading of amenity kits in all travel classes.

Dedicated Ambassador concept and information on sustainability topics for cabin crew members
To further promote measures and processes for more sustainable flying, SWISS has introduced a voluntary ambassador programme for cabin crew. The sustainability ambassadors work with the department to examine new approaches to improve existing processes such as the recycling of packaging materials. The ambassadors proactively share their knowledge and experience with their colleagues on board, helping to embed more sustainable processes in practice. They also support the introduction of more sustainable products and concepts on flights.

SWISS has provided dedicated briefing rooms at the Operations Centre in Zurich with information material to keep flying colleagues fully informed on current sustainability issues within the company.

Pilot project for sustainable aircraft decommissioning
SWISS joined the Aircraft Fleet Recycling Association in 2023, which promotes safe and sustainable recycling management when aircraft are taken out of service. The decommissioning of the Airbus A321 HB-IOC 2023 was used to set a new standard for the reuse and recycling of aircraft materials at the end of the aircraft's life cycle. For example, non-reusable components were recycled as part of a holistic lifecycle management process in order to recover aluminium and other high-quality alloys in particular. Certain elements were also used to make furniture and accessories, giving the components a second life.

Holistic governance system
SWISS has introduced a comprehensive governance system to manage its sustainability activities. All areas are required to make their contribution to the company-wide sustainability goals. All proposals to the Executive Board must be subject to an ESG assessment. An internal CO_2 price creates transparency with regard to current and predicted future CO_2 costs. The internally developed "Sustainability Cockpit" shows daily updated data on the most important KPIs and creates a cross-departmental basis for decision-making and management.

Establishment of various communication and training formats
SWISS offers training and information events for its management team, sustainability experts and other employees in order to embed our sustainability strategy and build up cross-departmental sustainability expertise. Events are also organised for customers to promote dialogue and at the same time transparently highlight SWISS's sustainability efforts.

Giving travel a future
In 2023, SWISS launched an information initiative to familiarise the public with its various sustainability activities.

5 Company and transport performance indicators

Corporate key figures	Unit	2023	2022	2021	2020	2019	±% PY
Location Zurich							
Staff	Number	7,491	6,720	6,663	7,626	8,019	11 %
Cockpit	Number	1,279	1,222	1,297	1,367	1,407	5 %
Cabin	Number	3,758	3,284	3,313	3,965	4,222	14 %
Ground	Number	2,364	2,142	1,986	2,219	2,337	10 %
Apprentices	Number	80	72	67	75	53	11 %
Location Geneva							
Staff	Number	272	230	236	293	299	18 %
Cockpit	Number	–	–	–	–	–	–
Cabin	Number	182	150	146	195	197	21 %
Ground	Number	90	80	90	98	102	13 %
Apprentices	Number	–	–	–	–	–	–

Transport key figures	Unit	2023	2022	2021	2020	2019	±% PY
Aircraft	Number	88	89	91	93	91	-1 %
Vehicles	Number	132	178	–	–	–	–
Of which e-vehicles	Number	3	2	–	–	–	–
Number of flights	Number	130,480	106,477	56,210	48,082	150,960	23 %
Number of passengers	Number	16,458,744	12,765,209	5,898,184	4,810,435	18,880,751	29 %
Regular SWISS flights[1]							
Seat kilometres offered, SKO	Million pkm	40,122	32,995	21,557	18,440	50,023	22 %
Freight tonne kilometres offered, FTKO	Million tkm	2,780	2,387	1,769	1,377	3,170	16 %
Tonne kilometres offered, TKO	Million tkm	6,822	5,710	3,940	3,235	8,208	19 %
Passenger kilometres, PKT	Million pkm	34,459	26,709	11,364	9,775	42,711	29 %
Freight tonne kilometres, FTKT	Million tkm	1,246	1,294	969	845	1,689	-4 %
Tonne kilometres, TKT	Million tkm	4,718	3,984	2,095	1,811	5,926	18 %

[1] SWISS flights, excluding other flights (see footnote 4) and flights operated by wet-lease partners.

