

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Lufthansa Group (LHG), headed by Deutsche Lufthansa AG is a leading European airline group with operations worldwide. It plays a leading role in its European home markets. LHG is composed of the segments **Network Airlines**, **Eurowings**, **Logistics**, **Technics (MRO)** and **Catering** as well as Additional Businesses and Group Functions. LHG is an aviation group with operations worldwide. In the financial year 2020, the LHG generated revenue of **13.6 bn EUR** and employed as of 31-12-20 **110,065 employees** and **757 aircraft**.

The **Network Airlines** segment comprises Lufthansa German Airlines, SWISS, Austrian Airlines and Brussels Airlines. With their multi-hub strategy, the Network Airlines offer their passengers a premium, high-quality product and service, with the multi-hub strategy which includes the hubs of Frankfurt, Munich, Vienna, Zurich, Brussels and a comprehensive route network with an outstanding degree of travel flexibility. The strategic focus on quality has been rewarded by numerous titles awarded to Lufthansa Group Airlines by renowned agencies like Skytrax or the Airport Transport World (ATW).

Eurowings focuses on short-haul routes in direct traffic. The equity investment in SunExpress is also part of this segment. Eurowings provides an innovative and competitive offering for price-sensitive and service-oriented customers in the growing European direct traffic segment.

Logistics: In addition to **Lufthansa Cargo AG** (the Lufthansa Group's logistics specialists), the logistics segment includes the airfreight container management specialist **Jettainer Group**, the **time:matters** subsidiary, which specialises in particularly urgent consignments, and the equity investment in the cargo airline **AeroLogic**.

MRO: Lufthansa Technik AG is the world's leading independent provider of maintenance, repair and overhaul services (MRO) for civilian commercial aircraft. Lufthansa Technik AG serves more than 800 customers worldwide, including OEMs, aircraft leasing companies and operators of VIP jets, as well as airlines.

Catering LSG Group: As LHG will focus more on the airline business, a contract with Gategroup was signed in late 2019 for the sale of the LSG group's European business. The sale was closed on 2 December 2020. Remaining activities of LSG Group are to be sold as soon as the operating environment permits.

Additional Businesses and Group Functions include the Group's service and financial companies, above all AirPlus, Lufthansa Aviation Training and Lufthansa Systems as well as the Group functions for the Lufthansa Group.

The business segments and the airlines are each under their own management. Overall coordination is by means of the Executive Board of the Lufthansa Group and the Group Executive Committee, which consists of the members of the Executive Board of the Lufthansa Group and the CEOs of the main companies. The supervisory Board of Deutsche Lufthansa AG consists of 20 members - 10 shareholder representatives and 10 employee representatives.

The **Executive Board of Deutsche Lufthansa AG was restructured** in terms of responsibilities and individuals as of **1 January 2020**. Its new formation reflects the strategic transition of the Lufthansa Group from an aviation group to an airline group. This should serve to sharpen customer focus, strengthen digitalization endeavors and establish **environmental, social and governance (ESG) responsibility** at Executive Board level.

Global air transport is currently experiencing its worst crisis ever. According to IATA, the severity of the COVID-19 impact is clearly shown in the semiannual results: Global RPKs fell by 58% in H1 2020 vs. H1 2019 - considered to be the most severe aviation crisis prior to 2020. IATA published a forecast on July 28 2020, in the base case scenario, global passenger traffic will not return to pre-COVID-19 levels until 2024.
(Source: <https://www.iata.org/en/pressroom/pr/2020-07-28-02/>)

IATA will publish a revised forecast on the 28th of July 2021. In that base case scenario, global passenger traffic will not return to pre-COVID-19 levels until 2023 in passenger terms and 2024 in RPK terms.

At the **extraordinary General Meeting on June 25, 2020** the shareholders of Deutsche Lufthansa AG voted in favor of accepting the capital measures and the participation of the **Economic Stabilization Fund (WSF)** of the Federal Republic of Germany in Deutsche Lufthansa AG. The package provides for stabilization measures and loans of up to 9 bn EUR. To face this crisis, the Lufthansa Group has initiated severe cost cutting and restructuring measures and meanwhile the companies of the Lufthansa Group are working at full speed to get their operations up and running again.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1 2020	December 31 2020	Yes	3 years

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

Albania
Algeria
Angola
Argentina
Armenia
Austria
Azerbaijan
Barbados
Belarus
Belgium
Benin
Bosnia & Herzegovina
Brazil
Bulgaria
Burkina Faso
Burundi
Cameroon
Canada
Chile
China
China, Hong Kong Special Administrative Region
Colombia
Costa Rica
Côte d'Ivoire
Croatia
Cuba
Cyprus
Czechia
Democratic Republic of the Congo
Denmark
Dominican Republic
Egypt
Estonia
Ethiopia
Finland
France
Gambia
Georgia
Germany
Ghana
Greece
Hungary
Iceland
India
Iraq
Ireland
Israel
Italy
Japan
Jordan
Kazakhstan
Kenya
Kuwait
Latvia
Lebanon
Liberia
Lithuania
Luxembourg
Maldives
Malta
Mauritius
Mexico
Micronesia (Federated States of)
Montenegro

Morocco
Myanmar
Namibia
Netherlands
New Zealand
Nigeria
North Macedonia
Norway
Panama
Philippines
Poland
Portugal
Republic of Korea
Republic of Moldova
Romania
Russian Federation
Rwanda
Saudi Arabia
Senegal
Serbia
Seychelles
Sierra Leone
Singapore
Slovakia
Slovenia
South Africa
Spain
Sri Lanka
Sweden
Switzerland
Thailand
Togo
Tunisia
Turkey
Uganda
Ukraine
United Arab Emirates
United Kingdom of Great Britain and Northern Ireland
United Republic of Tanzania
United States of America
Venezuela (Bolivarian Republic of)
Viet Nam

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

EUR

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Financial control

C-T00.7/C-TS0.7

(C-T00.7/C-TS0.7) For which transport modes will you be providing data?

Aviation

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Board-level committee	Group Executive Board of Deutsche Lufthansa AG: In the reporting year 2020 the "Group Executive Board of Deutsche Lufthansa AG" has been responsible for reviewing the Group's climate related strategy, measures and target setting. Decision 2020: The Group Executive Board decided e.g. to go further than industry's (IATA) CO2 targets. The Group Executive Board decided to reduce CO2 (flight) emissions by half in 2030 based on 2019 and to reach net zero CO2 (flight) emissions in 2050. 18 new and fuel efficient aircraft went into service with the Lufthansa Group airlines in 2020, despite the tense economic situation Furthermore the Board decided to confirm previous years targets - despite the COVID 19 crisis - • 100% compensation of CO2 emissions - starting in 2019 - for all business related flights of LHG employee • CO2 neutral mobility on the ground by 2030 in Germany, Austria, Switzerland and Belgium • Switch to carbon neutral electricity in 2019 for all LHG-buildings in Germany, Austria and Switzerland. The strategy and measures has been derived and prepared by the Head of Corporate Responsibility, direct report to the Executive Board member who is responsible for Corporate Responsibility in close cooperation with the Senior Vice President "Corporate International Relations and Government Affairs" (Direct Report to the Chief Executive Officer) .
Chief Financial Officer (CFO)	Since the implementation of the EU CSR Directive for the first time for the reporting year 2017 and also for this reporting year 2020 the Group's "Chief Financial Officer" had the final oversight of the annual report which includes the Non-financial declaration encompassing the climate / environmental strategy, climate-related risk assessment, organization, management, measures and targets. The Non-financial declaration is a compulsory part of the annual report and was subject to a voluntary audit with limited assurance in accordance with ISAE 3000 (revised) commissioned by the Audit Committee of the Supervisory Board.
Board-level committee	Supervisory Board of Deutsche Lufthansa AG 1. The "Supervisory Board" of the Lufthansa Group as a whole reviews the entire Lufthansa Group's strategy of which climate /environmental issues are part of. Shareholder representatives cover the targeted skill set which also comprises functional knowledge & experiences in the field of "sustainability" (currently: two out of 10 shareholder representatives with dedicated knowledge & experiences in the field of "sustainability"). 2. Additionally the "Audit Committee" of the Lufthansa Group Supervisory Board reviews and audits the Non-Financial declaration in their scheduled meetings. Climate /environmental issues and climate risk assessment is part of the Non-Financial declaration Decision in 2020: Continued integration of CO2 related targets into Executive Board remuneration: The Supervisory Board defined the parameter "Environment" as the sustainability target for the LTI (long Term Incentive) using the fuel efficiency target adopted by IATA: 1,5% annual improvement in specific fuel consumption.
Other, please specify (Corporate Responsible Council)	The Corporate Responsibility Council has been a groupwide cross-functional advisory council for managing corporate responsibility, including environmental issues and climate-related risk assessments across the entire Lufthansa Group, which is part of every scheduled meeting. The following Group Heads are part of the CRC (Corporate Responsibility Council) - they are all Direct Reports to an "Executive Board Member": Senior Vice President Corporate Strategy, Mergers & Acquisitions, Senior Vice President "Corporate International Relations and Government Affairs", Executive Vice President Corporate Controlling which includes Risk Management, Group Head of Legal and Compliance, Vice President Corporate Sourcing, Senior Vice President Corporate Communication, Vice President Investor Relations. The CRC usually takes place ca. twice a year. Due to the COVID-19 pandemic the advisory role of the CRC has been realized by the GEC (Group Executive Committee: all Executive Board Members plus CEOs of LHG main subsidiaries plus Executive Vice Presidents (Corporate Controlling, Corporate Strategy, Corporate Communications) GEC involvement 2020: Preparation and discussion of CO2 target setting which finally has been decided by the Executive Board in 2020.
Other, please specify (Head of Corporate Responsibility)	The Head of Corporate Responsibility is a direct report to the member of the Executive Board (Chief Customer Officer) responsible for the coordination of Group-wide environmental goals, strategies and measures, assessing climate-related risks and opportunities. This includes the management of environmental activities within the Lufthansa Group including subsidiaries e.g. Lufthansa German Airlines, Lufthansa Technik, SWISS, Austrian Airlines, Eurowings, Brussels Airlines as well as the analysis and development of innovative environmental concepts – always in close cooperation with the departments concerned. The new organizational structure has been implemented in 2020 recognizing the utmost importance of sustainability as a holistic approach. Decision in 2020: - Net zero CO2 (flight) emissions in 2050 and halving CO2 (flight) emissions in 2030 based on 2019 CO2 emissions - Several LOI, MoU to foster Sustainable Aviation Fuels (SAF) with i.e. ETH Zurich and Climeworks - decision to take part in HySupply initiative to foster green hydrogen - integration of the Lufthansa platform "Compensaid" into the flight booking processes to enable customers to purchase SAF in order to substitute fossil fuel.
Other C-Suite Officer	In 2020 an additional member of the Executive Board has been established: Chief Customer Officer who is responsible for Corporate Responsibility including environmental strategy. The Chief Customer Officer like the CFO has had the final oversight of the Non Financial declaration. Decision 2020: The CCO proposes the environmental targets such as net zero CO2 emissions in 2050 and halving the net CO2 (Flight) emissions based on 2019 by 50% in 2030. The CCO has also decided to become TCFD supporter, starting TCFD disclosure for 2020.
Chief Risk Officer (CRO)	In accordance with the CSR Directive Implementation Act (CSR-RUG), the Lufthansa Group's risk management also covers aspects relevant to CSR (incl. climate change) and their risks for external stakeholders. Risks are reported in the combined non-financial declaration in line with CSR-RUG if they would have a severely adverse impact on the Company and their occurrence is highly likely. In 2020, the CSR content was updated to include mitigating instruments and measures.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Scope of board-level oversight	Please explain
Scheduled – some meetings	<p>Reviewing and guiding strategy</p> <p>Reviewing and guiding major plans of action</p> <p>Reviewing and guiding risk management policies</p> <p>Reviewing and guiding annual budgets</p> <p>Reviewing and guiding business plans</p> <p>Setting performance objectives</p> <p>Monitoring implementation and performance of objectives</p> <p>Overseeing major capital expenditures, acquisitions and divestitures</p>	<Not Applicable>	<p>Board Level Committee: 1. Lufthansa Group Executive Board Meetings takes place every two weeks. Additionally climate-related issues are also being prepared and discussed at the strategic "Executive Board Offsite" Meeting (twice a year). Climate related strategy has been integrated in overall strategy decisions by the Executive Board in some of their scheduled Board meetings. The targets from 2019 have been despite the COVID-19 pandemic re-established in 2020 such as: 1. to carbon neutrality on ground by 2030 in Lufthansa Group home markets (Germany, Austria, Switzerland, Belgium) 2. to off-set 100% of LHG own duty flights 3. to achieve 100% green electricity in home markets Most relevant decision for climate related issues is the investment into new fuel efficient aircrafts. These decisions are being taking by the Executive Board as well as the Supervisory Board. In 2020, the Lufthansa Group took delivery of 18 new aircrafts which are up to 25% more fuel efficient. Despite the crisis, decision to still modernize the fleet with the most efficient aircraft has been taken. The Group Executive Board reviewed the introduction and pushed the further integration of COMPENSAID. This online CO2-compensation platform, has been in-house developed by the Lufthansa Innovation Hub. The customer can either buy sustainable aviation fuel and/or compensate their flights with high quality (Gold Standard) CO2 reduction projects with our long-term partner "myclimate" or to use a combination of both. 2. Group Executive Committee (GEC) consists of Executive Board Members plus CEOs of the Business Units plus Executive Vice Presidents (Corporate Controlling, Corporate Strategy, Corporate Communications): Climate-related issues were scheduled in 2020 at the agenda of the Group Executive Committee at some meetings with relevance on strategy or political decisions, risk management or major capital expenditures like aircraft or Sustainable Aviation Fuel. Therefore climate related considerations were integrated in board decisions on strategy, business plans or major capital expenditures.</p>
Scheduled – some meetings	<p>Reviewing and guiding strategy</p> <p>Monitoring and overseeing progress against goals and targets for addressing climate-related issues</p>	<Not Applicable>	<p>"Supervisory Board "of the Lufthansa Group: The environmental strategy as part of the corporate responsibility strategy is being reviewed annually by the Supervisory Board as part of the entire Lufthansa Group Strategy. Strategy and environmental targets as well as major projects such as strategic plans concerning e.g. Fleet renewal, Sustainable Aviation Fuels are also being reviewed.</p>
Scheduled – some meetings	<p>Reviewing and guiding strategy</p> <p>Other, please specify (Recommends the acknowledgement of the non-financial report by the Supervisory Board)</p>	<Not Applicable>	<p>"Audit Committee" of the Supervisory Board and the " CFO" having reviewed and audited the Non Financial declaration which encompasses also the climate / environmental strategy, risks, targets and measurement</p>
Scheduled – all meetings	<p>Reviewing and guiding strategy</p> <p>Reviewing and guiding major plans of action</p> <p>Reviewing and guiding risk management policies</p> <p>Monitoring and overseeing progress against goals and targets for addressing climate-related issues</p>	<Not Applicable>	<p>The Corporate Responsibility Council takes place ca. twice a year to discuss purely corporate responsibility issues including climate / environmental issues. In the reporting year this task has been mainly realized by the GEC on Board level (Group Executive Committee) due to the COVID 19 pandemic.</p>

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
<p>Other C-Suite Officer, please specify (Chief Customer Officer) <i>The highest non Board but management level position dealing with climate-related issues is the Head of Corporate Responsibility which has been established on 01.01.2020 as a direct report to the CCO (Chief Customer Officer).</i></p>	<Not Applicable >	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly
<p>Corporate responsibility committee <i>The Corporate Responsibility Council (CRC) is a groupwide cross-functional advisory council, managing corporate responsibility and environmental issues across the Lufthansa Group. Following Group Heads are part of the CRC - they are all Direct Reports to an "Executive Board Member": Executive Vice President Group Strategy, Mergers & Acquisitions, Senior Vice President "Corporate International Relations and Government Affairs", Executive Vice President Corporate Controlling which includes Risk Management, Group Head of Legal and Compliance, Vice President Corporate Sourcing, Executive Vice President Corporate Communication, Vice President Investor Relations. The CRC usually takes place ca. twice a year. Due to the COVID 19 pandemic has been realized by the GEC (Group Executive Committee: all Executive Board Members plus CEOs of LHG main subsidiaries plus Executive Vice Presidents (Corporate Controlling, Corporate Strategy, Corporate Communications).</i></p>	<Not Applicable >	Other, please specify (Giving advice on reported climate-related risks and opportunities)	<Not Applicable>	Half-yearly
<p>Chief Risks Officer (CRO) <i>explanation see below C1.2.a</i></p>	<Not Applicable >	Assessing climate-related risks and opportunities	<Not Applicable>	Quarterly
<p>Other committee, please specify (Group Executive Committee Executive Board Members plus CEOs of the Business Units) <i>see description in C1.2a and previous C1.1</i></p>	<Not Applicable >	Other, please specify (Preparing decision and giving strong advice on climate related risks and opportunities for the Executive Board)	<Not Applicable>	As important matters arise
<p>Other, please specify (Executive Board Strategic Offsite) <i>explanation see below C1.2.a</i></p>	<Not Applicable >	Other, please specify (Evaluating and taking decisions on climate-relates Risks and opportunities)	<Not Applicable>	Half-yearly
<p>Other, please specify (Head of Corporate Responsibility, Vice President)</p>	<Not Applicable >	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

The Chief Customer Officer is Executive Board Member of Lufthansa Group, responsible for Customer, IT and Corporate Responsibility. Climate related issues are monitored at the Executive Board meetings which takes place twice a month.

The Chief Risk Officer is also the Executive Vice President Corporate Controlling and has been reporting in 2020 to the CFO of LHG. In regards of Risk Management this position is responsible for the groupwide Risk Management System. Environmental /climate related risks are reported and monitored within the RMS as are other sustainability risks. The Group Head of Corporate Responsibility has been the Risk Owner of environmental /climate related risks in 2020. The risk assessment is done quarterly. The entire Risk Management System is being reviewed by the Executive Board on a regular basis and discussed annually with the Supervisory Board (Audit Committee). The risk ownership of a particular environmental / climate related risks depends on its most important characteristic. While the Head of Corporate Responsibility is the risk owner of climate- or environmental risks. Environmental / climate related risks with an underlying market price like for example emission trading are owned by the Head of Corporate Finance.

The Corporate Responsibility Committee (Council) is a group-wide cross-functional advisory council for managing corporate responsibility and environmental issues including climate issues across the entire Lufthansa Group. The CRC advises and gives input on environmental issues such as strategy, risks and also climate related opportunities. The following Group Heads are part of the CRC: Executive Vice President Group Strategy, Mergers & Acquisitions, Senior Vice President "Corporate International Relations and Government Affairs", Executive Vice President Corporate Controlling which includes Risk Management, Group Head of Legal and Compliance, Vice President Corporate Sourcing, Executive Vice President Corporate Communication, Vice President Investor Relations. The CRC usually takes place twice a year or is integrated within the GEC (see below). Due to the COVID-19 pandemic and the newly established Board Function which includes Corporate Responsibility as an own department the CRC will be newly established.

The Group's Head of Corporate Responsibility has been reporting to the Executive Board Member responsible for Customer, IT and Corporate Responsibility (Chief Customer Officer, CCO) and is responsible for the coordination of Group-wide environmental goals, strategies and measures, assessing climate related risks and opportunities. This includes the management of environmental activities within the Lufthansa Group for e.g. Lufthansa German Airlines, Lufthansa Technik, SWISS, Austrian Airlines, Eurowings, Brussels Airlines as well as the analysis and development of innovative environmental concepts – in cooperation with the departments concerned. The Group Head of Corporate Responsibility has been the Risk Owner of environmental /climate related risks in 2020.

Group Executive Committee (GEC)

Executive Board Members plus CEOs of LHG main subsidiaries plus Executive Vice Presidents (Corporate Controlling, Corporate Strategy, Corporate Communications) to act as advisory council to the Board, preparing various Board decisions also those of climate / environmental Group Strategy inclusive of targets and measures.

Executive Board Strategic Offsite

The Executive Board Strategic Offsite takes place twice a year. It is a strategic gathering of the Executive Board Members to discuss in depth strategic issues inclusive of climate-, environmental strategies.

LHG encompasses many subsidiaries. To ensure a fitting environmental /climate related strategy and monitoring concept, many of the larger sub-companies have additional Environment/Sustainability Managers who are steering and monitoring climate issues in their respective business unit. Most of the positions include issues like monitoring and managing energy consumption and overall efficiency, waste management, green energy and carbon-neutral mobility. The Business Units are required to meet the Lufthansa Group goals and pathways, they are free to set even more ambitious goals. For example, Lufthansa CityLine and Lufthansa Technik have been pioneers within the Group when it comes to the implementation of environmental management systems or the use of green energy, e-mobility and waste management. Brussels Airlines has been the first company to consume electricity from renewable sources only. In 2020, all Lufthansa Group companies in Germany, Austria and Switzerland use almost 100% green electricity. These achievements are just examples to illustrate how Environment/Sustainability Managers in different positions all over the company support "their" own company to set and reach ambitious sustainability targets.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	Executive Board remuneration consists of fixed, performance-unrelated and performance-related variable components. The three main components are the base salary, the one-year variable remuneration (annual bonus) and the multi-year variable remuneration (long-term incentive, LTI). Other performance-unrelated components also being a part of the remuneration system, are the ancillary benefits and the retirement benefits. The Share Ownership Guidelines are also an essential component of the remuneration system. They oblige the Executive Board members to hold a multiple of their base salary in Lufthansa shares during the service period on the Executive Board and beyond. 15% of the target achievement of the annual bonus and the long-term incentive is based on non-financial sustainability targets. The Supervisory Board decides on the non-financial sustainability targets on an annual base. The Supervisory Board focuses on sustainability aspects in particular to ESG topics.

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Board/Executive board	Monetary reward	Please select	For the financial year 2020, the Supervisory Board defined "customers" and "employees" as key topics for the sustainability targets in the one-year variable remuneration. For the long-term variable remuneration granted in 2020 the Supervisory Board has set the parameter "Environment" as focus topic for the sustainability criteria. Therefore the IATA targets for fuel efficiency were used, i.e. the average kerosene consumption to carry a passenger 100 kilometres which provide for an improvement of 1.5% p.a. in specific fuel consumption / specific CO2 emissions. To calculate performance, the improvement in specific CO2 emissions is measured annually over the four-year performance period. This then accounts for one-quarter of the total performance against the sustainability target at the end of the performance period. The performance in 2020 for the environmental parameter was 0% due to the COVID-19 pandemic. This then accounts for one-quarter of the total target achievement of the sustainability target at the end of the performance period. Due to the regulations of the "Wirtschaftsstabilisierungsfond"(WSF) the monetary reward will not be paid.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	0	1	The short-term time horizon for climate related risks is aligned with the financial time horizons.
Medium-term	1	3	The medium-term time horizon for climate related risks is aligned with the financial time horizons.
Long-term	3	10	The long-term time horizon for climate related risks is aligned with the financial time horizons. Furthermore, specific impacts of climate-related risks are discussed in special committees like for example the finance cockpit committee, which responsibility is to identify, assess, monitor and control major financial risks. In this committee the aspects of CORSIA and EU ETS have been discussed for a 10 years time horizon. The mitigation path for realizing net zero CO2 emissions (SCOPE 1) in 2050 has been discussed with the Lufthansa Group Executive Board.

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

We define **substantive financial impact** as **material percentage change of expected EBIT**. We consider any opportunity or risk to be of substantive strategic impact if it materially affects Lufthansa Group's future business potential and, therefore, its valuation. This includes changes of future growth potential – e.g. due to changes of customer satisfaction, regulatory limitations, financing capabilities, etc. – as well as changes of future profitability (EBIT margin, ROCE) – e.g. due to changes of cost positions, capital efficiency, etc.

The methodological evaluation of risks having a substantive financial impact on LHG business within the **Enterprise Risk Management** at Lufthansa Group (LHG) distinguishes between qualitative and quantitative risks. Climate related risks are updated and (re-)assessed on a quarterly basis. Financial impacts of climate-related risks are quantified if possible, otherwise they are described as qualitative risks.

Qualitative risks are long-term developments and challenges with potentially adverse consequences for the LHG. Qualitative risks are often identified in the form of weak signals. As specific information often is not available, these risks can either not be quantified precisely or not quantified at all. To evaluate them as systematically as possible, estimates are made about the probability of their occurrence and their significance. Significance describes the potential impact of the individual risk or development under consideration of the reputation, the business model or earnings of the LHG.

After evaluation, both the individual qualitative and quantitative risks are **divided into priority classes A, B, C and D to assess their materiality**. The thresholds for classifying the monetary earnings effect are defined centrally for the LHG according to a standardized logic.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations
Upstream
Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

The Lufthansa Group (LHG) has implemented a systematic Enterprise Risk Management process at both Group level and at the level of larger Business Units within the LHG. Through that the Enterprise Risk Management process all significant risks of the LHG including climate-related risks are being identified, assessed and aggregated in a risk map. This process takes into account all kinds of risks, i.e. also risks related to climate change (CC) – including physical and transitional risks and opportunities. The risk map is updated quarterly in close cooperation with different committees/departments throughout the LHG. Thereby it is guaranteed that various professionals and environmental experts across the LHG evaluate the risks/ opportunities from Climate Change. Based on their assessment the financial and strategic impact on the Group from CC risks are made transparent. Asset specific risks/opportunities from climate change are assessed at the department level. Respective Group committees are being involved through consultation engagements and regular reporting. The departments use the Group environmental expert know how and data to capture and store information about the identified risks/opportunities. This information is being used to calculate key indicators, which help reducing risks from climate change by improving LHG's performance in environmental protection on a continuous basis. One example in mitigating risks or exercising certain control about the identified risks: LHG has identified environmental regulation as a risk. Prominent examples include changes to existing regulations (EU ETS, ETD) and emerging (CORSA, ReFUEL EU Aviation, national SAF mandates (e.g. PtL in Germany), RED III) as risks, which are always included in our climate-related risk assessments. Planned changes to existing regulations or upcoming new regulations as well as the implementation of efficient carbon reduction measures are part of the Enterprise Risk Management. The related financial risk management process consists of the compliance with relevant legal regulations (monitoring and reporting the emissions, paying the emissions debt with emissions allowances) and the discussion of the impact on allowances price changes on the earnings of the LHG. In the frame of our defined time horizon for identifying, and assessing short to long term risks (0 to 10 years), LHG has not identified any significant physical risks (see C2.2c.). Beside the financial impact, LHG actively participates in research projects e.g. installing measuring instruments on LHG examples include the AMDAR, CARIBIC and IAGOS projects, all of which have been initiated by the European and National funds aiming at understanding climate change on the atmosphere and in the wider sense on air traffic, in order to identify and manage potential upcoming environmental and or physical risks. Furthermore LHG engages in reducing CO2 emissions throughout flight operations, i.e. with the project BurnFAIR Lufthansa was the first airline worldwide demonstrating the feasibility of using biofuels on scheduled commercial flights in 2011. Most recently, Lufthansa applied for D-Kult - a joint project with scientific and system partners aiming to determine the most eco-efficient flight trajectories taking into account more contributors to climate change than just CO2 (esp. contrails). Being a front-runner here might become a competitive advantage in the future when more than CO2 is regulated. The systematic identification of risks and opportunities takes place in everyday processes and market observations. Scenario analyses and accurate return calculations are used to evaluate and prioritize opportunities and associated risks. Opportunities considered as advantageous are pursued and implemented by means of defined steps. They are managed by the established planning and forecasting processes and short-term projects if the time frame or nature of opportunities requires. At LHG there are several processes in place to identify and assess different kinds of climate-related risks both on company level and on individual subsidiaries: 1. Regulatory risks: LHG has a dedicated department (Corporate Responsibility) that regularly monitors environmental policy and regulative developments (e.g. through regular dialog with relevant authorities and policy makers) and analyses these developments for potential implications for the LHG and its subsidiaries. Furthermore, LHG is member in several national (e.g. BDL, BDI, econsense, BDF) and international industry associations (e.g. IATA, A4E) which are also monitoring and assessing political developments for the aviation sector. Lufthansa Group actively proposes policy mechanisms that ensure competitive neutrality while keeping (or even increasing) the ambition for climate regulation and promotes them publicly (e.g. in panel discussions). Most recently, Lufthansa Group even partnered with NGOs (T&E) when it comes to political positioning and SAF mandate design towards the European Commission. 2. Physical risks LHG has dedicated experts within the Corporate Responsibility department who are in a continuous dialogue with climate scientists and institutions (e.g. German Aerospace Centre (Deutsches Zentrum für Luft- und Raumfahrt; DLR). Since 1994 LHG actively participates in research projects aiming at understanding climate and atmospheric changes and their effect on air traffic. Examples see above. By these processes LHG experts (engineers, active pilots, profound scientists up to Ph.D.) are able to identify and assess potential physical long-term climate change risks for LHG as well as potential measures to reduce or counter such risks. 3. Reputational Risks To identify potential reputational environmental/climate risks LHG regularly conducts broad stakeholder surveys (10,000 participants in 2018) on sustainability. The responses of the stakeholders are combined with top management's assessments in a materiality matrix, which is being updated on a yearly basis. Additionally LHG is monitoring relevant media reporting on climate and aviation related topics to identify potential reputational risks for the LHG and its subsidiaries.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Because of the current EU ETS regulation for aviation sector and the periodic tightening of this regulation in conjunction with the volatile price development of emissions allowances, the relevance of this risk type is always included in LHG climate-related risk assessments. The ETS has two concrete risks to Lufthansa emission expenses: Reducing the emission cap and reducing the free allocation of allowances. In 2020 the existing (since 2012) Luftverkehrsteuer (aviation ticket tax) has been increased significantly. The tax has three geographical and distance zones. Any changes will have different financial impact which might impact consumer's behavior: on the one hand to reduce air travel as of higher costs and on the other hand as of ongoing public discussion.
Emerging regulation	Relevant, always included	Because of the emerging climate regulations like CORSIA for international flights and several unresolved questions regarding the concrete implementation and the harmonization with the EU-ETS starting with the pilot phase in 2021, the relevance of this risk type is always included in LHG climate-related risk assessments. Moreover, the European Commission is about to publish a bundle of legislative initiatives to support the targets of the EU Green Deal initiative launched in 2020. The bundle is named "Fit for 55 package", i.e. a legislative proposal for a SAF mandate in Europe (2% in 2025, 5 % in 2030) and a legislative proposal to end the exemption of the energy tax for jet fuel will be included to the amendments of EU ETS and the handling of CORSIA.
Technology	Not relevant, included	In the frame of our defined time horizon for identifying, and assessing climate-related risks (up to 10 years) we have not identified any technology related risks for the LHG. Technology risks will be industry-wide risks.
Legal	Not relevant, included	In the frame of our defined time horizon for identifying, and assessing climate-related risks (up to 10 years) we have not identified any legal risks for the LHG.
Market	Relevant, always included	In the frame of our defined time horizon for identifying, and assessing climate-related risks (up to 10 years) we have the following market risks identified for the LHG.: - Market price risks for emission allowances - SAF prices and SAF sourcing (presently a monopolistic market) - higher competition on market for voluntary carbon offsets - Competition impact due to emission regulations, especially in intercontinental competition.
Reputation	Relevant, always included	Any negative impact on brand perception has the potential to have impacts on the ability to hold customers or to attract new customers, to form partnerships and community relations and as well on institutional investors. This could result in a) reduction in passenger/customer preferences and therefore could have impacts on revenue and b) in a downgrading by rating agencies. Aviation has been identified as a "hard to decarbonize" industry with a growing carbon footprint. Public concern about climate change and negative perception about the aviation industry may lead to increased calls for operating restrictions or financial penalties and brand damage to airlines. To identify potential reputational environmental/climate risks LHG is regularly conducting broad stakeholder surveys on sustainability topics such as materiality analysis, conducted latest in 2018, send out to 10.000 stakeholders. The responses of the stakeholders are combined with top management's assessments in a materiality matrix, which has been published in the Group's sustainability report Balance and is also the basis for the Non-financial statement. Over the years ahead, this matrix serves the LHG as the base from which to advance the strategic development of corporate responsibility management (including climate topics). A broad Stakeholder survey in the context of the materiality analysis will be hold in 2022 - postponed due to COVID-19. Furthermore, LHG is monitoring relevant media reporting on climate and aviation related topics to identify potential reputational risks for the LHG and its subsidiaries.
Acute physical	Relevant, always included	Acute physical risks like isolated extreme weather events (e.g. cyclones, hurricanes, or floods) don't have the potential to jeopardize LHG business, because LHG focuses on diversifying its operations through a global network. Those effects will usually have a larger impact on ground operation but might also affect flight operation. Individual destinations and flight routes or regions could be affected. LHG is constantly improving its weather forecasting capabilities and works closely with meteorological organizations like the "Deutsche Wetterdienst" and research facilities around the world in order to improve climate and weather forecasts by more intensively using aircraft based weather information. During the flight, LHG pilots are using the so called newly developed "Enroute Weather Display" which has the most accurate data e.g. for turbulence areas.
Chronic physical	Not relevant, included	In the frame of our defined time horizon for identifying, and assessing climate-related risks (upt to 10 years) we don't have identified chronic physical related risks for the LHG.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Current regulation	Other, please specify (Market price risk of emission allowances)
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Primary potential financial impact

Increased indirect (operating) costs

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Risk description: Cost incurring from market price changes in the EU Emissions Trading Scheme (ETS) regulation and the upcoming CORSIA compensation scheme. Since 2012, the air transport sector is included in the ETS, requiring airlines operating within the EU to buy carbon allowances to offset their emissions. All flights carried out by the LHG within the European Economic Area (EEA) and since 2020 between EEA and Switzerland are subject to this scheme. In 2019 (pre COVID-19) around 8.7 mio tons of CO2 of which 63 % was offset by purchasing emissions allowances (EUA's), 37% was offset by the allocation of free allowances. In 2020 due to the COVID-19 pandemic the CO2 emissions under EU ETS and CH EHS were reduced and reached 3,1 mio tons of CO2 allowances. LHG received more than this CO2 emissions in free allocations. The EU-Allowance's (EUA) price has increased from around 5 EUR per allowance in the fall of 2017 to over 50 EUR. At the 30th of June 2021 the price stands at 56 EUR per allowance. It is expected, that costs for EUA's will continue to fluctuate significantly and will further increase in future due to an increased scarcity of available offsetting allowances. Increased emission costs negatively affecting LHG's result. LHG already takes into account the additional emission costs due to CORSIA, the measure initiated by the International Civil Aviation Organization (ICAO). CORSIA has aimed at stabilizing airline net emissions from international flights at the average level of 2019/ 2020 (so-called Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)) from 2021 onward. On 30th June 2020 it has been agreed by ICAO due to COVID-19 pandemic, to use only 2019 as baseline. The airlines are obligated to compensate their emissions exceeding the baseline by purchasing emission reduction units. Prices for eligible projects differ widely. This risk encompasses also according to LHG risk definition the market risks /risk of change in market prices for allowances.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

450000000

Potential financial impact figure – maximum (currency)

650000000

Explanation of financial impact figure

At year end 2019 the Lufthansa Group have made provisions of 104 mio EUR to cover the cost being subject to EU ETS and CH ETS. In 2018, the Lufthansa Group incurred expenses of 66 mio EUR to fulfill the EU ETS requirements. Before COVID-19 pandemic LHG assumed that within the next 3 years LHG would need to buy allowances for approximately 65% of its CO2 emissions p.a. caused by intra-EU and Swiss flights. The cost burden associated with this mainly depended on the price trend for emissions allowances and the development of LHG's transport- and CO2-performance. Based on 2019 figures and prognostic traffic growth within the EU as well as the inclusion of Switzerland in the intra-EU ETS in 2020 and a first estimation of CORSIA costs, the costs would have amounted to more than 450 mio EUR over the next 3 years. In price scenarios which were considered possible the impact could have been more than 200 mio EUR higher. The COVID-19 pandemic has impacted the demand for air traffic in a dramatic way. To what extent the pre-pandemic scenarios are still valid depends very much on how air traffic is going to develop over the next months. The numbers above represent now an upper scenario where air traffic returns very quickly to pre-pandemic levels and prices for allowances remain high. As ICAO has decided to change the CORSIA baseline from 2020 to 2019 the overall emission costs of the next three years will be considerable lower than the 450 mio EUR mentioned above.

Cost of response to risk**Description of response and explanation of cost calculation**

LHG has implemented and operates - IT structures and relevant processes to ensure verified emission reports - a hedging strategy for emission allowances procurement and - monitors CO2 and climate policy and regulatory developments constantly - a stringent risk controlling process which considers and monthly reports the actual and expected ETS and CORSIA costs and which shows possible scenarios for the future. The overall willingness to address climate-related risks has enabled LHG to react more flexible to reduce the financial impact of emission trading schemes. In addition, LHG implemented and monitored a total of 34 fuel-saving projects in 2020, which sustainably reduced CO2 emissions by some 52,600 tons only in 2020. The quantity of kerosene saved amounted to 16,700 tons. The saved amount of fuel equals ca. 196 return flights from Munich to New York with an A350 aircraft.

Comment

The estimated costs associated with management actions and maintenance of the instruments EU ETS regarding the introduction of an internal Emissions Trading organization and related processes (e.g. expenditures for internal personnel, ETS trading software, IT infrastructure, verification, quality check of monitoring concept, consulting) amounts to 3 mio EUR for the whole LHG. The running costs of the ETS organization within the LH Group are estimated on 0.5 mio EUR p.a.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation	Other, please specify (Widened regulation concerning emissions - EU Green Deal implications)
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Primary potential financial impact

Increased indirect (operating) costs

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Risk description: Cost incurring from tightening changes due to the EU Green Deal comprising for air transport various legal initiatives such as : EU ETS: The scope of the EU Emissions Trading Scheme (ETS) regulation and/or the CORSIA agreement and/or an inclusion in other emission trading schemes: LHG faces risk of additional negative financial impact if any one of the emission trading schemes is further tightening. As of 2012, the air transport sector has been included in the EU ETS, requiring airlines operating within the European Economic Area (EEA) to buy carbon allowances to offset their emissions. Changes to the current regulation are under way. For the time after 2023 there is for example one possible scenario, that the EU includes all EU-inbound and outbound flights in its scope of the ETS, if the CORSIA don't fulfill the expectations of the EU. Other scenarios include that there is no further free of cost allocation of some emission allowances to the participating airlines or that the current free of cost allocation is quickly phased out. Changes to the current system poses a risk of increasing the economic distortion to EU carriers like LHG which have their hubs within the EU. This would occur for example when - as competitor airlines with non-EU hubs could offer international routes without bearing ETS compliance costs. Furthermore, the interaction of CORSIA and EU ETS is still not settled with the risk of double burden although EU's proposal to ICAO is to use CORSIA only non EU routes to avoid double burden. ReFuel EU Aviation: The proposed Sustainable Aviation Fuel (SAF) mandate will significantly increase fuel cost. Especially as it will affect all fuel uplifts in the EEA (where nearly 70 % of all LHG fuel is uplifted). Energy Tax Exemption foresees the abolishment of the tax exemption for all jet fuel used within the EEA. Any of these regulation is geographically confined and therefore induces competitive distortion to the disadvantage of European airlines.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

As the legal initiatives in conjunction with the EU Green Deal have not yet passed the EU Parliament, it is not possible to estimate potential financial impact also in light of the ongoing COVID-19 pandemic effects on air travel. The financial impact of CORSIA is difficult to estimate yet because some relevant parameters of the regulation have not yet been decided on until now. Indirect financial impact could result from competition distortion between EU and non EU airlines is difficult to estimate.

Cost of response to risk

Description of response and explanation of cost calculation

LHG was actively involved in deriving the industry carbon emission targets adopted in 2009 (carbon neutral growth from 2020 and net reduction of 50% CO2 by 2050 compared to 2005) and has been active to encourage global political support for CORSIA. The former LHG Head of Environmental Issues was active member of IATA's CORSIA working group. Nevertheless, LHG is managing the remaining risk of regulatory duplication incl. adding cost and competitive distortion (for example EU ETS may continue to apply to international aviation during the phases of CORSIA) through direct political lobbying in Germany, Austria, Switzerland, Belgium and EU as well as through airline industry groups and associations: BDL (Germany), Airlines for Europe (A4E) and IATA. The LHG team of Corporate Responsibility is actively working on a monthly to fortnight basis in the SEAC (Sustainability Environmental Advisory Council) working Group of IATA, the environmental working group of A4E and the Sustainability working group of BDL.

Comment

The costs associated with our efforts to monitor and manage political lobbying for regulatory emissions trading initiatives result from an optional adaptation of our IT infrastructure and internal staff expenses, as well as the production of related communication materials. The cost of these measures are estimated at less than EUR 500,000 per year.

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Acute physical	Increased severity and frequency of extreme weather events such as cyclones and floods
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Primary potential financial impact

Decreased revenues due to reduced production capacity

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Increase in extreme weather conditions: The Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC) indicates that a change in temperature extremes is very likely in the future. Heat waves will be more intense, more frequent and longer lasting in a future warmer climate and cold episodes are projected to decrease significantly. For the Lufthansa Group (LHG), a change in temperature/weather extremes could result in higher rates of flight cancellations or delays and therefore loss of revenues and/or in higher operational cost due to the higher costs for use of air-condition systems at aircraft on ground and at airports. The effects could range from temporary closure of stations or airspaces to damage/destruction of buildings, apron facilities, runways, air traffic control, media infrastructure and aircraft. In the reporting year 2020 LHG has not reported high numbers of flight cancellations due to weather but is watching the development closely. Between November 2017 and October 2018 for instance the weather related flight cancellations of Lufthansa German Airlines at Frankfurt airport amounted for 1,280 flights - a doubling compared to the same period of the previous year. In relation to the over 150,000 departures during this period, however, this is still a relatively manageable proportion.

Time horizon

Long-term

Likelihood

More likely than not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

1000000

Potential financial impact figure – maximum (currency)

5000000

Explanation of financial impact figure

In 2020 we did not have that many cancellations due to severe weather conditions, so we are still using 2018 as a basis to calculate a range of potential financial impact: In 2018 for example Lufthansa German Airlines had to cancel 1,280 flights at Frankfurt Airport due to weather conditions. In the event of cancellations due to weather conditions in accordance with EU261/2004 directive, the passenger is not entitled to compensation. Nevertheless, according to EU law, airlines have to provide food, drinks, hotels and substitute transportation. These costs could add up to several mio EUR p.a. – any climate change-related increase of flight cancellations thus will have negative effects on earnings for LHG. However, these costs are difficult to quantify in a meaningful way at the moment. The above mentioned range is an approximate estimate based on experience from November 2017-October 2018 where we had extreme weather conditions.

Cost of response to risk

Description of response and explanation of cost calculation

LHG focuses on diversifying its operations through a global network. We try to compensate for weather related interruptions within our networks in order to avoid major long-term damage to our business. Moreover, LHG is constantly improving its weather forecasting capabilities. We work closely with meteorological organizations and research facilities around the world in order to improve climate and weather forecasts by more intensively using aircraft based weather information. Since 1994, LHG has been actively engaged in several international climate research projects, which help scientists to evaluate and further improve their climate and weather models and to identify, monitor and minimize the climate impact of air traffic (examples: CARIBIC, IAGOS). The active support of these projects is also an instrument for LHG to better manage the potential physical and other climate change risk. Furthermore, LHG has a strong cooperation with the Deutscher Wetterdienst (DWD, German Meteorological Service) and other meteorological institutes to continuously improve weather forecasts and extreme weather events. Regarding physical risks, LHG Operation Control Centres monitor weather conditions on a real-time basis and inform their respective pilots about the current situation.