6 Environmental indicators

Flight operations	Unit	2023	2022	2021	2020	2019	±% PY
Absolute fuel consumption							
Regular SWISS flights[1]	t	1,175,337	982,277	649,895	556,711	1,472,585	20 %
Regular flights, wet-lease partners[2]	t	119,181	59,103	10,835	13,327	54,761	102 %
Other flights[3]	t	1,159	380	267	826	304	205 %
All flights	t	1,295,677	1,041,760	660,997	570,863	1,527,650	24 %
Absolute carbon dioxide emissions							
Regular SWISS flights[1]	t	3,702,311	3,094,172	2,047,168	1,753,639	4,638,643	20 %
Regular flights, wet-lease partners[2]	t	375,421	186,176	34,131	41,980	172,497	102 %
Other flights[3]	t	3,650	1,196	840	2,600	959	205 %
All flights	t	4,081,382	3,281,544	2,082,139	1,798,219	4,812,098	24 %

[1] SWISS flights, excluding other flights (see footnote 4) and flights operated by wet-lease partners.
[2] SWISS flights, excluding other flights (see footnote 4).
[3] Ferry flights, special flights, test flights, training flights, cancelled flights.

Flight operations, regular SWISS flights[1]	Unit	2023	2022	2021	2020	2019	±% PY
Specific fuel consumption							
Passenger transport	l/100 pkm	3.22	3.15	4.10	3.64	3.22	2 %
Freight transport	l/FTKT	0.29	0.30	0.36	0.38	0.28	-2 %
Specific carbon dioxide emissions							
Passenger transport	g/100 pkm	8.07	7.91	10.30	9.14	8.08	2 %
Freight transport	g/tkm	739	755	903	958	704	-2 %
Nitrogen oxide emissions							
Absolute	t	19,684	16,297	11,204	9,496	25,697	21 %
Specific, passenger transport	g/100 pkm	42	41	51	51	44	2 %
Specific, freight transport	g/tkm	4.23	4.13	5.61	5.13	3.99	3 %
Carbon monoxide emissions							
Absolute	t	1,858	1,667	1,287	1,072	3,168	11 %
Specific, passenger transport	g/100 pkm	4.19	4.56	6.84	6.60	5.91	-8 %
Specific, freight transport	g/tkm	0.33	0.35	0.53	0.48	0.38	-4 %
Fuel Dumps							
Events, total	Number	5	8	1	2	3	-38 %
Medical reasons	Number	5	5	0	0	0	0 %
Technical reasons	Number	0	3	1	2	2	-100 %
Other reasons	Number	0	0	0	0	1	–
Fuel amount	t	150	190	38	85	98	-21 %

Reduction measures flight operations	Unit	2023	2022	2021	2020	2019	±% PY
Carbon dioxide emissions, reduction through operational measures	t	12,976	–	–	–	–	–
Carbon dioxide emissions, reduction through the use of SAF	t	5,380	–	–	–	–	–

Investment in climate protection projects	Unit	2023	2022	2021	2020	2019	±% PY
Carbon dioxide emissions, offset through investment in climate protection projects	t	48,500	-	-	-	-	-

[1] SWISS flights, excluding other flights (see footnote 4) and flights operated by wet-lease partners.

Environmental indicators ground operations[4]	Unit	2023	2022	±% PY
Location Zurich				
Total use of land	m^2	106,376	–	–
Total sealed area	m^2	56,334	–	–
District heating	kWh	13,587,885	14,435,900	-6 %
Cold	MWh	969,163	838,389	16 %
Electricity	kWh	7,017,783	6,964,502	1 %
Water	m^3	48,987	39,309	25 %
Waste, thermal utilisation	kg	325,830	202,684	61 %
Waste, recycling	kg	252,665	182,560	38 %
Location Geneva				
Total use of land	m^2	6,164	–	–
Total sealed area	m^2	4,535	–	–
District heating	kWh	849,650	681,812	25 %
Electricity	kWh	351,719	367,710	-4 %
Water	m^3	2,242	1,799	25 %
Waste, thermal utilisation	kg	3,910	15,020	-74 %
Waste, recycling	kg	10,515	5,298	98 %
Fuel consumption vehicles				
Diesel	l	43,137	38,376	12 %
Petrol	l	66,556	52,763	26 %
Mobility				
Service flights	t CO_2	3,359	2,158	56 %

[4] The operational consumption at the SWISS locations is recorded.