Comment

Reliable weather forecast is a prerequisite for a safe airline operation. It is a permanent task for Lufthansa Group and its partners to continuously work on improvements to have these data available more often, at the highest and fastest possible quality for cockpit and dispatch use. An addition through the engagement in climate research LHG may be able to use the results and the knowledge provided by the research projects to reduce climate-change-induced costs.

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Reputation	Shifts in consumer preferences
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Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Lufthansa Group (LHG) faces risk of loss of reputation in case of not responding to environmental issues in an appropriate manner. A perceived lack of action by LHG or the industry in general could result in a loss of reputation and a shift in consumer attitude, potentially resulting in reduced demand. This particular risk mainly arises from the strong dependency of the air traffic sector on fossil fuel. Due to the COVID-19 pandemic less flights have been conducted and some consumers might shift preferences even more to use less flights for sustainability reasons. However, so far demand has returned whenever travel restrictions have been revoked. As the COVID-19 pandemic is still ongoing it is hard to predict the consumers' future behavior. There could be also a shift from less business travel towards more leisure trips in the shortterm, as customers due to the pandemic could not travel as before and might have a bigger need to travel once the travel restrictions are gone.

Time horizon

Long-term

Likelihood

About as likely as not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

The growing negative sentiment of fossil fuel powered air travel might negatively impact the global long-term growth rate of the airline industry and in turn might mean for the LHG - an increasingly tougher yield environment due to overcapacity as air travel demand may be lower than the available capacity - a decreasing market value of used aircraft. The potential impact has not been quantified financially yet but is being researched by IATA and A4E in 2021. LHG will be involved in these studies and derive for LHG individual scenarios.

Cost of response to risk

2000000

Description of response and explanation of cost calculation

LHG has a comprehensive carbon emissions mitigation strategy in place and undertakes regular stakeholder dialogues and assessments to better understand the environmental issues and impacts that concern LHG's stakeholders. Furthermore, LHG constantly engages in on-going dialogues with all stakeholders and provides information about the environmental performance and challenges of LHG and the aviation industry, its ambitious emissions reduction targets and measures. Moreover, LHG provides information on its environmental engagement on its company websites, via its social media platforms as well as through publications, executive presentations and media releases. LHG provides a transparent reporting on environmental issues in the annual report and the "Sustainability Fact Sheet" published on www.lufthansagroup.com. Executive Board members, senior vice presidents and senior directors of LHG work together with aviation associations on national (BDL: Bundesverband der Deutschen Luftverkehrswirtschaft) and international level (IATA: International Air Transport Association and A4E: Airlines for Europe) to take on responsibility to develop joint roadmaps towards a sustainable aviation industry, involving local governments and the EU Commission. Additionally LHG is actively giving input to numerous consultations from the EU regarding various aspects of the "EU Green Deal" such as the further promoting of sustainable aviation fuel. For the first time in 2019 with repetition in 2020 the National Aviation Conference has been taken place with the German chancellor to discuss with 500 high ranking officials and the aviation industry the transition to climate-neutral aviation. LHG has been represented by LHG CEO and further top management representatives to actively support the roadmap towards sustainable aviation. This has led to comprehensive media coverage which supported awareness creation about what the industry is already doing, the technological challenges for aircraft manufactures to develop electric or hydrogen aircraft as well as the development on sustainable aviation fuel. LHG promotes and

enables customers to buy SAF: In 2019 LHG introduced as the first airline group worldwide the CO2 compensation platform COMPENSAID, a LHG owned development giving customers the possibility to either compensate their flights with our partner myclimate or to buy SAF or a combination of both. In 2020 COMPENSAID has been further integrated into the LHG booking processes.

Comment

Cost Calculation is a rough estimate on producing online publications on environmental / sustainable issues, undertaking stakeholder dialogues, taking part in lead conferences, expenses for the Non-Financial Declaration, auditing and stakeholder communication /-dialog comprising environmental/climate protection, developing tools to engage the stakeholders and customers i.e. the development and maintenance of the CO2 Compensation platform COMPENSAID.

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

The LHG is constantly working on reducing its specific fuel consumption and CO2 emissions. Since 1990, the specific net CO2 emissions from LHG flight operations have already been reduced by 41%. Through this continuous improvement in environmental performance and transparent communication about the associated goals and measures, the LHG has the opportunity - compared to its competitors - to achieve a higher level of attractiveness for customers (product differentiation). This can lead to increased customer loyalty and/or the acquisition of new customers as well as an improvement in the LHG's position with investors or lenders who include the sustainability performance of companies in their decisions. A greater influence on aircraft designers and manufacturers towards more efficient, cleaner aircraft (airframes and engines) using different propulsion technologies such as electric or hydrogen energy, can also be an opportunity supported by a credible and transparent communication of the LHG's environmental performance.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

More and more customers are including climate protection aspects in their purchasing decisions. A growing awareness of climate change may persuade customers to buy tickets from companies/airlines with a good performance track on climate change and sustainability. Positive perceptions and reputations enhances increased demand of a company's products and services, which in turn gives the opportunity of increased production capacity and investment opportunities. These opportunities could bring additional interest in our services and an increase in sale however, the financial impact on LHG is hard to estimate.

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation

In order to actively engage consumers for environmental issues and to meet their increased awareness for these issues resulting in changing consumer behavior, LHG has implemented services like the carbon calculator and the voluntary carbon offset program for its customers. In 2019 LHG has developed in addition to the existing partnership with myclimate the CO2 compensation platform COMPENSAID to offer LHG's customers the possibility to reduce their carbon footprint by either purchasing Sustainable Aviation Fuel or by compensating their CO2 flight emissions with CO2 reducing projects or a combination of both. Furthermore, LHG is constantly modernizing its fleet in order to offer its customers flights with the most modern and fuel efficient aircrafts. Some corporate customers already judge upon the type of aircraft, when choosing their suppliers for air travel. Despite the COVID-19 pandemic LHG remains committed to continue modernizing our fleet with e.g. A320neo and Boeing 777, to keep its products competitive, to generate fuel and therefore CO2 efficiencies to improve continuously our environmental footprint. In 2020 LHG has put 18 new fuel efficient aircraft into service. In 2020 LHG has continued the "Corporate Value Fares" programme for corporate customers with a corresponding contract. CO2 emissions for their flights within Europe will be compensated by LHG via its partner myclimate and customers will receive the CO2 compensation credits for it.

Comment

The development and maintenance for the CO2 compensation platform COMPENSAID by the Lufthansa Innovation Hub caused costs of approximately 0.5 -1.0 mio EUR.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient production and distribution processes

Primary potential financial impact

Other, please specify (Reduced operational costs - less fuel, less CO2 compensation certificates, less aircraft operating costs (aircraft usage is reduced))

Company-specific description

The intensive debate on effective measures to mitigate climate change opens up even more the opportunity for the introduction of a Single European Sky (SES) to be implemented more rapidly and with greater attention. Improved air traffic management based on international agreements. For example, the Single European Sky (SES) is an air traffic management modernisation project with huge climate protection potential. The SES' flight efficiency objective tackles the problem of flying longer routes than ideally necessary. European Air Traffic Management inefficiency is costing EUR 5 billion extra a year to airlines and passengers (calculated Pre-COVID-19). A Single European Sky (SES) would eliminate unnecessary detours: 0.8 to 1.6 tons of CO2 per flight could be saved. For Lufthansa, that would be around 1 to 1.8 million tons less CO2 per year (pre COVID-19). The foundations for a unified European airspace system were in fact already laid in the 1990s. The plan was to help make the European air traffic control system more efficient in commercial terms and also more environmentally friendly. But being such a large scale project, there were countless political and technical agreements that had to be made and compromises that needed to be reached along the way. Due to the intensive climate change debate, the restructuring process is now gaining more and more momentum and improvements are being achieved in many areas through the use of innovative solutions, not at least through the involvement of the Lufthansa Group which works for numerous SES projects such as enhanced IT tools, optimizing flight patterns saving fuel /reducing CO2 emissions.

Time horizon

Long-term

Likelihood

More likely than not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

200000000

Potential financial impact figure – maximum (currency)

400000000

Explanation of financial impact figure

The European Organisation for the Safety of Air Navigation (Eurocontrol) states a SES would eliminate unnecessary detours – 0.8 to 1.6 tons of CO2 per flight could be saved. For LHG, that would be 1 to 1.8 mio tons less CO2 per year prior to COVID- 19 pandemic. With a consumption of 10 mio tons of kerosene in 2019 (last year prior to COVID-19) and corresponding CO2 emissions of 32 Mio. tons of the LHG aircraft fleet, a SES would result in cost savings on EUR 200m to 400m for the LHG depending on actual prices for kerosene and EU ETS certificates and recovery speed of air travel. As 2020 has been an extraordinary year due to COVID-19 pandemic, calculation should remain on 2019 basis.

Cost to realize opportunity**Strategy to realize opportunity and explanation of cost calculation**

The Lufthansa Group explicitly supports the efforts of the EU and campaigns via the European airline association Airlines for Europe (A4E) for the creation of a dependable and efficient European airspace. A key milestone for achieving a Single European Sky is the harmonisation and modernisation of the European aviation infrastructure, for which the European Commission has set up the SESAR programme (Single European Sky ATM Research). SESAR is to develop, test and implement Europe-wide new technologies, procedures and standards that contribute to harmonising and optimising European air traffic management. The Lufthansa Group supports SESAR with the clear expectation that measurable operational improvements in air traffic management are implemented. The aim is to generate direct benefits for customers and the environment and to sustainably reduce air traffic control costs. The implementation of these technologies in daily operations is jointly coordinated by the members of the industry consortium SESAR Deployment Manager (SDM). The Lufthansa Group is a member of this consortium and provides local experts. Across Europe, the SDM currently coordinates 349 projects (2020). The various airlines in the Lufthansa Group and Lufthansa Systems are also actively involved as IT providers for SESAR research and demonstration projects. These activities are supported by additional research and development projects such as "EffFlug" in cooperation with DLR (German Airspace Institute). Within EffFlug methods, IT Tools and workflows are derived to optimize the planning of the flight operation such as optimizing flight paths based on the evaluation of real flight data. These findings are being implemented into software tools which calculate more precisely fuel consumption and noise emissions. These projects have been supported financially by the ministry of economics in order to support more sustainable and environmental friendly air traffic by flying more efficiently.

Comment

No additional management costs. The management cost associated with LH's actions to promote the SES in 2020, incurring for a participation of experts in projects, workshops, task forces etc. has been absorbed within existing capabilities mechanism and partly financially by funding of the ministry of economics.

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of new technologies

Primary potential financial impact

Reduced direct costs

Company-specific description

The most significant source of direct greenhouse gas emissions (GHG) generated by LHG's activities is linked directly to the flight operations which represent 99 % of the LHG's total direct emissions. Reducing our CO2 emissions goes hand in hand with fuel use reduction. Therefore, one of the focus points in our environmental policy is to reduce the use of fuel together with our upstream supply chain. The opportunity is shown by the fact that very high investments into our fleet are also the most efficient way to reduce our specific CO2 footprint. The LHG invests continuously in a modern and efficient fleet, and for decades has made significant contributions to developing new types of aircraft. In 2020 LHG took delivery of 18 new aircraft of which has been e.g. A320neo, A321neo, 777F and A350 which are up to 25% more fuel efficient than previous models.

Time horizon

Long-term

Likelihood

Virtually certain

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

In 2020, fuel costs accounted for 9.0% of the Lufthansa Group's operating expenses (previous year: 18.1%) - the LHG spent around EUR 1.88 billion on jet fuel. Thus a 1% reduction in fuel consumption through the purchase and use of more efficient aircraft would reduce fuel expenditure by around EUR 18.8m. Added to this are the correspondingly lower expenses for the purchase of CO2 certificates.

Cost to realize opportunity**Strategy to realize opportunity and explanation of cost calculation**

The LHG invests continuously in a modern and efficient fleet, and for decades has made significant contributions to developing new types of aircraft. The Group has been the launch customer for the introduction of new, fuel efficient and quieter aircraft multiple times. In 2016, it was the C-Series at SWISS and the Airbus A320neo at Lufthansa. In the long-haul segment as well, the Group has set the trend with regard to climate and environmental responsibility for many years by putting especially fuel-efficient aircraft in service. New entries to the fleet were the Boeing 747-8 in 2012, the Boeing 777F in 2013 and the Airbus A350-900 at the end of 2016. By replacing four-engined aircraft with new twin-engined models, the Group creates a basis for the future over the long term: fuel consumption and noise emissions decline, operating costs decline and customer comfort increases. LHG had 210 new aircraft with delivery dates up to 2027 on order pre COVID-19. Furthermore LHG has a dedicated department for "Operational Efficiency": Operating with more fuel-efficient aircraft, implementing weight reduction measures on board, optimizing flight routes and improving flight operations all contribute to the reduction of fuel use and therefore carbon emissions. With regard to flight operational measures in financial year 2020, 34 fuel-saving projects were under way across the Group. They made it possible to permanently avoid another 52.6 TSD t of CO2 emissions in the reporting year.

Comment

Despite the COVID-19 pandemic LHG is still committed to invest into new modern aircraft. So far there has been no cancellation of the already ordered aircrafts but an extension of the delivery period.

Identifier

Opp4

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Primary potential financial impact

Other, please specify (Creating availability of energy source and potential of lowering cost)

Company-specific description

Growing public climate debate increases the need of fossil free energy sources and pushes the awareness of producing Sustainable Aviation Fuel (SAF) either through enhanced R&D and production by the fuel industry and or raising national, EU and international financial and structural governmental support to further develop SAF and to promote market entry at affordable levels.

Time horizon

Long-term

Likelihood

Virtually certain

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Today, SAF is extremely limited. Only less than 1% of the world's demand of production has been available in 2020 at extremely high cost - up to 5-8 times more expensive than fossil fuel. If SAF will be available in more substantial amounts due to raising production which could be pushed by governments out of political reasoning and due to the EU Green Deal, the hypothesis is that prices will go down and LHG could more easily afford to buy SAF, reducing the CO2 emissions, reducing number of EU ETS certificates and reducing payments for CORSIA. In addition to that more and more funding on national and EU level are made available to support the development of Sustainable Aviation Fuel.

Cost to realize opportunity**Strategy to realize opportunity and explanation of cost calculation**

LHG is actively lobbying together with trade associations (IATA, A4E, BDL, BDI, ...) and at EU Commission asking political and governmental financial and structural support as the green transformation within the airline industry is only manageable by a joint effort with industries namely aircraft producers, fuel providers, renewable energy providers and governmental support. LHG is actively involved in creating and managing SAF-consortia comprising of various stakeholders such as research (DLR, universities), different industries, providing essential parts of the SAF technical process, politicians, buyers etc. LHG has signed already in 2019 letters of intent (LOI) which continue into 2020 in which further initiatives have been activated. 2019: 1. Raffinerie Heide: Demonstration Plant to produce with Power-to-liquid technology Sustainable Aviation Fuel, LHG has committed to offtake up to 21.000t p.a. starting earliest in 2024 2. PtX Kompetenz Zentrum Lausitz: Supporting the research and development of PtX for aviation together with BASF, Rolls Royce, Sunfire, State of Brandenburg, Technical University Brandenburg, this project is part of the PtX initiative of the Ministry of Environment 2020: - Cooperation with ETH Zurich, Synhelion and Climeworks, in which carbon capture technologies have been developed -Cooperation with HySupply (German National Industry Association and acatech) to develop a supply chain for green hydrogen. -a power-to-liquid roadmap for aviation in Germany has been initiated

Comment**Identifier**

Opp5

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resilience

Primary climate-related opportunity driver

Participation in renewable energy programs and adoption of energy-efficiency measures

Primary potential financial impact

Other, please specify (Knowledge gain, first mover advantage)

Company-specific description

LHG uses partnerships to drive research projects on sustainable aviation fuel. In the past decade, the Lufthansa Group has been closely involved with the research, testing and use of sustainable aviation fuel (SAF), i.e. synthetic kerosene made using renew-able energy sources. In 2011 the Lufthansa Group carried out pioneering work with the world's first long-term trial of bio-kerosene in regular flight operations. Since then, the Lufthansa Group has worked in partnerships to drive key technologies for producing sustainable aircraft fuels. The focus is on synthetic kerosene based on waste materials, ligneous biomass and renewable electrical energy (power-to-liquid – PtL). In 2019, for instance, LHG signed a letter of intent with Raffinerie Heide on future supplies of PtL fuel to Hamburg Airport. Among other things, the Lufthansa Group also supports the Lausitz power-to-X centre of excellence. Another partnership was begun in the reporting year with ETH Zurich and its two spin-offs Synhelion and Climeworks. The experts at ETH Zurich have developed innovative methods for removing CO2 from the atmosphere and, together with water and with the help of concentrated sunlight, convert it into a synthesis gas that can be used to generate fuel LHG is still involved with the cross-sector Powerfuel initiative coordinated by the German Energy Agency (dena) to build an international alliance to develop the strategic importance of synthetic renewable fuels, to jointly advance a global market for these fuels and to accelerate their market development. As "Green hydrogen" is vitally important for synthetic fuels LHG is taking part in the HySupply initiative launched by the Federation of German Industries and acatech. The aim is to develop a supply chain for green hydrogen from Australia. LHG is a member of the working group Clean Skies for Tomorrow. The importance of SAF for reducing emissions from air traffic has been recognised at the European level. As part of its Green Deal, the EU is preparing special legislation dealing exclusively with SAF, which is intended to market them progressively by rising blending ratio. This joint strategy involves federal and regional governments, aviation and fuel industries and equipment manufacturers, coordinated by the Federal Association of the German Aviation Industry and the Federal Transport Ministry. LHG has made an active contribution to the project to speed up demonstration project and market launch of PtL fuels.

Time horizon

Long-term

Likelihood

More likely than not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure**Cost to realize opportunity**

Strategy to realize opportunity and explanation of cost calculation

For the aviation industry Sustainable Aviation Fuels are of utmost importance in the transition to a more sustainable future. The research and development for SAF is very important and gives LHG the chance to gain knowledge and to enlarge our competencies while fostering our position as a first mover and securing us a leading position. It will secure us access to renewable energy, minimizing the risk of not getting the quantities needed in a market with very limited resources. It gives LHG also the opportunity to influence the research in the best sustainable way as to support those technologies which promises in the long run the most sustainable results in reducing CO2 emissions.

Comment

Identifier

Opp6

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resilience

Primary climate-related opportunity driver

Other, please specify (Communication, reputation, rating)

Primary potential financial impact

Increased access to capital

Company-specific description

The demand from multiple stakeholders for transparent disclosure of climate-related issues is an opportunity to integrate this non-financial information more and more into financial reporting. LHG has been reporting about its climate-related projects and initiatives for the last 25 years predominantly in the sustainability report BALANCE. Since 2017 LHG has issued the Non financial Declaration within the Annual Report. For the reporting year 2020 LHG has reported also according to the TCFD recommendations and SASB and has issued the Sustainability Factsheet 2020. Within the last 4 years, the projects and efforts put into these activities have been made even more transparent to all stakeholders also to the capital markets having the chance to increase access to capital in the medium to long-term.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

A good scoring / rating within sustainability issues will have a positive impact on the cost of capital in the medium to long-term and is of growing importance for institutional investors.

Cost to realize opportunity**Strategy to realize opportunity and explanation of cost calculation**

Securing holistic, professional reporting and disclosure of climate-related issues, using international recognized frameworks such as TCFD and SBTi, participating in major ratings and securing an open and frequent communication with all major stakeholders. Providing climate-related information on LHG websites and other publications such as the LHG Sustainability Factsheet published at least once a year.

Comment

Identifier

Opp7

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient production and distribution processes

Primary potential financial impact

Reduced indirect (operating) costs

Company-specific description

Increased resource efficiency also has a direct impact on the P&L through lower energy cost (incl. related carbon taxations).

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Ressource efficiency especially in regards to fuel consumption has a direct impact on the LHG P&L.

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation

Managing the existing environmental management system e.g. at Lufthansa CityLine, Air Dolomiti, Lufthansa Cargo and Lufthansa Technik supports the efforts of managing resources efficiently. It is planned to further widen the scope of our environmental management systems.

Comment

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization’s strategy and/or financial planning?

Yes, and we have developed a low-carbon transition plan

C3.1a

(C3.1a) Is your organization’s low-carbon transition plan a scheduled resolution item at Annual General Meetings (AGMs)?

	Is your low-carbon transition plan a scheduled resolution item at AGMs?	Comment
Row 1	No, and we do not intend it to become a scheduled resolution item within the next two years	German law does not require to have low carbon transition plan on the AGM agenda

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative, but we plan to add quantitative in the next two years

C3.2a

(C3.2a) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
2DS	This scenario aims for net-zero emissions by 2050. It implies a linear reduction from 2019 to 2050. It is being used for Lufthansa Group's airline operations, which comprises the majority of Lufthansa Group's activities. It includes new aircraft (based on the fleet plan until 2030, extrapolated to 2050), operations and ATM efficiency (based on average performance, e.g. Single European Sky) and compulsory or existing carbon offsetting (CORSIA and duty travel compensation). In all modelled scenarios (i.e. Destination 2050, Waypoint 2050 from ATAG)a gap remains between the projected absolute CO2 emissions reductions and the targeted emission reduction path. We have evaluated a mix of sustainable aviation fuel and additional compensation to close that gap for each scenario as technology especially new aircraft propulsion such as electric and hydrogen aircraft will not be able to power aircraft for longhaul flights as of today's knowledge (i.e. Waypoint 2050 and destination 2050).
Other, please specify (IPCC 1,5 degree)	This scenario is based on the Special Report of UN IPCC to limit global warming to 1,5 degrees. For this purpose, the intermediate target was added in 2030 to reach -55% of 2010 emissions in order achieve significant reductions near-term. In consequence, the above mentioned gap became larger, i.e. even more sustainable fuel and compensation would be required.
Other, please specify (IATA 2050 - 50% CO2 based on 2005)	This scenario is based on the IATA / ATAG emission targets that have been issued specifically for aviation. It is based on carbon neutral growth from 2020 onward and then a reduction to -50 % of 2005 emissions. Although there is no reduction path in the original target, we have implied a linear reduction from 2020 onward.
Other, please specify (A4E proposal - Destination 2050)	Based on a proposal that originated from A4E a further reduction scenario has been modelled. Besides the net zero goal in 2050, it features an intermediate target in 2030. In that year, the net CO2 emissions will be reduced by 50 % vs. 2019. The assumptions for the contribution of fleet renewal, ops and ATM efficiency, SAF and compulsory compensation remain the same. The remaining gap to the targeted mitigation path are compensated voluntarily. This scenario and target has then been adopted officially by the LHG Executive Board.
Other, please specify (Preliminary SBT for air transport from SBTi - until today there is no sectorial SBT for air transport, but SBTi has started developing one in 2020 which has not been finalized yet. LHG has taken part in the consultation on 18.12.2020)	Preliminary Science-based Targets: A specific goal based on a carbon budgeting approach that complies to „well below 2°C“. However, the actual target is specific (kgco2/pkm), calculating that back into absolute CO2 results in a reduction ambition of about 25 % until 2030 vs. 2019. In this reduction ambition only fleet renewal, operations and ATM efficiency and SAF are allowed. Compensation is not part of this framework. This is presently explored bei SBTi. We await the final sector-target guidelines to be published by SBTi.
IEA Sustainable development scenario	Lufthansa Group has chosen the Sustainable Development Scenario from the IEA ETP 2020 report to run a qualitative assessment of the transition risks for Lufthansa Group. See: LHG TCFD Report 20220 The company has chosen the scenario as it is in line with the goal of the Paris Agreement of limiting global warming to well below 2°C compared to pre-industrial levels—a goal the Lufthansa Group and the European aviation industry have also subscribed to. Increasing climate regulation like carbon pricing, energy efficiency standards as well as aviation(and fuel)taxes may lead to increasing expenditures for new airplanes and higher operational costs. Higher operational cost and lower margins could also result from mandatory sustainable aviation fuel quota which is more expensive than conventional fuels. Policy constraints (e.g. regarding the energy efficiency of the fleet, ban of short flights) may lead to early write-offs of equipment and an expansion of Lufthansa Group's research and development investment. As risks are likely to affect the entire aviation sector, the impact on competitiveness is expected to be limited. Though, risks could increase significantly with geographically constrained or heterogeneous regulation across countries/regions. Lufthansa Group plans to conduct a quantitative analysis of at least two scenarios in the near future, looking into transition and physical risks and opportunities and quantifying financial implications.

C3.3

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	Sustainability has been integrated into the LHG Corporate Strategy discussing climate change and the related risks and opportunities. Following (examples) products/services have been developed to reduce and / or to compensate CO2 emissions: Corporate Value Fares: The concept includes the full CO2-compensation of all continental European flights of all LHG network airlines' Corporate Customers, who have signed a contract starting in 2020. Compensation products: LHG has further expanded the longstanding partnership with myclimate and Climate Austria to all airlines of the Lufthansa Group via COMPENSAID (see below). Additionally customers have the possibility to use myclimate via Miles&More to trade in their miles for compensation. SAF products for customers: In 2020 the functionality of COMPENSAID which has been developed by Lufthansa Innovation Hub in 2019 has been further developed. This CO2 compensation platform has been the first worldwide possibility for customers to buy Sustainable Aviation Fuel (SAF) to reduce their carbon footprint. With COMPENSAID customers can buy directly (SAF) regardless if they were flying on LHG Group airlines or on other airlines. They have also the opportunity to buy a mixture of Sustainable Aviation Fuel and CO2 compensation projects. Intermodal choices: LHG has intensified the cooperation with Deutsche Bahn to raise the number of "Express Rail" destinations (more than 17 cities) and frequencies (more than 120/ day) and optimizes smooth transfer processes. App development Rydes for travellers: "Lufthansa Innovation Hub" has developed the app "Rydes", which gives its users tips and pointers for more sustainable transportation. Travelers can collect points and rewards for any form of mobility in the app, regardless of whether they are traveling by car, car-sharing, rental bike, train or airplane. For Lufthansa Technik AG (LHT) Customers: LHT has developed together with BASF a functional foil known as "sharkskin" reducing air resistance. For a Boeing 747 savings of more than 1,300 tons of CO2 emissions per aircraft per year are possible with this technology. The intention is to also have the foil authorised for other aircraft types and to market it worldwide. LHT has also developed and marketed a special engine wash "Cyclean" which helps to reduce fuel consumption and respectively reduces CO2 emissions.
Supply chain and/or value chain	Yes	In 2020 LHG continued its strategy to engage on sustainability matters with our supply chain and / or value chain. In 2019 LHG has introduced the "Supplier Code of conduct" additionally to the already existing general Code of Conduct. LHG generally prefers to cooperate with such suppliers who make and demonstrate an active contribution to sustainability and environmental climate protection. LHG cooperates with the aircraft industry demanding more fuel efficient aircrafts and new propulsion technologies and is involved into new aircraft technological developments. LHG intensively cooperates with Fuel suppliers and industry consortia to support further development and market readiness. LHG also promotes / supports the development of e-mobility at airports to lower local emissions (NOx, CO2 and ultra-fines) e.g. electric tugs, buses, catering trucks. Especially at its German hubs Frankfurt and Munich LHG is intensively engaged in a cooperation with FRAPORT and Munich airport FMG. LHG cooperates with Deutsche Bahn, Austrian and Swiss Railways and has developed since the 1990s intermodal concepts such as Express Rail, Codeshare - see above under "Products and Services". Further services are planned even to suspend flight routes if the railway connection offers similar connectivity, reliability and comfort for the passenger. LHG Building Infrastructure: Negotiation on rented buildings include the point: "Green Building" Further details see C12 Engagement and Supply Chain Module within the CDP questionnaire.
Investment in R&D	Yes	Sustainable Aviation Fuels are currently the only way to almost completely avoid aviation emissions. However, industry-wide use has so far failed due to the amount available, since there are currently only a few production facilities worldwide. Additional obstacles are the high price and that only limited raw material potential is available. Therefore greater research especially to boost renewable fuels of non-biogenic origin, like Power-to-Liquid (PtL) is required. LHG is involved in various SAF projects, alliances worldwide and looks globally for sourcing opportunities. In 2019 LHG closed a letter of intent with Heide refinery to support the development of Power-to-liquid technology for sustainable Jet fuel. Heide refinery shall supply us with kerosene from 2024 of 5% for LHG flights from Hamburg. More than ten LoIs and MoU have been signed (i.e. Kompetenz Center Lausitz) in order to support the market introduction of more suppliers and technologies. However, it is very likely that PtL will be produced in certain regions where the cost for renewable electricity is low, e.g. south America or Middle East. Lufthansa is engaged in both regions, with a project in Abu Dhabi conducted by MASDAR and in conjunction with other partners e.g. Siemens Energy. Lufthansa is presently the largest user of SAF in Europe. Via the LHG platform COMPENSAID corporate customers can buy SAF and Lufthansa Group issues third-party audited mitigation certificates that allow the corporates to claim the scope 3 emissions. CLIMATE RESEARCH: Since decades LHG is partnering with universities (e.g. KIT, RWTH Aachen), the DLR (German Airspace Center) and "Deutschen Wetterdienst" (German Weather Forecast Service) in research projects. Lufthansa's A340-600 "Leverkusen" e.g. has already traveled more than 85 times around the world for atmospheric + climate research. For 15 years, it has been collecting data for the European research project IAGOS-CARIBIC, an association of 12 European research institutes to better understand climate change. Lufthansa Technik AG cooperates with BASF Coatings GmbH and Airbus to develop a film that resembles the structure of Sharks Skin as their microstructure reduces the frictional resistance which can save up to 3% of fuel. The Lufthansa Cargo Fleet will adopt the coating on its B777 fleet.
Operations	Yes	FUEL EFFICIENCY PROJECTS: In 2020 LHG conducted 34 fuel efficiency projects to reduce within flight operation the fuel consumption via weight reduction, Flight route optimization. In the reporting year an additional 52,6 TSD tons of CO2 Emissions could be saved which comes to 196 return flights from Munich to New York with an A350 aircraft. SINGLE EUROPEAN SKY (SES): LHG supports actively the European Working group on optimizing the European Airspace in order to fly more directly and to reduce detours which shall save between 5-10% of the European CO2 emissions. Optimization of Navigation systems in 2019 "Augmented Approaches to land - 2" (AAL2) to realize fuel efficient landing approaches, optimization of Ground processes to reduce fuel consumption. In 2019 LHG developed the software further to make more use of the available flight data for more fuel efficient operation. Follow up in 2020 on the project EMAS (Early Morning Arrival Stream) to optimize the landing approaches in Frankfurt. This project has been conducted in tight cooperation with the DFS (German Flight traffic Control). As a result of this the concept "Target Times" has been introduced. In 2019 the Executive Board of LHG has decided to become carbon -neutral on the Ground operation in LHG home countries (Germany, Austria, Switzerland and Belgium) which has led to feasibility studies in 2019, e.g. which apron vehicles (tugs, catering loaders, amount of electricity needed and availability) can be run on alternative fuels or with electricity and will be continued.

C3.4

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Indirect costs Capital expenditures Capital allocation Access to capital Assets Liabilities	DIRECT COSTS: -Jet Fuel: LHG's business strategy and financial planning is always linked to emission reductions as any fuel saved helps reducing CO2 emissions and direct costs. Reducing emissions of LHG's aircraft fleet is a key focus and within LHG, aircraft emissions constitute 99% of our overall Scope 1 and 2 CO2 emissions. Therefore, LHG is committed to reduce fuel consumption / carbon emissions and contributes to global efforts to reduce aviation's impact on the environment and climate change, primarily via the modernization of its fleet. Partly due to the COVID-19 pandemic LHG has retired substantially older and less efficient aircraft. CAPITAL ALLOCATION - Funds for voluntary CO2 compensation: Financial funds have been provided to compensate CO2 on a voluntary basis: All LHG employees duty flights are 100% compensated via our partner myclimate since 2019. CAPITAL ALLOCATION - Funds for Green electricity: Financial funds have been provided to use 100% green electricity in Germany, Austria, Switzerland and Belgium CAPITAL EXPENDITURE: - The Group's investments primarily focus on the renewal of its fleet, which is the Group's most effective lever to reduce CO2 emissions. Primary investment in down payments and final payments for aircraft, aircraft components, and aircraft and engine overhaul amounted in 2020 to 983 mio EUR, this accounts for 77% of total capital expenditure. The Group has committed to purchase up to 80 new aircraft until the end of 2023, too. The decision to acquire new aircraft generally factors in climate-related costs and benefits (fuel consumption, emission-related costs). CAPITAL ALLOCATION: -See above - the opportunity to reduce fuel consumption and emissions has made aircraft investments comparably more attractive than other investments and alternative options to allocate capital. ASSETS: - See above - the fleet is the Group's largest non-current asset by far. REVENUES: - Environmental taxes may constitute a significant part of the ticket price, depending on route and travel class. LHG might not be able to price this into the ticket due to the competitive situation which might lead to lower average revenues. - Customers are also given the opportunity to compensate the emissions of their journey, for example by the purchase of Sustainable Aviation Fuel (SAF). Both the environmental taxes and compensation will increase the ticket price which could lead to less passengers and /or may influence the customer's choice of the airline to travel with and willingness to pay for the underlying fare. - Flightshame could lead to less customer demand and thus influence the overall revenues. - Development of innovative products and services such as Sharkskin (developed by Lufthansa Technik and BASF) or Rydes App by Lufthansa Innovation Hub could lead to a positive impact on LHG revenues. INDIRECT COSTS: Wages: Due to the utmost importance of climate related strategies and management, the LHG department Corporate Responsibility has grown in FTE and also more employees than before throughout the LHG are covering sustainability topics. Energy: Due to green electricity, indirect cost will rise as green electricity until today is more expensive. Sustainable Aviation Fuel (SAF) is actually around 5-8 times more expensive than fossil fuel. ACCESS TO CAPITAL: The upcoming EU Taxonomy will influence the accessibility to capital. Until today "air transport" has not been included as a NACE Code, so the magnitude of the impact is still not clear. LIABILITIES: Due to the COVID-19 pandemic, LHG had to asked for state loans. Germany's government has therefore established the "Wirtschaftsstabilisierungsfond" (WSF) which requires that expenditures out of this loan need to support sustainable investments.

C3.4a

(C3.4a) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

Lufthansa Group (LHG) is committed to reducing its carbon footprint and as such has included the goal of constantly improving efficiency into its Group strategic program. The LHG strategy has been developed considering input from several business units and committees. Since the reporting year 2017, sustainability and climate aspects have been even more strongly interlinked with LHG strategy by prioritizing strategically relevant topics, which are then detailed and implemented by a working group managed by the respective department. Furthermore, the LHG pursues a strategic environmental program. Its main fields of action are the improvement of fuel efficiency, the reduction of emissions, resource management and investment in research. Most of these measures come with the chance of a long-term cost reduction, so they are closely linked to the overall business strategy.

In January 2020 an additional **Executive Board function "Chief Customer Officer"** also responsible for IT and **Corporate Responsibility** was created. This additional Executive Board function underlines the importance of corporate responsibility which encompasses the environmental issues. Within the Executives Board oversight a new corporate function has been established: "Corporate Responsibility". The Head of Corporate Responsibility reports directly to the above mentioned responsible Executive Board Member.

Lufthansa Group supports climate protection goals of the aviation sector and reinforces its own targets. According to the International Energy Agency (IEA), CO₂ emissions from air traffic currently account for around 2.8% of global carbon emissions from burning fossil fuels. The aviation sector started making voluntary commitments to reduce emissions as early as 2009, via its industry association IATA and the Air Transport Action Group (ATAG). The Lufthansa Group was closely involved in setting the target of continuous efficiency improvements of 1.5% until 2020, carbon-neutral growth from 2020 and a reduction of 50% in net emissions compared with 2005 by 2050.

IATA is currently reviewing its targets for the global aviation industry. Above and beyond the currently agreed targets, it aspires to make global air traffic carbon neutral by the year 2060. The existing climate goals mentioned above will also remain in place.

Via the European airline association (A4E), the Lufthansa Group has also been involved in the **Destination 2050 study** – an initiative by five European air transport associations (A4E, ACI EUROPE, ASD, CANSO and ERA) which began in summer 2019. The study investigates the potential for reducing emissions in the action areas of technology, operations and infrastructure, sustainable aviation fuel (SAF) and market-based mechanisms, to determine how they can contribute to achieving the emissions targets for European air transport. **The focus is on significant reductions by 2030 and achieving carbon neutrality by 2050.** The aim is to never exceed the level of emissions recorded in 2019 any more. The study has been published early in 2021. Policy-makers and industry are also working towards the long-term goal of making flights from and to Europe carbon neutral by the middle of the century as part of the EU pact. Significant reductions should already be achieved by 2030.

As befits its pioneering role, the Lufthansa Group has also defined its own carbon reduction targets, which in some cases are more demanding. This means the Lufthansa Group's carbon footprint should be reduced by half by 2030 compared with 2019, with carbon neutrality the objective for 2050.

As jet fuel is a large part of LHG cost structure, its business strategy is always linked to emissions reductions – any fuel saved helps reduce LHG's cost, while also reducing its emissions. Reducing emissions of LHG aircraft fleet is a key focus and within LHG, aircraft emissions constitute 99% of our overall Scope 1 and Scope 2 CO₂ emissions. Therefore, LHG is committed to manage carbon emissions and contributes to global efforts to reduce aviation's impact on the environment and climate change.

Investing in fleet modernisation has been one of the most substantial business decisions of LHG in 2020 despite the COVID-19 pandemic. The most important driver for reducing CO₂ emissions from flight operations is investing continuously in modern, particularly fuel-efficient aircraft and engine technologies. In 2020, the airlines of the Lufthansa Group took delivery of 18 new aircraft - among them the Airbus A350-900 which emissions are around 25% lower than those of comparable aircraft types.

With regard to flight operational measures in the financial year 2020, 34 fuel-saving projects were under way across the Group. These projects comprise activities relating to performance and procedures, weight reduction, flight route optimisation and technical developments. In addition to the reductions achieved in previous years, they made it possible to permanently avoid another 52.6 thousand tons of CO₂ emissions in the reporting year. The quantity of kerosene saved amounted to around 16.7 thousand tons – this is equivalent to approximately 196 return flights between Munich and New York with an Airbus A350-900 aircraft.

The decisions taken in 2019

- 100% compensation of CO₂ emissions - starting in 2019 - for all business related flights of LHG employees
- CO₂ neutral mobility on the ground by 2030 in Germany, Austria and Switzerland
- Switch to carbon neutral electricity in 2019 for all LHG-buildings in Germany, Austria, Belgium and Switzerland.

have been continued despite the COVID-19 pandemic in 2020, as well as cross-sector initiatives, which aim to launch and build an international alliance to develop the future strategic importance of synthetic renewable energy sources/fuels (PTL – power to liquid), to jointly advance a global market for these energy sources and to accelerate their market development. The increasing use of alternative fuels will be an essential measure for achieving the long-term CO₂ reduction goals of LHG and the whole aviation sector.

In addition to the mandatory EU Emission Trading scheme and upcoming CORSIA, the Lufthansa Group already offers its customers the option of voluntary CO₂ compensation. Corporate customers have the option of flying CO₂-neutral with the network airlines in continental Europe of the Lufthansa Group since January 1, 2020.

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Both absolute and intensity targets

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Year target was set

2019

Target coverage

Business division

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Base year

2018

Covered emissions in base year (metric tons CO2e)

129774

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2025

Targeted reduction from base year (%)

25

Covered emissions in target year (metric tons CO2e) [auto-calculated]

97330.5

Covered emissions in reporting year (metric tons CO2e)

99784

% of target achieved [auto-calculated]

92.4376223280472

Target status in reporting year

Underway

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

<Not Applicable>

Please explain (including target coverage)

Percentage of emissions in scope relates to all production sites Lufthansa Technik AG and its subsidiaries worldwide. Reduction target of Lufthansa Technik AG production sites in metric tons CO2: 32,444. Note: special reduction effect caused by the output reduction due to the COVID-19 pandemic and the carve-out of significant production capacities associated with their transfer to Lufthansa. Attention: Lufthansa Technik is a provider of maintenance, repair and overhaul services (MRO) for civilian commercial and governmental aircraft. For this sector no science-based targets methodology could be identified.

Target reference number

Abs 2

Year target was set

2009

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1

Base year

2005

Covered emissions in base year (metric tons CO2e)

21293772

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2050

Targeted reduction from base year (%)

Covered emissions in target year (metric tons CO2e) [auto-calculated]

10646886

Covered emissions in reporting year (metric tons CO2e)

11370071

% of target achieved [auto-calculated]

93.2075444406937

Target status in reporting year

Underway

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

<Not Applicable>

Please explain (including target coverage)

Percentage of emissions in scope relates to the LH Group aircraft fleet (passenger and cargo). Note: special reduction effect caused by the output reduction due to the COVID-19 pandemic. Target aligns with the still existing IATA industry goal of reducing absolute carbon emissions by 50% by 2050, compared to 2005 levels. IATA is currently reviewing the target for 2050. (<https://www.iata.org/en/programs/environment/climate-change/>)

Target reference number

Abs 3

Year target was set

2019

Target coverage

Country/region

Scope(s) (or Scope 3 category)

Scope 2 (market-based)

Base year

2019

Covered emissions in base year (metric tons CO2e)

56104

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

28

Target year

2020

Targeted reduction from base year (%)

100

Covered emissions in target year (metric tons CO2e) [auto-calculated]

0

Covered emissions in reporting year (metric tons CO2e)

0

% of target achieved [auto-calculated]

100

Target status in reporting year

Achieved

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

<Not Applicable>

Please explain (including target coverage)

In March 2019 the Lufthansa Group Executive Board adopted the goal of supplying 100% of Lufthansa Group electricity consumption in buildings in Germany, Austria, Switzerland and Belgium with 100% green electricity from 2020. To this end, Lufthansa has acquired green power certificates, which guarantee the production of green electricity from new power plants, thus contributing to the expansion of renewable energy. For Buildings that were fully and directly owned or rented by Lufthansa, Lufthansa was able to reach the target of a 100% reduction, since LH was able to buy certificates for these locations. The rented and non-owned buildings in this region accounted for a residual of only 4.473 tons of CO2.

Target reference number

Abs 4

Year target was set

2019

Target coverage

Country/region

Scope(s) (or Scope 3 category)

Scope 1

Base year

2019

Covered emissions in base year (metric tons CO2e)

12122

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2030

Targeted reduction from base year (%)

100

Covered emissions in target year (metric tons CO2e) [auto-calculated]

0

Covered emissions in reporting year (metric tons CO2e)

5678

% of target achieved [auto-calculated]

53.1595446295991

Target status in reporting year

Underway

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

<Not Applicable>

Please explain (including target coverage)

In March 2019 the Lufthansa Group Executive Board adopted the goal of transition into CO2-neutral mobility on the ground in Germany, Austria, Switzerland and Belgium until 2030. Note: special reduction effect caused by the output reduction due to the COVID-19 pandemic.