Data delimitation and Calculation methodology

Data delimitation

Unless otherwise stated, reporting on transport performance, kerosene consumption and emissions from flight operations is based on the following data delimitation:

1. All scheduled and charter flights by Swiss International Air Lines are recorded. Includes third-party services, wet-lease partners who operate flights on behalf of SWISS.

Calculation methodology

2. Kerosene absolute: Kerosene consumption is determined on the basis of actual flight operations and measured consumption volumes. This covers all flight phases – from taxiing on the ground to diversions and holding patterns in the air.

3. Emissions absolute: The calculation of absolute CO_2 emissions from flight operations is based on actual kerosene consumption in the respective reporting year. An emission factor of 3.15 t CO_2 / tonne of kerosene is used for the combustion of one tonne of kerosene. When calculating non-CO_2 emissions, each aircraft-engine combination in the fleet is considered separately, taking into account the annual average profiles of the individual sub-fleets. This makes it possible to determine emissions as a function of altitude, distance, thrust and load. This is particularly necessary for nitrogen oxides (NOX) and carbon monoxide (CO)..

4. Specific consumptions and emissions: The calculation of specific consumptions and emissions puts the absolute values in relation to transport performance. For example, the key figure litres per 100 passenger kilometres (l/100 pkm) is calculated on the basis of the actual load factor and the kerosene actually used. The distances used refer to great circle distances. The standard of 100 kilograms on average is applied for passengers and their luggage, and the weighed weight for freight. 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. Since 2013, the DIN EN 16258 standard has provided a framework for the standardised calculation of greenhouse gas emissions for transport processes. The Lufthansa Group adjusts to this guideline with regard to payload allocation. Starting with the reporting year 2024, the Lufthansa Group will carry out these calculations on the basis of the new international standard ISO 14083:2023.

5. NOX and CO emissions are determined on the basis of an annual average flight profile of the Lufthansa Group. This makes it possible to determine emissions as a function of altitude, distance, thrust and load.

6. Fuel type (vehicles): The data on the fuel consumption of company vehicles is derived from the actual amount of fuel tanked, which is documented by fuel card statements.

7. Electricity, heating, cooling and water consumption: All consumption figures for buildings over which Swiss International Air Lines has operational control in Zurich and Geneva as part of a lease or ownership relationship are recorded. The data sources are meters and bills from energy suppliers.

8. Waste: Waste data is compiled and analysed annually from the transfer notes and invoices from the waste disposal companies.

7 Declaration of validity

validiert durch
MÜLLER-BBM
CERT GMBH

EMAS

GÜLTIGKEITS-ERKLÄRUNG

ENVIRONMENTAL VERIFIER'S DECLARATION ON VERIFICATION AND VALIDATION ACTIVITIES

SWISS

Swiss International Air Lines Ltd.
Obstgartenstrasse 25
8302 Kloten / Suisse

The undersigned Dr. Stefan Bräker, EMAS-Environmental verifier with EMAS environmental verifier registration number DE-V-0272, accredited or licensed for the scope „Air traffic" (51.1,51.21 and 52.21) declares to have verified whether the organization's flight operations and ground operations at the Zurich and Geneva sites as indicated in the environmental statement with the registration number DE-155-00367 meet all requirements of Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organizations in a Community eco-management and audit scheme (EMAS).

By signing this declaration, I declare that:

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

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

Kerpen, 07.06.2024

Bräker

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Further information on the SWISS Corporate Responsibility activities is available at:
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