Target reference number

Abs 5

Year target was set

2020

Target coverage

Other, please specify (Own Duty flights)

Scope(s) (or Scope 3 category)

Scope 1

Base year

2020

Covered emissions in base year (metric tons CO2e)

21831

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

0.2

Target year

2020

Targeted reduction from base year (%)

100

Covered emissions in target year (metric tons CO2e) [auto-calculated]

0

Covered emissions in reporting year (metric tons CO2e)

0

% of target achieved [auto-calculated]

100

Target status in reporting year

Achieved

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

<Not Applicable>

Please explain (including target coverage)

The Lufthansa Group itself has been offsetting the carbon emissions of all employees' duty flights around the world in 2020. The corresponding CO2 emissions are offset by financing high-quality, certified carbon offset projects initiated and managed by our cooperation partner myclimate.

Target reference number

Abs 6

Year target was set

2020

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1

Base year

2019

Covered emissions in base year (metric tons CO2e)

33349293

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2030

Targeted reduction from base year (%)

50

Covered emissions in target year (metric tons CO2e) [auto-calculated]

16674646.5

Covered emissions in reporting year (metric tons CO2e)

11509756

% of target achieved [auto-calculated]

130.974512713058

Target status in reporting year

Underway

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

<Not Applicable>

Please explain (including target coverage)

By 2030 LHG wants to reduce its net emissions (scope 1) by 50 % vs. 2019. 2020 was still affected by the COVID-19 pandemic.

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Year target was set

2008

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1

Intensity metric

Other, please specify (kg CO2 per ton kilometre (TKM))

Base year

2006

Intensity figure in base year (metric tons CO2e per unit of activity)

0.957

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure

99

Target year

2020

Targeted reduction from base year (%)

25

Intensity figure in target year (metric tons CO2e per unit of activity) [auto-calculated]

0.71775

% change anticipated in absolute Scope 1+2 emissions

0

% change anticipated in absolute Scope 3 emissions

0

Intensity figure in reporting year (metric tons CO2e per unit of activity)

0.89

% of target achieved [auto-calculated]

28.0041797283176

Target status in reporting year

Expired

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

<Not Applicable>

Please explain (including target coverage)

Because of the strong growth of air transport performance in 2019 and the continuous consolidation process within the airline sector (LHG has played an active role in this consolidation process and its airline portfolio has thus grown over the past years), we calculate that our targets and performance in regards to a reduction of specific fuel consumption was not fully met. But due to the COVID-19 effects on the aviation sector absolute carbon emissions decreased radically in 2020 and most probably also in following years. Current forecasts indicate global passenger traffic will most likely not return to 2019 levels before 2024, a year later than previously projected. The recovery in short haul travel is still expected to happen faster than for long haul travel. As a result, passenger numbers will probably recover faster than traffic measured in RPKs. Recovery to pre-COVID-19 levels, however, will probably also slide by a year from 2022 to 2023.(according to the international air transport association IATA <https://www.iata.org/en/pressroom/pr/2020-07-28-02/>).

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

Target(s) to increase low-carbon energy consumption or production

Net-zero target(s)

Other climate-related target(s)

C4.2a

(C4.2a) Provide details of your target(s) to increase low-carbon energy consumption or production.

Target reference number

Low 1

Year target was set

2019

Target coverage

Country/region

Target type: absolute or intensity

Absolute

Target type: energy carrier

Electricity

Target type: activity

Consumption

Target type: energy source

Renewable energy source(s) only

Metric (target numerator if reporting an intensity target)

Percentage

Target denominator (intensity targets only)

<Not Applicable>

Base year

2019

Figure or percentage in base year

22

Target year

2030

Figure or percentage in target year

100

Figure or percentage in reporting year

92

% of target achieved [auto-calculated]

89.7435897435898

Target status in reporting year

Underway

Is this target part of an emissions target?

This target is part of our target to aim for carbon neutral ground operations at Lufthansa Group in Germany, Austria, Switzerland and Belgium until 2030. For Buildings that were fully and directly owned or rented by Lufthansa, Lufthansa was able to reach the target of a 100% reduction, since LH was able to buy certificates for these locations. The rented and non-owned buildings in this region accounted for the residual of 8 percentage points in electricity consumption.

Is this target part of an overarching initiative?

Other, please specify (Part of relevant SDG goals which were supported by Lufthansa Group: Goal 12: Responsible consumption and production Goal 13: Climate action)

Please explain (including target coverage)

In March 2019 the Lufthansa Group Executive Board adopted the goal of transition into CO2-neutral mobility on the ground in Germany, Austria, Switzerland and Belgium until 2030. This is including the use of 100 % renewable energy sources at all LHG facilities in these home market countries as soon as possible. The switch to 100 % renewable energy sources was started in Januar 2020.

C4.2b

(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.

Target reference number

Oth 1

Year target was set

2019

Target coverage

Country/region

Target type: absolute or intensity

Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Low-carbon vehicles	Percentage of low-carbon vehicles in company fleet
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Target denominator (intensity targets only)

<Not Applicable>

Base year

2019

Figure or percentage in base year

10

Target year

2030

Figure or percentage in target year

100

Figure or percentage in reporting year

10

% of target achieved [auto-calculated]

0

Target status in reporting year

Underway

Is this target part of an emissions target?**Is this target part of an overarching initiative?**

Other, please specify (Part of relevant SDG goals which were supported by Lufthansa Group: Goal 12: Responsible consumption and production Goal 13: Climate action)

Please explain (including target coverage)

In March 2019 the Lufthansa Group Executive Board adopted the goal of transition into CO2-neutral mobility on the ground in Germany, Austria, Switzerland and Belgium until 2030. That means that Lufthansa Group aims to switch all own ground vehicles used at the airports in these countries to a low carbon energy. This is including also the use of 100 % renewable energy sources at all LHG facilities in these home market countries as soon as possible (see target "Low1"). The switch to 100 % renewable energy sources have been started in January 2020. In 2019, Lufthansa Group has started to draw up a plan for the necessary steps for a transformation to low carbon ground mobility and to hold talks with the relevant system partners. The next step in the process is now to determine how a gradual implementation is to take place. The 10 % share in low-carbon vehicles in the current company fleet mentioned above is a rough estimate. Exact shares are not available at present. Due to the COVID-19 situation no investment in new low-carbon vehicles was possible in 2020.

Target reference number

Oth 2

Year target was set

2020

Target coverage

Company-wide

Target type: absolute or intensity

Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Other, please specify	Other, please specify (Carbon Neutral Duty Travel)
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Target denominator (intensity targets only)

<Not Applicable>

Base year

2020

Figure or percentage in base year

0

Target year

2020

Figure or percentage in target year

100

Figure or percentage in reporting year

100

% of target achieved [auto-calculated]

100

Target status in reporting year

Achieved

Is this target part of an emissions target?

This target ist part of our Environmental Strategy 2020 which aim to reduce LHG´s environmental impact. The Strategy contains 15 goals, this target support goal No. 8 ("Continue offsetting carbon footprint") of LHG Environmental strategy.

Is this target part of an overarching initiative?

Other, please specify (Part of relevant SDG goals which were supported by Lufthansa Group: Goal 12: Responsible consumption and production Goal 13: Climate action)

Please explain (including target coverage)

The Lufthansa Group itself has been offsetting the carbon emissions of all employees' duty flights around the world in 2020. The corresponding CO2 emissions are offset by financing high-quality, certified carbon offset projects initiated and managed by our cooperation partner, the non-profit organisation myclimate.

C4.2c

(C4.2c) Provide details of your net-zero target(s).

Target reference number

NZ1

Target coverage

Company-wide

Absolute/intensity emission target(s) linked to this net-zero target

Not applicable

Target year for achieving net zero

2050

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Please explain (including target coverage)

LHG want's to reduce it's net CO2 emissions (scope 1) to zero in 2050. LHG has set itself ambitious climate protection targets. Despite the challenging technological path, e.g. electric/hydrogene aircraft earliest expected in 2035 for short haul flights and SAF actually not available in sufficient quantities, LHG is heavily involved in actively shaping the decarbonization of aviation.

Target reference number

NZ2

Target coverage

Country/region

Absolute/intensity emission target(s) linked to this net-zero target

Abs4

Target year for achieving net zero

2030

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Please explain (including target coverage)

LHG want's to reach carbon neutral ground mobility (scope1) by 2030 in it's home markets Germany, Austria, Belgium and Switzerland

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	499	
To be implemented*	31	28230
Implementation commenced*	42	111384
Implemented*	32	124688
Not to be implemented	355	

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Transportation	Other, please specify (Operational measure)
----------------	---

Estimated annual CO2e savings (metric tonnes CO2e)

21557

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

2805000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

The Efficient Flight Profile Concept (EFP) supports a continuous descent operations which allows a fuel-efficient approach for landing at the airports of Frankfurt and Munich.

Initiative category & Initiative type

Transportation	Other, please specify (Engine update)
----------------	---------------------------------------

Estimated annual CO2e savings (metric tonnes CO2e)

9607

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

1485000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Modification of Trent 900 Engines of A380 with Engine Performance (EP) Packackes by Rolls Royce. The lifetime of initiative is theoretically unlimited, at least as long as the respective part of the fleet is in service.

Initiative category & Initiative type

Company policy or behavioral change	Other, please specify (Pilots briefing)
-------------------------------------	---

Estimated annual CO2e savings (metric tonnes CO2e)

7597

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

1479000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

An updated "Pilot's Guide Fuel!": promotion of Fuel Efficiency measures and active communication at Eurowings.

Initiative category & Initiative type

Transportation	Company fleet vehicle efficiency
----------------	----------------------------------

Estimated annual CO2e savings (metric tonnes CO2e)

5818

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

458000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

An improved algorithm has been implemented in the IT solution "Flight Profile" and will lead to optimized fuel burn during climb at Lufthansa. The lifetime of this initiative is theoretically unlimited, at least as long as the respective software is in service.

Initiative category & Initiative type

Transportation	Other, please specify (Inflight Performance Software)
----------------	---

Estimated annual CO2e savings (metric tonnes CO2e)

5350

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

1050000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Historical tracks, i.e. 'shortcuts' are shown to pilots on their electronic flight bag EFB (pilots' laptops used in cockpit) during flight via the fuel management software AVIASO at Brussels Airlines. The lifetime of this initiative is theoretically unlimited, at least as long as the respective software is in service.

Initiative category & Initiative type

Transportation	Other, please specify (Inflight Performance Software)
----------------	---

Estimated annual CO2e savings (metric tonnes CO2e)

4869

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

956000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Introduction of Embraer's "Cost Index Operation Inflight Performance Software" at Austrian Airlines. The lifetime of this initiative is theoretically unlimited, at least as long as the respective part of the fleet and the software is in service.

Initiative category & Initiative type

Transportation	Other, please specify (Inflight performance)
----------------	--

Estimated annual CO2e savings (metric tonnes CO2e)

2917

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

568000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

A reduction of the idle factor at the Lufthansa Group Airline "Eurowings" will move the calculated Top of Descent more towards the destination. As a consequence, the Eurowings fleet's aircraft will stay longer on the cruise flight level and will consequently burn less fuel.

Initiative category & Initiative type

Transportation	Other, please specify (weight reduction)
----------------	--

Estimated annual CO2e savings (metric tonnes CO2e)

1890

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

368000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Eurowings inflight magazine & brochures removal. This reduces fuel consumption and other ground handling costs.

Initiative category & Initiative type

Transportation	Other, please specify (Engine swap)
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Estimated annual CO2e savings (metric tonnes CO2e)

1727

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

455000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Installation of the "fittest" engines on airplanes of the A32x family at Lufthansa Group airline "Swiss Airlines" in cases where a reduction of a high fuel burn was possible in combination with a life cycle limit optimization. The lifetime of initiative is theoretically unlimited, at least as long as the respective aircraft type and engine is in service.

Initiative category & Initiative type

Company policy or behavioral change	Other, please specify (Pilots briefing)
-------------------------------------	---

Estimated annual CO2e savings (metric tonnes CO2e)

1109

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

220000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Pilots Briefing (PLATON - Pre flight AnalyTics On demaNd) consists of dashboards about historical fuel burn, delay, arrival distances and go arounds for a selected city pair or flight number and helps pilots at Swiss Airlines to optimize their fuel consumption.

Initiative category & Initiative type

Transportation	Other, please specify (Weight reduction)
----------------	--

Estimated annual CO2e savings (metric tonnes CO2e)

781

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

122000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Exchange of aluminum unit load devices (container) type AKH with new light weight AKH. Weight reduction of 12kg per unit load device due to new composite material. Increased costs can be covered by fuel savings.

Initiative category & Initiative type

Transportation	Other, please specify (Technical enhancement)
----------------	---

Estimated annual CO2e savings (metric tonnes CO2e)

380

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

7000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Wheel fairing on the Lufthansa Group's Austrian Airlines E195 fleet. Development of main landing gear wheel fairing reduces aircraft drag. The lifetime of this initiative is theoretically unlimited, at least as long as the respective part of the fleet is in service.

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	Implementation of internal organization and processes to fulfil the EU ETS requirements, national emissions protection requirements and the ISO 14001 standard as well as EMAS.
Dedicated budget for energy efficiency	Voluntary initiative: Fuel Efficiency Projects: The flight operations efficiency department of the Lufthansa Group (LHG) supports numerous projects to reduce overall fuel consumption. 34 fuel-saving projects were in progress across the Group in 2020. These projects comprise activities relating to performance and procedures, weight reduction, flight route optimisation and technical developments. They permanently avoid another 52.6 thousand tonnes of CO ₂ per year – this not only in 2020 but in addition to the reductions already achieved in recent years and the years to come. The quantity of kerosene saved amounted to around 16.7 thousand tonnes in 2020. This is equivalent to approximately 196 return flights between Munich and New York with an Airbus A350-900 aircraft. Another 570 projects on different levels of implementation - including projects under investigation and projects to be implemented - are still in the pipeline or are shortly before implementation.
Dedicated budget for low-carbon product R&D	Voluntary Initiatives: Participation in Fuel Efficiency Projects: LHG actively participates in several projects on national and European level which focus on achieving fuel efficiency improvements. An example is the participation in the SESAR project, an air traffic control infrastructure modernization program launched by the European Community. The SESAR program represents the technological dimension of the Single European Sky initiative, which aims at reforming the European air traffic management in a way so as to allow the use of more direct flight routes between two European cities, and thus to increase overall fuel efficiency.
Dedicated budget for low-carbon product R&D	In 2020 LHG voluntarily signed a partnership with ETH Zurich and its two spin-offs Synhelion and Climeworks. ETH Zurich has developed innovative methods for removing CO ₂ from the atmosphere and, together with water and the help of heat derived from sunlight, convert it into a synthesis gas that can be used to generate fuel. In early 2021, the Lufthansa Group also announced its planned participation in another pioneering project in Abu Dhabi to generate green hydrogen. One of the partners in both projects is Siemens Energy. Since November 2019, Lufthansa Technik has worked together with BASF Coatings GmbH to tackle climate-related issues and began practical tests of functional films designed to decrease aircraft air resistance in order to reduce fuel consumption and finally achieve less CO ₂ emissions. This riblet film with microscopic ribbing (also called "shark skin"), has been tested and verified in real flight situation by attaching it to the lower fuselage of a Lufthansa Fleet's Boeing 747-400. The modification will generate annual savings of more than 400 tonnes of fuel or 1,300 tonnes of CO ₂ emission per aircraft per year. This innovative fuel saving surface will be applied to LHG's Boeing 777 freighter fleet as a first step. Authorization to further aircraft types is planned. Lufthansa Technik plans to make the fuel-saving technology available to other airlines, also outside of LHG. This is a leading edge example. how LHG helps to make older aircrafts around the world more fuel efficient. The Lufthansa Group has been involved in researching and using alternative fuels in air transport for many years, being the first airline to use biofuel in a commercial aircraft in 2011. Lufthansa was the first airline worldwide to use bio kerosene on regular flights. As early as in 2011 LH deployed an Airbus A321 for six months using blended 50% biosynthetic kerosene in one of its engines on the Frankfurt–Hamburg route. LHG invested some 3.7 mio EUR in the project. The aim of this long-term project was to investigate the effects of bio kerosene on aircraft operation, airframe and engine maintenance. Another milestone in LHG's pioneering work in testing alternative fuels took place in 2014, when Lufthansa operated the first European farnesane flight. In 2016, LHG refueled its aircraft at Oslo Airport with a fuel blend that contained 5 percent bio kerosene.
Dedicated budget for energy efficiency	Fleet modernization program. Fleet renewal is currently the key driver for reducing CO ₂ . The most important driver for reducing CO ₂ emissions from flight operations is investing continuously in modern, particularly fuel-efficient aircraft and engine technologies. Alongside alongside 4 used aircraft, 18 new aircraft went into service with the Lufthansa Group airlines in 2020, including more Airbus A320neos, A321neos, A350s and Boeing 777Fs, which are powered by modern engines. The A350-900 aircraft is one of the latest and most environmentally friendly long-haul aircraft in the world and is much quieter than comparable aircraft types. A total of 28 older aircraft were removed from the Group fleet in exchange. New aircraft are more fuel efficient than older aircraft types that will be replaced in the context of the fleet modernization program. For example, fuel saving aircraft such as the Airbus A350-900 and Airbus A320neo will have lower specific fuel consumption and thus help the Lufthansa Group to make progress towards the target of improving its efficiency by 25% by 2020 compared to 2006 levels. A significant number of new aircraft were already delivered since 2010. E.g. in 2012, 37 new airplanes, in 2013, 31 new airplanes, in 2014, 23 new airplanes, in 2015, 15 new airplanes, in 2016 47 new airplanes, in 2017 29 new airplanes, in 2018 another 29 new airplanes joined the Group, and in 2019, the airlines in the Lufthansa Group took delivery of 27 new aircraft.
Partnering with governments on technology development	In Germany a PtL roadmap for the aviation sector will be published in 2021. This joint strategy involves the federal and regional governments, the aviation and fuel industries and equipment manufacturers, and it is coordinated by the Federal Association of the German Aviation Industry and the Federal Transport Ministry. The Lufthansa Group has made an active contribution to the project in order to help shape demonstration projects, production at scale and market launch of PtL fuels.
Other (Intermodal transport partnerships)	Almost the only purpose of very short flights is to bring passengers to and from longer flights from the Lufthansa Group's hubs in Frankfurt, Munich, Zurich, Vienna and Brussels. Since the 1980s, the Lufthansa Group has been developing ways of combining the various means of transport (air, rail and road) intelligently, a concept known as intermodality, to reduce the environmental impact of return trips to the hub. A pioneering example in the global airline industry was the proprietary Lufthansa owned AirRail Trains connecting Cologne and Frankfurt already in the early 90s of the last century replacing short-haul flight capacity between the two cities. To encourage intermodal transport, a partnership was established with rail operator Deutsche Bahn already in 2001 and has since been intensified, with significant progress made in the reporting year. Joint capacity on existing routes was expanded, and three additional destinations were added: Leipzig, Hanover and Basel. Lufthansa German Airlines now enable its customers in 17 cities to complete the journey to and from their flight on a climate friendly ICE train, with over 120 connections a day. Other opportunities for cooperation are currently being developed with Deutsche Bahn. As there is no long-distance rail connection at Munich Airport, the Lufthansa Group is investigating the use of comfortable buses on selected routes. Two more destinations, Lugano and Geneva, were introduced at the Zurich hub in 2020 in cooperation with the Swiss rail operator SBB. In Vienna, a connection to Graz was added to the joint programme with Austrian Railways, and the existing connection to Salzburg was expanded significantly.
Partnering with governments on technology development	In addition the LHG is still involved with a cross-sector power-fuel initiative coordinated by the German energy agency (DENA). It aims to build an international alliance to develop the future strategic importance of synthetic renewable fuels.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Product

Description of product/Group of products

CO2 offsetting is offered as a component of the "LHG Corporate Value Fares", a corporate fare product. Reason: CO2 offsetting is increasing in value for corporate customers and remains - despite the Corona crisis – focus topic and major driver of our external perception. The CO2 offsetting is managed via donations to the non-profit organization "myclimate". This offer is demonstrating the Lufthansa Group's responsibility for the environment and society as central guiding principle within the corporate business.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify (Calculation carbon emissions of company customer flights with Lufthansa aircraft by using an algorithm developed especially for Lufthansa flights by myclimate and offset these emissions by financing high quality climate protection projects.)

% revenue from low carbon product(s) in the reporting year

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

In 2020, LHG has offset more than 12.000 tons of CO2 for corporate customers using the "LHG Corporate Value Fares". The offer still proves to be very popular, but compensation level certainly dropped dramatically due to the corona pandemic.

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

January 1 2015

Base year end

December 31 2015

Base year emissions (metric tons CO2e)

28601347

Comment

In the year 2016 the Scope 1 emissions of the year 2015 were external verified for the first time (with high assurance).

Scope 2 (location-based)

Base year start

January 1 2015

Base year end

December 31 2015

Base year emissions (metric tons CO2e)

343438

Comment

In the year 2016 the Scope 2 emissions of the year 2015 were external verified for the first time (with limited assurance)

Scope 2 (market-based)

Base year start

January 1 2017

Base year end

December 31 2017

Base year emissions (metric tons CO2e)

241338

Comment

Base year for Scope 2 market-based emissions is 2017 because Scope 2 market-based emissions were not available for 2015.

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

European Union Emission Trading System (EU ETS): The Monitoring and Reporting Regulation (MMR) – General guidance for installations
European Union Emissions Trading System (EU ETS): The Monitoring and Reporting Regulation (MMR) – General guidance for aircraft operators
IPCC Guidelines for National Greenhouse Gas Inventories, 2006
ISO 14064-1
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
Other, please specify (Airport Carbon Accreditation of the Airport Council International Europe)

C5.2a

(C5.2a) Provide details of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

Airport Carbon Accreditation is an independent, voluntary programme administered by WSP, an international consultancy appointed by ACI EUROPE to enforce the accreditation criteria for airports on an annual basis. Aviation companies/airports applying to become accredited must have their carbon footprints independently verified in accordance with ISO14064 (Greenhouse Gas Accounting).

The definitions of emissions footprints used by Airport Carbon Accreditation follow the principles of the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI) "Greenhouse Gas Protocol" Corporate Accounting and Reporting Standard. When considering the emissions from aircraft within the airport perimeter and on final approach and initial departure, Airport Carbon Accreditation uses the International Civil Aviation Organisation's (ICAO) definition of the Landing-Take Off cycle and requires airports to comply with these definitions. The emissions of the Landing-Take-Off cycle are included in the emissions Scope 1, since according to EU ETS regulations and CORSIA regulations, these emissions must also be recorded and reported by the aircraft operator (method B of EU ETS).

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

11509756

Start date

January 1 2020

End date

December 31 2020

Comment

Scope 1 emissions data include direct GHG emissions from aviation passengers, freight, as well as ground operation and stationary installations.

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)

33349293

Start date

January 1 2019

End date

December 31 2019

Comment

Scope 1 emissions data include direct GHG emissions from aviation passengers, freight, as well as ground operation and stationary installations.

Past year 2

Gross global Scope 1 emissions (metric tons CO2e)

32790778

Start date

January 1 2018

End date

December 31 2018

Comment

Scope 1 emissions data include direct GHG emissions from aviation passengers, freight, as well as ground operation and stationary installations.

Past year 3

Gross global Scope 1 emissions (metric tons CO2e)

28949145

Start date

January 1 2017

End date

December 31 2017

Comment

Scope 1 emissions data include direct GHG emissions from aviation passengers, freight, as well as ground operations and stationary installations.

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

Scope 2 location-based figure is calculated with location-based factors (IEA EMISSION FACTORS 2019). Scope 2 market-based figure is calculated with market-based factors for electricity delivered by our energy suppliers where available. For all other sites, where market-based-factors were not available, we used location-based factors to complete the market-based figure.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

222309

Scope 2, market-based (if applicable)

135183

Start date

January 1 2020

End date

December 31 2020

Comment

Scope 2 location-based figure is calculated with location-based factors (IEA EMISSION FACTORS 2019). Scope 2 market-based figure is calculated with market-based factors for electricity delivered by our energy suppliers where available. For all other sites, where market-based-factors weren't available, we used location-based factors to complete the market-based figure. In the CDP-report, we calculated our Scope 2 location-based emissions as instructed in the CDP-guidance. Therefore, we used location-based factors also for sites, where 100 % green power was used.

Past year 1

Scope 2, location-based

259527

Scope 2, market-based (if applicable)

199817

Start date

January 1 2019

End date

December 31 2019

Comment

Scope 2 location-based figure is calculated with location-based factors (IEA EMISSION FACTORS 2019). Scope 2 market-based figure is calculated with market-based factors for electricity delivered by our energy suppliers where available. For all other sites, where market-based-factors weren't available, we used location-based factors to complete the market-based figure. In the CDP-report, we calculated our Scope 2 location-based emissions as instructed in the CDP-guidance. Therefore, we used location-based factors also for sites, where 100 % green power was used.

Past year 2

Scope 2, location-based

237771

Scope 2, market-based (if applicable)

194059

Start date

January 1 2018

End date

December 31 2018

Comment

Scope 2 location-based figure is calculated with location-based factors (IEA EMISSION FACTORS 2019). Scope 2 market-based figure is calculated with market-based factors for electricity delivered by our energy suppliers where available. For all other sites, where market-based-factors weren't available, we used location-based factors to complete the market-based figure. In the CDP-report, we calculated our Scope 2 location-based emissions as instructed in the CDP-guidance. Therefore, we used location-based factors also for sites, where 100 % green power was used.

Past year 3

Scope 2, location-based

260847

Scope 2, market-based (if applicable)

241338

Start date

January 1 2017

End date

December 31 2017

Comment

Scope 2 location-based figure is calculated with location-based factors (IEA EMISSION FACTORS 2019). Scope 2 market-based figure is calculated with market-based factors for electricity delivered by our energy suppliers where available. For all other sites, where market-based-factors weren't available, we used location-based factors to complete the market-based figure. In the CDP-report, we calculated our Scope 2 location-based emissions as instructed in the CDP-guidance. Therefore, we used location-based factors also for sites, where 100 % green power was used.

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

C6.4a

(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source

Non-owned offices in countries outside of Europe: Small offices that are used but not owned by Lufthansa. Incomplete information for the period in question.

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

Explain why this source is excluded

Emissions from some small non-owned-office buildings which usually have a very small energy consumption and no energy consumption data is available.

Source

Ground vehicles: vehicles used for ground operation at smaller airports. Incomplete information for the period in question. Data gaps exist for certain group airlines, business units and in certain operating destinations.

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

Explain why this source is excluded

Incomplete information for the period in question. Data gaps exist for certain group airlines, business units and in certain operating destinations.

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

In 2019 this category reported GHG emissions from the production of flight simulators, which Lufthansa Group (LHG) bought in 2019. Based on the assumption that GHG emissions from the production of aircraft and flight simulators are about the same in the first order, emissions were estimated in equivalence to the emissions from aircraft manufacturing. In 2020 LHG has bought no new flight simulators, so this category is not relevant in 2020.

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

473200

Emissions calculation methodology

Aircraft / Engine manufacturing: GHG emissions which are emitted through the process of aircraft and engine manufacturing. The emission factor derives from a research paper published by the University of California (Berkeley) in 2008. The emissions calculated reflect the LHG aircraft deliveries in 2020. Therefore, LHG accounts for the total cradle-to-gate emissions of purchased aircraft/engines in the year of acquisition. Ref: Chester, M./ Horvath, A. (2008): Environmental Life-cycle Assessment of Passenger Transportation: A Detailed Methodology for Energy, Greenhouse Gas, and Criteria Pollutant Inventories of Automobiles, Buses, Light Rail, Heavy Rail and Air. (Working Paper) UC Berkeley Centre for Future Urban Transport: Berkeley. (UCB-ITS-VWP-2008-2).

Percentage of emissions calculated using data obtained from suppliers or value chain partners

30

Please explain

In 2020 the Lufthansa Group has entered into service 18 new aircraft (14 medium sized and 3 large sized aircraft in LHG ownership as well as 1 leased aircraft, which is not accounted for here due to it's leased status).

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

2599885

Emissions calculation methodology

According to Greenhouse Gas Protocol aggregated number from the following subcategories: A) Upstream emissions of purchased fuels: CO₂ emissions which are emitted along the supply chain of kerosene (Well-to-Tank-Process). The calculation is based on the burned kerosene by all aircraft (those emissions are reported in Scope 1) and on the emission factor from the DIN EN Standard 16258. B) Upstream emissions of purchased electricity: The calculation is based on emission factors from the DEFRA 2015 (Government emission conversion factors for greenhouse gas company reporting). The calculation method is based on the average-data method according to the "Guidance for Calculating Scope 3 Emissions" from the Greenhouse Gas Protocol (p.32 and following). C) transmission and distribution losses: The calculation is based on electric power and district heating transmission and distribution loss rates for the respective country from DEFRA, 2015 (Government emission conversion factors for greenhouse gas company reporting). The calculation method is based on the average-data method according to the "Guidance for Calculating Scope 3 Emissions" from the Greenhouse Gas Protocol (p.34). Estimates for the subcategory "D) Generation of purchased electricity that is sold to end users" were not conducted since it is not applicable to Lufthansa.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

70

Please explain

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

158702

Emissions calculation methodology

Aggregated number from the following subcategories: - Flights for Lufthansa Group (LHG) services from third parties, which are fully documented in our operational datawarehouse systems. These third parties are neither owned nor controlled by LHG. - The Road Feeder Service, which transports airfreight by trucks from its initial origin to the airport, respectively from the airport to its final destination. Trucks are neither owned nor controlled by LHG. The emissions factor used was derived from the CLECAT-study ("Calculating GHG Emissions for Freight Forwarding and Logistics Services" (2012)) - Airport operation: The GHG emissions which result from airport operation. The data was requested from the Lufthansa Group's main hubs (Frankfurt, Munich, Zurich, Vienna), which also report their emissions according to the GHG Protocol.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

80

Please explain

According to the GHG Protocol life cycle emissions associated with manufacturing vehicles, facilities or infrastructure can be included in this category optionally (cp. "Guidance for Calculating Scope 3 emissions" from the Greenhouse Gas Protocol, p.4). The main part of the emissions in this category are resulting from airport operation. Further in this category emissions from flights by third parties performing flights for the Lufthansa Group and ground based transportation performed by third parties are included.

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

187837

Emissions calculation methodology

Waste data for 2020 was only available partly. Waste generated at German locations is available for most of the LHG's companies. For LSG Sky Chefs, which is responsible for the major part of the waste generated, international data is included, originating from 2019.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

70

Please explain

The major part of the waste is generated by LSG, Lufthansa Group's catering company. Since this company operates in countries all over the world, with facilities in big cities, as well as developing countries, tracking down waste precisely can be difficult. Still, we are improving the data coverage every year. Growing numbers do not automatically indicate more waste, they can also be explained by growing data coverage.

Business travel

Evaluation status

Not relevant, calculated

Metric tonnes CO₂e

17740

Emissions calculation methodology

This contains staff accommodation and business travel. Business travel is only included when operated by other airlines, since flights operated by members of the Lufthansa Group are already included in Scope 1. Please note that all business travel of Lufthansa Group employees was accounted for with a zero emission factor due to the fact that it was fully compensated in 2020. The emissions for staff accommodation and business flights were not significant for the Lufthansa Group as they amounted to less than 1% of the Scope 3 emissions in the past two years. The emissions for staff accommodation were calculated based on an average crew size and layover duration. A category is classified as "not relevant, calculated" if the share of calculated Scope 3 emissions is <1% of total Scope 3 emissions in the reporting year.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

30

Please explain

Employee commuting

Evaluation status

Not relevant, calculated

Metric tonnes CO₂e

20865

Emissions calculation methodology

The emissions from employee commuting were calculated based on the "Mikrozensus 2016", a nationwide, governmental study that includes average commuting habits in Germany. Emissions factor actualized by using new data from Umweltbundesamt Germany (https://www.umweltbundesamt.de/sites/default/files/medien/366/bilder/dateien/vergleich_der_durchschnittlichen_emissionen_einzelnr_verkehrsmittel_im_personenverkehr_bezugsjahr_2018_tabelle.pdf). Since such data was not available for other countries the data was extrapolated to all Lufthansa Group employees. Due to the pandemic-related increase of short-time work and the share of employees working from their home-offices, the emissions accounted for the last three quarters of 2020 were reduced by 50%. A category is classified as "not relevant, calculated" if the share of calculated Scope 3 emissions is <1% of total Scope 3 emissions in the reporting year.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

50

Please explain

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Emissions from operating leased assets within the Lufthansa Group are accounted for in Scope 1 and Scope 2.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

According to the GHG Protocol "this category includes emissions from transportation and distribution of products sold by the reporting company in the reporting year between the reporting company's operations and the end consumer [...] in vehicles and facilities not owned or controlled by the reporting company" ("Guidance for Calculating Scope 3 Emissions" from the Greenhouse Gas Protocol, p.70). Within the Lufthansa Group mainly transportation, maintenance and IT services are provided. These services are no physical products and hence cannot be sold or processed again. Products sold by LHG's catering service are transported in own vehicles and are therefore accounted for in Scope 1 emissions.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Within the Lufthansa Group mainly transportation, maintenance and IT services are provided. These services are no physical products and hence cannot be sold or processed again. Therefore, emissions from processing of sold intermediate products by third parties in this category are not relevant to LHG (cp. "Guidance for Calculating Scope 3 Emissions" from the Greenhouse Gas Protocol, p.72).

Use of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Within the Lufthansa Group mainly transportation, maintenance and IT services are provided. These services are not physical products and hence cannot be sold or processed again. Therefore, emissions from the use of sold goods and services by the end user are not relevant to LHG (cp. "Guidance for Calculating Scope 3 Emissions" from the Greenhouse Gas Protocol, p.77).

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Within the Lufthansa Group mainly transportation, maintenance and IT services are provided. These services are not physical products and hence cannot be sold or processed again. Therefore, end-of-life emissions from sold products due to waste disposal and treatment are not relevant to LHG (cp. "Guidance for Calculating Scope 3 Emissions" from the Greenhouse Gas Protocol, p.88).

Downstream leased assets

Evaluation status

Not relevant, calculated

Metric tonnes CO₂e

33593

Emissions calculation methodology

Emissions resulting from aircraft owned by the Lufthansa Group and leased to other airlines outside the Lufthansa Group. The calculation is based on the assumption that the leased aircraft have a similar capacity and fuel consumption as the respective aircraft types within the Lufthansa Group. Therefore, the calculation is based on the internal fuel consumption of the respective leased aircraft type as a representative figure and extrapolated to the respective number and time of lease. A category is classified a "not relevant, calculated" if the share of calculated Scope 3 emissions is <1% of total Scope 3 emissions in the reporting year .

Percentage of emissions calculated using data obtained from suppliers or value chain partners

80

Please explain

Franchises

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

LHG does not operate franchises. This category is not relevant.

Investments

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

LHG has made financial investments, but they only account for a small share of total investments. Within the Lufthansa Group, the main investments are done in transportation infrastructure, maintenance and IT services. Therefore, emissions related to financial investments are not calculated.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

There are no other Scope 3 upstream emissions which need to be accounted for. All relevant upstream emissions are covered by the upstream emission categories above

Other (downstream)

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

There are no other Scope 3 downstream emissions which need to be accounted for. All relevant downstream emissions are covered by the downstream emission categories above.

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.000857

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

11644939

Metric denominator

unit total revenue

Metric denominator: Unit total

13589000000

Scope 2 figure used

Market-based

% change from previous year

7

Direction of change

Decreased

Reason for change

Relative decrease of scope 1 and scope 2 emissions 2020 versus 2019 of the Lufthansa group was greater than the relative decrease of the total revenue of the group. The explanation for this effect is, that Lufthansas traffic revenues, which are closely correlated to Lufthansas scope 1 impact, decreased by a relatively smaller percentage than Lufthansa total revenues. This effect is owed to the COVID-19 pandemic situation, that had an extremely severe impact on the demand for passenger air transport.

C-TS6.15

(C-TS6.15) What are your primary intensity (activity-based) metrics that are appropriate to your emissions from transport activities in Scope 1, 2, and 3?

Aviation

Scopes used for calculation of intensities

Report just Scope 1

Intensity figure

0.00089

Metric numerator: emissions in metric tons CO2e

11370073

Metric denominator: unit

t.km

Metric denominator: unit total

12778473538

% change from previous year

1.4

Please explain any exclusions in your coverage of transport emissions in selected category, and reasons for change in emissions intensity.

Data include all passenger and freight flights of LHG aircraft. Exclusion of ground based freight transport (all with subcontractors). The intensity figure represents the CO2-emissions in t CO2 per revenue tonne kilometer transported (RTK). The slight increase in emission intensity is owed to the pandemic situation in 2020: the passenger load factor, which declined to 60.8% on average compared to 82.0% in 2019 and to the many changes in the route network.

ALL

Scopes used for calculation of intensities

Please select

Intensity figure

Metric numerator: emissions in metric tons CO2e

Metric denominator: unit

Please select

Metric denominator: unit total

% change from previous year

Please explain any exclusions in your coverage of transport emissions in selected category, and reasons for change in emissions intensity.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

No

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Other, please specify (International Airspace)	11370073
Germany	65153
Other, please specify (Rest of world)	74490

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By activity

C7.3c

(C7.3c) Break down your total gross global Scope 1 emissions by business activity.

Activity	Scope 1 emissions (metric tons CO2e)
Catering	70161
Aircraft Maintenance, repair and overhaul (LHT)	61639
Aircraft & ground operations of passenger airlines	9855823
Cargo	1514399
Services (IT, Flight Training, additional customer services like miles&more)	7733

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions, metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (midstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	11370073	<Not Applicable>	For the Lufthansa Group, transport service activities as a sector production activity only imply aircraft operations, not ground operations. Therefore, sector-specific Scope 1 emissions include the emissions from the aircraft fleet of Lufthansa Group (verified with a high assurance).

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
Germany	110850	31234	359107	2181
Other, please specify (Rest of the world (without Germany))	111459	103949	271122	40037

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By activity

C7.6c

(C7.6c) Break down your total gross global Scope 2 emissions by business activity.

Activity	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Catering (kitchen, storing facilities etc.)	67317	59165
Aircraft Maintenance, repair and overhaul (LHT)	69529	38146
Airline Offices (Administration)	47959	23890
Cargo	21836	10528
Services (IT, Flight Training, additional customer services like miles&more)	15668	3454

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (midstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	69794	34418	For Lufthansa Group, sector production activities are transport services activities. Sector-specific location-based and market based Scope 2 emissions include the emissions from the Lufthansa Group airlines Lufthansa German Airline, Lufthansa City Line, Brussels Airlines, Eurowings, Germanwings, Air Dolomiti, SWISS, Austrian Airlines and Lufthansa Cargo verified with a limited assurance. Sector-specific market-based Scope 2 emissions of Lufthansa Group airlines include sites in Germany, Austria, Belgium and Switzerland, which provided market-based factors and all other sites, where only location-based factors were available.

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?
 Decreased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	27416	Decreased	0.08	Since 2020 the Lufthansa Group is sourcing exclusively carbon-neutral electricity in its home markets Germany, Austria, Belgium and Switzerland, whenever Lufthansa is sourcing directly from energy providers or from airports and also in selected sites in other countries. This is accomplished by either directly sourcing green electricity or by buying high quality green electricity certificates, so called "Grünstromzertifikate" according to Ökostromlabel HKNneu 100. That allowed the Lufthansa Group to save in 2020 an additional 27.416 t of CO2 compared to 2019, representing another decrease of 0,08 % related to the Lufthansa Group's combined scope 1 and 2 emissions 2019. Calculation: (27.416/33.549.110)*100=0,08%
Other emissions reduction activities	94420	Decreased	0.28	As detailed in section 4.3 of this questionnaire the Lufthansa Group implemented in 2020 emission reduction initiatives leading to annual CO2 saving of 124.688 tons. In 2019 the annual savings of the emission reduction initiatives were 30.268 tons of CO2. That allowed the Lufthansa Group to save in 2020 an additional 94.420 t of CO2 compared to 2019, equalling to another decrease of 0,28 % related to the Lufthansa Group's combined scope 1 and 2 emissions in 2019. Calculation: (94.420/33.549.110)*100=0,28%
Divestment		<Not Applicable >		
Acquisitions		<Not Applicable >		
Mergers		<Not Applicable >		
Change in output	21904171	Decreased	65.3	Due to the COVID-19 Pandemic a significantly reduced air transport capacity was offered by the Lufthansa Group's airlines. A major part of the fleet was grounded and the reduced demand was mainly met by employing the most fuel efficient modern aircraft of the Lufthansa Group fleet only. As a consequence of these management decisions it was possible to push down the kerosene consumption and the CO2 emissions (Scope 1 and 2) to the greatest possible extent. The emissions that resulted from the change in output were calculated as follows: total Scope 1+2 2020 minus total Scope 1+2 2019= -21.904.171 t CO2e (11.644.939-33.549.110). Calculation of percentage change: (-21.904.171/33.549.110)*100= - 65,3%
Change in methodology		<Not Applicable >		
Change in boundary		<Not Applicable >		
Change in physical operating conditions		<Not Applicable >		
Unidentified		<Not Applicable >		
Other		<Not Applicable >		

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Market-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 5% but less than or equal to 10%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	Yes
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	Yes
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	Unable to confirm heating value	0	44678461	44678461
Consumption of purchased or acquired electricity	<Not Applicable>	42218	403027	445245
Consumption of purchased or acquired heat	<Not Applicable>	0	113601	113601
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	0	113601	113601
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	42218	45308690	45350907

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Jet Kerosene

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

44198000

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

3.15

Unit

metric tons CO2e per metric ton

Emissions factor source

Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council, Article 52, Annex III

Comment

Fuels (excluding feedstocks)

Natural Gas

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

340431

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.18396

Unit

metric tons CO2 per MWh

Emissions factor source

UK Government GHG Conversion Factors for Company Reporting, published by Defra (Department for Environment, Food & Rural Affairs)

Comment

Fuels (excluding feedstocks)

Diesel

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

70372

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

2667

Unit

kg CO2e per m3

Emissions factor source

UK Government GHG Conversion Factors for Company Reporting, published by Defra (Department for Environment, Food & Rural Affairs)

Comment

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

23172

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

2420

Unit

kg CO2 per m3

Emissions factor source

German Environmental Federal Agency (Umweltbundesamt) and EU 136/2014 (Annex IV)

Comment

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

11898

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

227.16

Unit

kg CO2 per metric ton

Emissions factor sourceIPCC 2006 (https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf)**Comment**

Fuels (excluding feedstocks)

Other, please specify (Heating Oil)

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

3064

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

<Not Applicable>

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

266.4

Unit

kg CO2 per MWh

Emissions factor source

Federal Environment Agency of Germany: CO2 emission factors for fossil fuels, Climate Change 27/2016, page 46

Comment

C8.2d**(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.**

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	26187	26187	0	0
Heat	25828	25828	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero emission factor in the market-based Scope 2 figure reported in C6.3.

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type

Low-carbon energy mix

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Germany

MWh consumed accounted for at a zero emission factor

195301

Comment

In Germany 1,2 % of all zero emission electricity consumed by the Lufthansa Group in 2020 was green electricity, 98.8% was covered by green electricity certificates. In 2020 the Lufthansa Group was sourcing exclusively carbon-neutral electricity in its home markets Germany, Austria, Belgium and Switzerland, whenever Lufthansa is sourcing directly from energy providers or from airports and also in selected sites in other countries. This is accomplished by either directly sourcing green electricity or by buying high quality green electricity certificates, so called "Grünstromzertifikate" according to Ökostromlabel HKNneu 100. That allowed the Lufthansa Group to save more than 80.000 tons of CO2 in 2020 worldwide.

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type

Low-carbon energy mix

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Belgium

MWh consumed accounted for at a zero emission factor

3760

Comment

In Belgium 100 % of all zero emission electricity consumed by the Lufthansa Group in 2020 was green electricity. In 2020 the Lufthansa Group was sourcing exclusively carbon-neutral electricity in its home markets Germany, Austria, Belgium and Switzerland, whenever Lufthansa is sourcing directly from energy providers or from airports and also in selected sites in other countries. This is accomplished by either directly sourcing green electricity or by buying high quality green electricity certificates, so called "Grünstromzertifikate" according to Ökostromlabel HKNneu 100. That allowed the Lufthansa Group to save more than 80.000 tons of CO2 in 2020 worldwide.

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type

Low-carbon energy mix

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Austria

MWh consumed accounted for at a zero emission factor

19129

Comment

In Austria 100% of all zero emission electricity consumed by the Lufthansa Group in 2020 was green electricity. In 2020 the Lufthansa Group was sourcing exclusively carbon-neutral electricity in its home markets Germany, Austria, Belgium and Switzerland, whenever Lufthansa is sourcing directly from energy providers or from airports and also in selected sites in other countries. This is accomplished by either directly sourcing green electricity or by buying high quality green electricity certificates, so called "Grünstromzertifikate" according to Ökostromlabel HKNneu 100. That allowed the Lufthansa Group to save more than 80.000 tons of CO2 in 2020 worldwide.

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type

Low-carbon energy mix

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Switzerland

MWh consumed accounted for at a zero emission factor

3691

Comment

In Switzerland 29,3 % of all zero emission electricity consumed by the Lufthansa Group in 2020 was green electricity, 70,7% was covered by green electricity certificates. In 2020 the Lufthansa Group was sourcing exclusively carbon-neutral electricity in its home markets Germany, Austria, Belgium and Switzerland, whenever Lufthansa is sourcing directly from energy providers or from airports and also in selected sites in other countries. This is accomplished by either directly sourcing green electricity or by buying high quality green electricity certificates, so called "Grünstromzertifikate" according to Ökostromlabel HKNneu 100. That allowed the Lufthansa Group to save more than 80.000 tons of CO2 in 2020 worldwide.

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type

Low-carbon energy mix

Country/area of consumption of low-carbon electricity, heat, steam or cooling

United Kingdom of Great Britain and Northern Ireland

MWh consumed accounted for at a zero emission factor

3239

Comment

In the United Kingdom of Great Britain and Northern Ireland 100 % of all zero emission electricity consumed by the Lufthansa Group in 2020 was green electricity. In 2020 the Lufthansa Group was sourcing exclusively carbon-neutral electricity in its home markets Germany, Austria, Belgium and Switzerland, whenever Lufthansa is sourcing directly from energy providers or from airports and also in selected sites in other countries. This is accomplished by either directly sourcing green electricity or by buying high quality green electricity certificates, so called "Grünstromzertifikate" according to Ökostromlabel HKNneu 100. That allowed the Lufthansa Group to save more than 80.000 tons of CO2 in 2020 worldwide.

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type

Low-carbon energy mix

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Ireland

MWh consumed accounted for at a zero emission factor

9594

Comment

In the Ireland 100 % of all zero emission electricity consumed by the Lufthansa Group in 2020 was green electricity. In 2020 the Lufthansa Group was sourcing exclusively carbon-neutral electricity in its home markets Germany, Austria, Belgium and Switzerland, whenever Lufthansa is sourcing directly from energy providers or from airports and also in selected sites in other countries. This is accomplished by either directly sourcing green electricity or by buying high quality green electricity certificates, so called "Grünstromzertifikate" according to Ökostromlabel HKNneu 100. That allowed the Lufthansa Group to save more than 80.000 tons of CO2 in 2020 worldwide.

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type

Low-carbon energy mix

Country/area of consumption of low-carbon electricity, heat, steam or cooling

United States of America

MWh consumed accounted for at a zero emission factor

2432

Comment

In the United States of America 100 % of all zero emission electricity consumed by the Lufthansa Group in 2020 was green electricity. In 2020 the Lufthansa Group was sourcing exclusively carbon-neutral electricity in its home markets Germany, Austria, Belgium and Switzerland, whenever Lufthansa is sourcing directly from energy providers or from airports and also in selected sites in other countries. This is accomplished by either directly sourcing green electricity or by buying high quality green electricity certificates, so called "Grünstromzertifikate" according to Ökostromlabel HKNneu 100. That allowed the Lufthansa Group to save more than 80.000 tons of CO2 in 2020 worldwide.

C-TS8.5

(C-TS8.5) Provide any efficiency metrics that are appropriate for your organization's transport products and/or services.

Activity

Aviation

Metric figure

0.353

Metric numerator

Liters of fuel

Metric denominator

t.km

Metric numerator: Unit total

4513286083

Metric denominator: Unit total

12778473538

% change from last year

1.4

Please explain

The main driver of this development was the lower passenger load factor, which resulted mainly from the wide-ranging travel restrictions caused by the pandemic. The seat load factor of the Lufthansa Group's own fleet declined from 82,0% in 2019 to 60,8% in 2020.

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

Description

Energy usage

Metric value

3.56

Metric numerator

MWh electricity in reporting year

Metric denominator (intensity metric only)

Average number of employees in reporting year

% change from previous year

8.7

Direction of change

Decreased

Please explain

Since there is a close correlation between the number of employees working in the LHG's premises and LHG's consumption of electricity, we created a KPI relating MWh electricity consumed to the average number of employees. This KPI shows the average electricity consumption in MWh per employee per year. The positive development of this KPI observed in 2020 versus 2019 is partly owed to the COVID-19 pandemic and the resulting increased use of homeoffice options.

C-TO9.3/C-TS9.3

(C-TO9.3/C-TS9.3) Provide tracking metrics for the implementation of low-carbon transport technology over the reporting year.

Activity

Aviation

Metric

Fleet adoption

Technology

Other, please specify (Company Car Leasing: increase in share of low carbon vehicles)

Metric figure

60

Metric unit

Other, please specify (Percentage increase of the share of low carbon company cars in reporting year 2020 compared to base year 2019)

Explanation

By incentivizing the use of low carbon company cars in Germany, the utilization of these cars was increased from about 7% in 2019 to about 11% in 2020. This represents an year to year increase of the electric and hybrid fleet of about 60% in 2020 compared to 2019.

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	

C-TO9.6a/C-TS9.6a

(C-TO9.6a/C-TS9.6a) Provide details of your organization's investments in low-carbon R&D for transport-related activities over the last three years.

Activity

Aviation

Technology area

Aerodynamics

Stage of development in the reporting year

Pilot demonstration

Average % of total R&D investment over the last 3 years

≤20%

R&D investment figure in the reporting year (optional)

Comment

In February 2020, Lufthansa Technik completed first trials of a new surface coating developed jointly with BASF Coatings GmbH. This innovative project had its beginning in late 2019. Since November 2019, Lufthansa Technik has worked together with BASF Coatings GmbH to tackle climate-related issues and began practical tests of functional films designed to decrease aircraft air resistance in order to reduce fuel consumption and finally achieve less CO2 emissions. This riblet film with microscopic ribbing (also called "shark skin"), has been tested by attaching it to the lower fuselage of a Lufthansa Fleet's Boeing 747-400. The technology has been verified during actual flight operations. Based on the standard deployment profile of this aircraft, the modification is expected to bring annual savings of more than 400 tons of fuel, equalling to almost 1,300 tons of CO2 emission savings per aircraft and per year. It had been planned prior to the COVID-19 pandemic crisis to attach the riblet film to the entire Boeing 747-400 fleet as well as to other aircraft types in 2020. The plan to apply the new surface coating to the entire fleet of Boeing 747-400s at Lufthansa German Airlines has been postponed due to the pandemic. Due to the high demand in cargo air transport capacity during the pandemic, transporting amongst other cargo-types Corona vaccination, protective equipment and tests, it was decided to start applying the innovative fuel saving surface to Lufthansa's Boeing 777 freighter fleet of the LH Group as a first step. Plans persist to have the energy-saving foil authorised to further aircraft types, promoting it more widely. Therefore Lufthansa Technik plans to make the fuel-saving film available to other airlines, even outside the Lufthansa Group. So this is a leading edge example. how Lufthansa helps to make older aircrafts around the world more fuel efficient.

Activity

Aviation

Technology area

Operations

Stage of development in the reporting year

Small scale commercial deployment

Average % of total R&D investment over the last 3 years

≤20%

R&D investment figure in the reporting year (optional)

Comment

The Lufthansa Group's operational measures to protect the climate include the deployment of efficiently sized aircraft, improvements to load factors, testing and introduction of new flight procedures, as well as the determination of optimal flight routes and air speeds. All these climate-related measures help to reduce the fuel consumption and therefore to reduce CO2 emissions: e.g. in the SESAR demonstration "Augmented Approaches to Land-2" (AAL2) in 2018, navigation methods were optimised to achieve more efficient approaches with lower emissions. A systemic approach is increasingly taken to realise further efficiency gains at the interfaces to system partners such as airports or air traffic control, which includes the system partners in the analysis and definition of activities. In the SESAR large-scale demonstration "xStream" in 2019, the EMAS (Early Morning Arrival Stream) Frankfurt project from the previous year was continued. In cooperation with DFS Deutsche Flugsicherung GmbH (German Air Traffic Control), the concept "Target Times" for the arrival stream between 5:00 a.m. and 6:00 a.m. was developed and tested in a second two-week demonstration. The aim is to achieve an improvement in predictability and more efficient arrivals at Frankfurt Airport. In order to exploit the potential to improve operating efficiency, more in-depth analyses of the results, tactical approach procedures and process adjustments will have to be conducted together with DFS. This is scheduled to take place after traffic volumes have reached pre-crisis levels. In 2020 the "Low Demand Season Concept" implemented together with DFS: Lateral and vertical optimization of flight profiles inbound Frankfurt and Munich in times of low traffic, saving ca 4.200 tons of fuel equivalent to 13.300 tons of CO2 in Q3/Q4 2020. A new departure routing was implemented at Düsseldorf Airport, reducing noise and CO2 emissions by 23tons in 2020. This by using modern satellite navigation.

Activity

Aviation

Technology area

Alternative fuels

Stage of development in the reporting year

Large scale commercial deployment

Average % of total R&D investment over the last 3 years

≤20%

R&D investment figure in the reporting year (optional)

Comment

The Lufthansa Innovation Hub launched the offsetting platform COMPENSAID in August 2019. It was the first platform worldwide offering travellers to replace fossil fuels with sustainable aviation fuel (SAF). LHG provides the infrastructure and the SAF purchases on behalf of the traveller, of which the traveller has to pay the price difference between fossil fuel and SAF. The COMPENSAID Platform can be integrated into any flight booking process within any airline worldwide and can therefore be commercialized and support climate change in a way that more and more passengers buy SAF and reduce CO2 emissions. By involving its customers as well, the Lufthansa Group wants to accelerate the transformation of the industry. The offset platform Compensaid, which the Lufthansa Innovation Hub launched in 2019, was refined and integrated into the flight booking process for all Lufthansa Group airlines in 2020. It can be used by travellers to substitute the fossil fuels required for their flights by SAF. This principle was transferred to cargo flights for the first time in November 2020. Lufthansa Cargo and DB Schenker completed a cargo flight that was 100% carbon neutral. This entailed feeding the volume of SAF that corresponds to the fuel requirement for this flight into the fuel supply system at Frankfurt Airport and notionally allocating it all to this flight. At the same time, the emissions caused by the SAF itself (e.g. for its production and logistics) were also offset.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

High assurance

Attach the statement

1
2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf

Page/ section reference

Please refer to pages 1-2 of attached document named 2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf

Relevant standard

European Union Emissions Trading System (EU ETS)

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

1
2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf

Page/ section reference

Please refer to pages 1-2 of attached document named 2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf

Relevant standard

Other, please specify (The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard and associated Guidance documents; Airport Carbon Accreditation (ACA) des Airports Council International Europe)

Proportion of reported emissions verified (%)

100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category

Scope 3: Purchased goods and services

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

1

2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf

Page/section reference

Please refer to pages 1-2 of attached document named 2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf

Relevant standard

Other, please specify (The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard and associated Guidance documents; Airport Carbon Accreditation (ACA) des Airports Council International Europe)

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Capital goods

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

1

2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf

Page/section reference

Please refer to pages 1-2 of attached document named 2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf

Relevant standard

Other, please specify (The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard and associated Guidance documents; Airport Carbon Accreditation (ACA) des Airports Council International Europe)

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

1

2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf

Page/section reference

Please refer to pages 1-2 of attached document named 2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf

Relevant standard

Other, please specify (The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard and associated Guidance documents; Airport Carbon Accreditation (ACA) des Airports Council International Europe)

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Upstream transportation and distribution

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

1

Page/section reference

Please refer to pages 1-2 of attached document named 2021_Lufthansa_CDP-report Berichtsjaahr 2020_Zertifikat 14064-1_engl.pdf

Relevant standard

Other, please specify (The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard and associated Guidance documents; Airport Carbon Accreditation (ACA) des Airports Council International Europe)

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Waste generated in operations

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

1

2021_Lufthansa_CDP-report Berichtsjaahr 2020_Zertifikat 14064-1_engl.pdf

Page/section reference

Please refer to pages 1-2 of attached document named 2021_Lufthansa_CDP-report Berichtsjaahr 2020_Zertifikat 14064-1_engl.pdf

Relevant standard

Other, please specify (The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard and associated Guidance documents; Airport Carbon Accreditation (ACA) des Airports Council International Europe)

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Business travel

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

1

2021_Lufthansa_CDP-report Berichtsjaahr 2020_Zertifikat 14064-1_engl.pdf

Page/section reference

Please refer to pages 1-2 of attached document named 2021_Lufthansa_CDP-report Berichtsjaahr 2020_Zertifikat 14064-1_engl.pdf

Relevant standard

Other, please specify (The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard and associated Guidance documents; Airport Carbon Accreditation (ACA) des Airports Council International Europe)

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Employee commuting

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

1

2021_Lufthansa_CDP-report Berichtsjaahr 2020_Zertifikat 14064-1_engl.pdf

Page/section reference

Please refer to pages 1-2 of attached document named 2021_Lufthansa_CDP-report Berichtsjaahr 2020_Zertifikat 14064-1_engl.pdf

Relevant standard

Other, please specify (The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard and associated Guidance documents; Airport Carbon Accreditation (ACA) des Airports Council International Europe)

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Downstream leased assets

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

1

2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf

Page/section reference

Please refer to pages 1-2 of attached document named 2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf

Relevant standard

Other, please specify (The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard and associated Guidance documents; Airport Carbon Accreditation (ACA) des Airports Council International Europe)

Proportion of reported emissions verified (%)

100

C10.2**(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?**

Yes

C10.2a**(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?**

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C6. Emissions data	Other, please specify (Relative decrease of scope 1 and scope 2 emissions 2020 versus 2019 related to LHG's total annual revenue in Euro)	European Union Emissions Trading System (EU ETS); The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard and associated Guidance documents; Airport Carbon Accreditation (ACA) des Airports Council International Europe	LHG has chosen to verify the selected data points with the mentioned standard in order to provide verified data to our interested stakeholders. All data mentioned in questions C6.10 were verified by third party . The verification was carried out on a yearly basis via the entire LHG organization. 2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf
C7. Emissions breakdown	Other, please specify (Scope 1 and 2 emissions by country /region, as well as by business activity)	European Union Emissions Trading System (EU ETS); The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard and associated Guidance documents; Airport Carbon Accreditation (ACA) des Airports Council International Europe	LHG has chosen to verify the selected data points with the mentioned standard in order to provide verified data to our interested stakeholders. - all data mentioned in questions C7.2, C7.3c, C-TS7.4, C7.5, C7.6c, C-TS7.7 and C7.9a were verified by third party . The verification was carried out on a yearly basis via the entire LHG organization. 2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf
C8. Energy	Energy consumption	European Union Emissions Trading System (EU ETS); The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard and associated Guidance documents; Airport Carbon Accreditation (ACA) des Airports Council International Europe	LHG has chosen to verify the selected data points with the mentioned standard in order to provide verified data to our interested stakeholders. - all data mentioned in questions C8.1, C8.2a, C8.2c and C8.2d were verified by third party . The verification was carried out on a yearly basis via the entire LHG organization. 2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf
C8. Energy	Other, please specify (Efficiency metric appropriate to organization's transport products and services)	European Union Emissions Trading System (EU ETS); The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard and associated Guidance documents; Airport Carbon Accreditation (ACA) des Airports Council International Europe	LHG has chosen to verify the selected data points with the mentioned standard in order to provide verified data to our interested stakeholders. - all data mentioned in question C-TS8.5 was verified by third party . The verification was carried out on a yearly basis via the entire LHG organization. 2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf

2021_Lufthansa_CDP-report Berichtsjahr 2020_Zertifikat 14064-1_engl.pdf

C11. Carbon pricing**C11.1****(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?**

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

EU ETS

Switzerland ETS

Other ETS, please specify (CORSA)

C11.1b

(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.

EU ETS

% of Scope 1 emissions covered by the ETS

27

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1 2020

Period end date

December 31 2020

Allowances allocated

3563147

Allowances purchased

1340297

Verified Scope 1 emissions in metric tons CO₂e

2872360

Verified Scope 2 emissions in metric tons CO₂e

0

Details of ownership

Facilities we own and operate

Comment

Allowance purchased include those for EU ETS as well as for CH ETS . That is possible as the same type of allowance can be used in both emission trading scheme. In purchasing we take into account also the planned emissions of the year 2021 and 2022. Scope 1 coverage (27%) is calculated by adding the verified EU ETS and CH ETS scope 1 emissions and relating this amount to the Lufthansa Group's total scope 1 emissions.

Switzerland ETS

% of Scope 1 emissions covered by the ETS

27

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1 2020

Period end date

December 31 2020

Allowances allocated

491478

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO₂e

262184

Verified Scope 2 emissions in metric tons CO₂e

0

Details of ownership

Facilities we own and operate

Comment

see comment to EU ETS. Scope 1 coverage (27%) is calculated by adding the verified EU ETS and CH ETS scope 1 emissions and relating this amount to the Lufthansa Group's total scope 1 emissions.

Other ETS, please specify

% of Scope 1 emissions covered by the ETS

71

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1 2021

Period end date

December 31 2021

Allowances allocated

0

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO2e

0

Verified Scope 2 emissions in metric tons CO2e

0

Details of ownership

Facilities we own and operate

Comment

CORSIA active accounting period starts in 2021. LHG has prepared everything necessary to start the relevant processes. The LHG Airlines have submitted their CORSIA monitoring concepts, all of which have been agreed upon. Furthermore, LHG airlines have submitted their first CORSIA reporting together with the EU ETS Reporting to the relevant competent authorities.

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

Our strategy is to ensure legal compliance through closely monitoring and reporting externally verified emissions and through a close cooperation with the respective national emission authority. Furthermore, to be able to fulfill the obligation to surrender allowances to cover the emission debts, LHG purchases CO2 allowances on a regular basis and takes thereby into account the planned emissions of not only the current year but also the two following business years. Besides this, LHG constantly strives to use all opportunities to reduce fuel consumption and with this the CO2 emissions.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

Yes

C11.2a

(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.

Credit origination or credit purchase

Credit purchase

Project type

Other, please specify (Mix of several project types (Biomass energy, energy efficiency, forest, etc.))

Project identification

e.g. renaturation of upland moores, Switzerland ; solar power-plant, Dominican Republic; reforestation, Nicaragua, Italy; efficient cookers, Kenia, Ruanda; solar cookers, Madagaskar; biomass power-plant, Brasilia

Verified to which standard

Other, please specify (depending on project: Gold Standard, Plan Vivo)

Number of credits (metric tonnes CO2e)

38068

Number of credits (metric tonnes CO2e): Risk adjusted volume

38068

Credits cancelled

Yes

Purpose, e.g. compliance

Voluntary Offsetting

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

Navigate GHG regulations
Stakeholder expectations
Drive low-carbon investment
Other, please specify (GHG Scope)

GHG Scope

Scope 1
Scope 2

Application

The Lufthansa Group uses an internal CO2 price (price range), which is mainly used by environmental, strategy, risk Controlling, sales and aircraft procurement teams - typically taking into account the costs of current and (possible) future regulations (e.g. EU ETS, CORSIA or other possible carbon regulatory schemes) and prices in the voluntary carbon market. This means that the CO2 price risk is increasingly taken into account in investment or project decisions. LHG also has set ambitious CO2 reduction targets for its ground operation activities (carbon neutrality until 2030 within the DACH Region). Part of this target is purchasing green energy certificates for electricity consumption at LHG buildings. Therefore we calculate an 'implicit carbon price' for carbon free electricity supply.

Actual price(s) used (Currency /metric ton)

24

Variance of price(s) used

Between 5-40 EUR per ton, based on the different price ranges currently in discussion for carbon credits.

Type of internal carbon price

Shadow price
Implicit price
Offsets

Impact & implication

The use of an internal CO2 price has helped to push the conversation on low-carbon investment that have the potential to reduce fuel/energy use and thus to limit carbon emissions. In addition, the use of the internal CO2 price for existing and future regulations as a shadow price has also helped to raise awareness of the major risks associated with kerosene (98% of the LHG's direct CO2 footprint). We also use an internal CO2-price for our current and future voluntary carbon offsetting targets.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers
Yes, our customers
Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Compliance & onboarding

Details of engagement

Included climate change in supplier selection / management mechanism
Code of conduct featuring climate change KPIs
Climate change is integrated into supplier evaluation processes
Other, please specify (ESG is integrated into supplier evaluation processes procurement/supply chain is committed to support LHG goals 2030/2050, Implementation of a Business Partner Due Diligence Process incl. supplier ESG screening (respective risk categories))

% of suppliers by number

40

% total procurement spend (direct and indirect)

% of supplier-related Scope 3 emissions as reported in C6.5

Rationale for the coverage of your engagement

For the Lufthansa Group, climate aspects are an integral part of the business strategy. Lufthansa Group constantly improves its climate and environmental measures and involves its suppliers as well in terms of supporting Lufthansa Group's understanding of climate and environmental responsibility. Therefore this important subject is integrated in the supplier handbook.

Impact of engagement, including measures of success

LHG as a leading airline group is looking predominantly for suppliers, who are actively engaged in innovative product development, processes and services. Lufthansa Group has integrated its understanding of environmental responsibility in its Supplier Handbook <https://www.lufthansagroup.com/en/suppliers.html> and specified in the Supplier Code of Conduct - https://www.lufthansagroup.com/media/downloads/en/suppliers/LHG_Supplier_Code_of_Conduct_EN_201912.pdf Lufthansa Group expects from its suppliers, their representatives and subcontractors to respect and comply with the standards of the Supplier Code of Conduct. As it is stated "Lufthansa Group generally prefers to cooperate with such suppliers who make and demonstrate an active contribution to sustainability and environmental/climate protection". Lufthansa Group expects from its suppliers to comply with laws, guidelines and regulations referring to a fair competition, integrity and responsible behaviour. The Group's purchasing policy includes the obligation on social and ecological responsibility. It is a superior specification for all purchasing guidelines of the Group companies. It also serves as a manual for purchasers and all employees with contacts in the procurement market. Among other things, the following obligations are to be included in contracts with suppliers: 1. Compliance with the ten principles of the UN Global Compact 2. The observance of the four basic principles of the International Labour Organization (ILO) 3. The consent to announced / unannounced audits by Lufthansa Group companies 4. The granting of the right, in case of violation of the agreements to terminate the contractual relationship Through these guidelines, the Lufthansa Group is aiming to create a responsible relationship with its suppliers and thus to ensure that the suppliers' own entrepreneurial behaviour is in line with the Group's responsibilities. Furthermore, Lufthansa Group expects its suppliers to adhere to the principles embedded in the Code of Conduct which includes environmental protection and therefore climate-related issues.

Comment

note: due to the COVID-19 pandemic situation affecting the aviation industry and LHG all figures and percentages are estimates only respectively partly not available and may vary in the years to come.

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Other, please specify (Before signing a new contract with a supplier, suppliers have to describe their environmental management system)

% of suppliers by number

% total procurement spend (direct and indirect)

% of supplier-related Scope 3 emissions as reported in C6.5

Rationale for the coverage of your engagement

In regards of Lufthansa Group's business strategy, it is important to understand the environmental behaviour of their suppliers especially for business units where environmental aspects could have a huge impact.

Impact of engagement, including measures of success

To understand better the environmental engagement of for example Lufthansa Technik AG (LHT) suppliers, all new LHT suppliers have to complete a questionnaire before a contract will be signed. Suppliers have to describe to which standard their "Environmental, Health & Safety Management System" is complying. If their system does not comply with ISO 14001, ISO 45001, EMAS, OHSAS 18001, suppliers have to describe to which other standard they comply or if there are other procedures in place. For all information given by the potential suppliers, certificates or detailed descriptions and documents are requested. Additionally, supplier have to report if they - Fulfill all requirements for environmental protection and occupational safety from their national law - Have been audited by external organizations /authorities for compliance with national law in the last 5 years - Fulfill all requirements for environmental protection and occupational safety from EU regulations

Comment

note: due to the COVID-19 pandemic situation affecting the aviation industry and LHG all figures and percentages are estimates only respectively partly not available and may vary in the years to come.

Type of engagement

Innovation & collaboration (changing markets)

Details of engagement

Other, please specify (Joint product development with suppliers)

% of suppliers by number

3

% total procurement spend (direct and indirect)

80

% of supplier-related Scope 3 emissions as reported in C6.5

80

Rationale for the coverage of your engagement

Major parts of LHG CO2 emissions are related to jet fuel consumption. Therefore a special focus lies on suppliers and business partners which are directly involved in flight operations to improve fuel efficiency: Aircraft and engine manufacturers: LHG is highly involved and encourages suppliers when developing new aircraft models and or retrofits, to ensure the aircraft are getting more fuel efficient with each new generation, i.e. to use light weight materials. LHG has i.e. reduced the seat density in its new cabin designs as well as wardrobes have been abolished in order to reduce weight. LHG pilots and LHT are usually involved in the development and implementation of new aircraft technologies. With airports LHG has a close cooperation in order to minimize taxi-fuel burn, i.e. by testing autonomous e-taxi bots. LHG has partnered also with airports and ground service providers to have the necessary infrastructure to power aircraft using electricity instead of fuel while parked at the gate, and also to motivate the use of electronic service vehicles (i.e. catering vehicles and baggage trucks). With ATC/ATM providers we have developed landing procedures to reduce noise and fuel consumption during descent (see annual report 2020). With catering and logistic providers LHG is constantly working on developing light weight solutions for container and catering trolleys. With LHG Fuel suppliers we are engaged in producing more Sustainable aviation fuel and also optimizing sustainable logistics.

Impact of engagement, including measures of success

As all these measures are combined, it is difficult to derive a single number of CO2 reduction for each initiative. New aircraft usually save up to 25% of fuel respectively reducing by 25% CO2 emissions.

Comment

note: due to the COVID-19 pandemic situation affecting the aviation industry and LHG all figures and percentages are estimates only respectively partly not available and may vary in the years to come.

(C12.1b) Give details of your climate-related engagement strategy with your customers.**Type of engagement**

Education/information sharing

Details of engagement

Run an engagement campaign to education customers about your climate change performance and strategy

% of customers by number

100

% of customer - related Scope 3 emissions as reported in C6.5

100

Portfolio coverage (total or outstanding)

<Not Applicable>

Please explain the rationale for selecting this group of customers and scope of engagement

To sensitize customers about GHG emissions and climate change strategies, Lufthansa Group Airlines offer voluntary programs to their customers to offset the CO2 emissions associated with their air travel through the purchase of carbon offsets. In cooperation with myclimate, an experienced non-profit organization that operates carbon offsets, Lufthansa and SWISS passengers can pay the carbon offsetting since 2007. Austrian Airlines has been cooperating with Climate Austria and Kommunalkredit Public Consulting since 2008 to offer customers the opportunity of voluntary offsetting their carbon emissions. Furthermore, Miles & More has started voluntary carbon offsetting option in 2019. Lufthansa Innovation Hub has developed an online CO2 Compensation platform COMPENSAID for customers who wish either to buy Sustainable Aviation Fuel (SAF) for their flights or to compensate with CO2 reducing projects or a combination of both. With this innovation LHG offers as first airline worldwide its customers to buy SAF directly. LHG ensures the purchase and logistics of the sustainable aviation fuel for the customer. The customer has the possibility to choose the amount of SAF and will pay the additional cost incurred to close the gap between fossil fuel and SAF. The online platform COMPENSAID has been launched in 2019. In 2020 COMPENSAID has been rolled out to all LHG airlines. In the reporting year 2020 LHG pushed the communication about voluntary offsets via various channels: The individual airlines' homepages, interviews and addresses of the LHG's CEO, in which he pointed out the option to compensate on a voluntary basis as LHG is also compensating 100% of the duty trips of its employees worldwide.

Impact of engagement, including measures of success

The success for this engagement is measured by the amount of credits purchased as well as the total monetary value invested in carbon credits by customers. In 2020, the amount of credits of B2C (individual customers) adds up to ca. 21.000 tons of CO2. In total, individual customers have spent more than EUR 260.000 EUR on voluntary carbon offsetting. LHG has spent around 200.000 EUR for their employees' duty trips. Due to the COVID-19 pandemic figures are lower than previous year, as air travel has reduced significantly. note: due to the COVID-19 pandemic situation affecting the aviation industry and LHG all figures and percentages are estimates only respectively partly not available and may vary in the years to come.

Type of engagement

Collaboration & innovation

Details of engagement

Other, please specify (Innovative product development - Corporate Value Fares)

% of customers by number

25

% of customer - related Scope 3 emissions as reported in C6.5

25

Portfolio coverage (total or outstanding)

<Not Applicable>

Please explain the rationale for selecting this group of customers and scope of engagement

LHG Corporate Value Fares LHG offers corporate customers who want to contribute to climate protection the option of purchasing Lufthansa Group Corporate Value Fares on European continental routes. One of the benefits of these fares is the offsetting of CO2 emissions. The funds flow directly into certified, high-quality climate protection projects which, in addition to reducing CO2, also contribute to the United Nations' Sustainable Development Goals (SDGs). The climate protection projects are developed and selected by the independent Swiss climate protection foundation, myclimate. The myclimate flight emissions calculator quantifies the direct CO2 emissions per passenger for any given flight. The calculated emissions represent an average value for a given pair of origin and destination airports, based on international statistics on passenger and cargo loads and aircraft type usage. The calculated emissions per passenger represent the amount of CO2 to be reduced in myclimate carbon offset projects. The foundation ensures that the individual projects are carried out sustainably and according to the highest standards (Gold Standard, Clean Development Mechanism [CDM]). The following projects are currently supported: A reforestation project in Nicaragua that will enable CO2 emissions over the next 20 years to be captured. Photovoltaic systems in the Dominican Republic. The spread of energy-efficient cookers operated by using solar power and energy from biomass in Rwanda, Kenya, Madagascar and China. These measures reduce the consumption of wood and coal for fuel, protect the local forests and, in addition to the associated CO2 savings, contribute to improving the health of the population. In Rwanda, reducing the demand for firewood also helps to protect the habitat of one of the world's most endangered animals, the mountain gorilla. The non-profit foundation myclimate, which the Lufthansa Group has been working with since 2007, ensures that the money reaches the individual projects. myclimate one of the leading providers of voluntary emission offsetting measures, manages over 100 climate projects in 30 countries. It guarantees that purchased emission reductions in the energy sector will be achieved in the climate protection projects within two years at the latest and be documented in a public register for everyone to view after three years at the latest.

Impact of engagement, including measures of success

The concept of Value Fares has started as a project in 2019, due to the huge success, LHG has decided to integrate the concept of Corporate Value Fares into our contracts with the corporate customers for their flights with the network airlines of the LHG within continental Europe. In 2020 ca. 60.000 tons have been compensated and ca. 0,5 mio EUR have been spend. note: due to the COVID-19 pandemic situation affecting the aviation industry and LHG all figures and percentages are estimates only respectively partly not available and may vary in the years to come.

Type of engagement

Collaboration & innovation

Details of engagement

Other, please specify (Product innovation for CO2 reduction with SAF for corporate customers)

% of customers by number

25

% of customer - related Scope 3 emissions as reported in C6.5

25

Portfolio coverage (total or outstanding)

<Not Applicable>

Please explain the rationale for selecting this group of customers and scope of engagement

Sustainable Aviation Fuel (SAF) as a product within corporate customer contract Lufthansa developed a Corporate Program, which allows corporate customers to pay for carbon emission mitigation through Sustainable Aviation Fuels ("SAF") in support of a more sustainable aviation. SAF is a synthetically produced fossil-free jet fuel and is considered to be the first real alternative to fossil jet fuels. It can be introduced into regular flight operations without any infrastructure adjustments. By replacing fossil jet fuel with SAF, aviation's carbon emissions can be significantly reduced by around 80%. As the prices for SAF are currently significantly higher than those of fossil kerosene, Lufthansa is willing to support the program's endeavor to make SAF more broadly available to the aviation in general. The program enables LHG corporate customers to pay for an agreed upon amount of SAF, who in return receive certification from an independent external auditor confirming the mitigated emissions resulting from the replacement of fossil jet fuel with the agreed on amount of SAF. The emission mitigation resulting from the replacement of fossil jet fuel by SAF will be exclusively allocated and certified to the LHG corporate customer. The SAF for the program is not derived from palm oil or palm fatty acid distillates. The fuel manufacturer is certified according to EU-ISCC and complies with the requirements of the RED II and the certification system ISCC EU which is approved by the European Commission.

Impact of engagement, including measures of success

LHG is in the contracting phase with the B2B customers. Especially Lufthansa Cargo has initiated first contracts with a worldwide cargo customer in 2020. In 2021 there will be flights (ca. once a week) to Shanghai which will be accounted for 100% SAF usage (not physical on that particular flight, but SAF purchased for the amount of fuel needed for that flight). The cargo customer receives the audited certificate for its Scope 3 emissions. note: due to the COVID-19 pandemic situation affecting the aviation industry and LHG all figures and percentages are estimates only respectively partly not available and may vary in the years to come.

Type of engagement

Collaboration & innovation

Details of engagement

Other, please specify (Voluntary CO2 compensation with climate protection projects by corporate customers)

% of customers by number

25

% of customer - related Scope 3 emissions as reported in C6.5

25

Portfolio coverage (total or outstanding)

<Not Applicable>

Please explain the rationale for selecting this group of customers and scope of engagement

Additional voluntary CO2 compensation :Climate protection projects In addition to the possibility to compensate the carbon emissions via the Lufthansa Group Corporate Value Fares, corporate customers have the option to compensate their CO2 emissions produced with worldwide flights of the Lufthansa Group which are not covered by the Lufthansa Group Corporate Value Fares with Climate protection projects. The corporate customers can decide how much of their CO2 emissions they want to compensate. The high-quality projects promote quantifiable climate protection and greater sustainability worldwide. Projects cover the areas of biogas, biomass, efficient cook stoves, energy efficiency, hydro power, land use and forestry, solar, waste management and compost, water (purification & saving) and wind. The climate protection projects are also developed and selected by the independent Swiss climate protection foundation, myclimate. The foundation ensures that the individual projects are carried out sustainably and according to the highest standards (Gold Standard, Clean Development Mechanism [CDM]). Due to the longstanding partnership with myclimate LHG can offer the experience of an professional compensation partner, which is a great advantage for the corporate customers as they do not need to look for partners, for projects and accounting details, as LHG will organize this process along with the respective certificates.

Impact of engagement, including measures of success

LHG has initiated these additional services for their corporate customers and is now in the contracting phase, initial fedback is very encouraging. note: due to the COVID-19 pandemic situation affecting the aviation industry and LHG all figures and percentages are estimates only respectively partly not available and may vary in the years to come.

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

Engagement / cooperation with the European airspace and EU Commission Green Deal and SES (Single European Sky) to reduce CO2 emissions

The fundamental modernisation and harmonisation of technologies, processes and standards in the European airspace are necessary to realise the significant potential of airspace infrastructure for greater efficiency. In autumn 2020, the European Commission started SES2+ (Single European Sky 2+) consultations, with the aim of incorporating findings that had been previously identified by various committees. In line with the European Commission’s current **Green Deal**, the aim is to reduce fuel consumption and thereby sustainably lower CO2 emissions, and to achieve significant improvements in aviation punctuality and reliability for passengers. The Lufthansa Group was actively involved in drafting a declaration by the airline industry through the **Airlines for Europe (A4E) association** and Lufthansa representatives, and the Group has for years expressly supported the efforts of the EU to create a reliable and efficient EU airspace. Parts of these new measures are based on the results of the European **SESAR (Single European Sky ATM Research)** programme. This is a key milestone in the harmonisation and modernisation of European aviation infrastructure. The goal of this programme is to develop, test and implement Europe-wide new technologies, procedures and standards that contribute to harmonizing and optimizing European air traffic management. The Lufthansa Group has supported SESAR for many years. The implementation of these technologies in daily operations is jointly coordinated by the members of the **industry consortia SESAR Deployment Manager (SDM)**. The Lufthansa Group is a member of these consortia and provides local experts. SDM currently coordinates **343 projects**. The LHG airlines Lufthansa Group and Lufthansa Systems are actively involved as IT providers for SESAR research. Up to 5%-10% of CO2 reduction is expected by SES.

Engagement with German, Austrian and Swiss railways to expand intermodal transport

To encourage intermodal transport, a partnership was established with rail operator **Deutsche Bahn in 2001**. In 2020 **capacity on existing routes was expanded**, three additional destinations were added: Leipzig, Hanover and Basel. Customers in 17 cities can complete the journey to and from their flight on a climate friendly ICE train, with over 120 connections a day. As there is no long-distance rail connection at Munich Airport, the Lufthansa Group is investigating the use of comfortable buses on selected routes. Two more destinations, Lugano and Geneva, were introduced at the Zurich hub in 2020 in cooperation with the Swiss rail operator SBB. In Vienna, a connection to Graz was added to the joint programme with Austrian Railways, and the existing connection to Salzburg was expanded significantly

e-mobility on ground

Our climate-related engagement strategy also takes account of e-mobility. The Lufthansa Group sees itself as a pioneer in the aviation industry and aims to become carbon neutral on ground by 2030. We have set up a group wide project in 2019 to analyze LHG’s CO2 emissions for the owned ground fleet and have developed an implementation plan in order to be able to achieve this goal. Due to the general COVID 19 implementation is reduced to a minimum and expected to be reactivated with an economic recovery.

As a lighthouse project LHG implemented world’s first e-towing for wide body aircraft in a regular operation. Lufthansa Group was engaged in the project “E-PORT AN” - the learnings from this joint project leads to different changes towards a more environment friendly ground operation. Based on the results of the test case LHG will increase the use of e-mobility for its ground units based on the regular rollover wherever possible. Together with Frankfurt Airport (Fraport) we are looking continuously with a joint working group at fields where we could further cooperate to increase green solutions on ground. To foster the use of electric vehicles as well for our staff, we introduced additional 45 car loading stations in Frankfurt, Munich and Hamburg . Furthermore, we are supporting the lease of electric cars financially for those employees and managers that are allowed to use a management car. Additionally several smaller projects are implemented to exchange conservative vehicle fueling with hydrogen, bio fuel or synthetic fuel. These test cases are necessary to evaluate on reliability, operational stability and feasibility of the use of new eco-friendly mobility solutions at the airports, which are in a highly dynamic and crowded environment that requires operational stability and especially reliability at highest security levels. The positive effects of electro mobile handling processes on CO2 and noise emissions will be investigated and potential improvements to vehicle batteries in every day operation will be analyzed.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

- Direct engagement with policy makers
- Trade associations
- Funding research organizations
- Other

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
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Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Cap and trade	Support with major exceptions	Lufthansa Group (LHG) has been engaging directly with national, EU and international policy makers to encourage the adoption of a global market based measure for reducing carbon emissions from aviation. Due to its restricted geographic scope, current legislation (EU ETS) and Switzerland ETS) is only limitedly effective and leads to competitive distortions to the detriment of participating airlines. A global offsetting mechanism would improve effectiveness and eliminate any competitive distortions. LHG has been promoting this opinion in previous years and also in 2020 through active participation in several national, European and international discussion meetings, congresses and debates with a climate change (CC) background, such as in the case of participation of Executive Board Members at the high level National Aviation Conference .The conference comprised 500 participants, all executive level from the aviation industry and government officials. Furthermore, LHG has addressed the issue in its "Policy Brief", which is being sent to politicians and media contacts several times a year LHG is member and an active participant in the various trade associations such as BDL in Germany, A4E (Airlines for Europe) and IATA, where all the Policy issues are being discussed and position papers are being drafted.	LHG considers the adoption of market-based measures as an effective means for reducing carbon emissions from aviation if they fulfill the following criteria: 1. ensure environmental integrity, 2. minimize administrative complexity, and 3. minimize competitive distortions. LHG sees these criteria only fulfilled by a globally harmonized approach and therefore proposes the implementation of market-based measures at the global level. In October 2016, the UN Aviation Organization ICAO passed a resolution calling for a CO2 compensation system from 2020 onwards called CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation). LHG fully supports the CORSIA system for international aviation. In 2019 discussions started about alignment between EU ETS and CORSIA on different levels and organizations such as A4E, BDL (Bündnis der Deutschen Luftverkehrswirtschaft), IATA, which were ongoing in 2020 when a revision of the EU ETS and consultation papers on EU level took place. LHG is and will be deeply involved in all associations' discussions. Looking forward, in July 2021 the EU Commissions has announced several legislative initiatives within the "FIT FOR 55 Package" which foresees a harmonization of EU ETS and CORSIA. LHG supports still the idea of a fully global market mechanism to avoid market distortion. LHG would support that any funds received via such tools should be used to support the needed technological innovative transformation to make the decarbonisation of air transport possible.
Energy efficiency	Support	LHG has also been engaging directly with national, EU as well as international policy makers to encourage the implementation of IATA's '4-pillar-strategy' to climate change into binding legislation. Currently, individual actors are implementing the measures available under the framework individually. The support of policy makers is required to achieve maximum effectiveness, which can only be achieved if all measures available under the framework are implemented properly. LHG has addressed the topic - in nearly every conversation with policy makers, as well as - in its "Policy Briefs", which are being sent to national/European policy makers and media contacts. LHG is member and an active participant in the various trade associations such as BDL in Germany, A4E (Airlines for Europe) and IATA, where all the Policy issues are being discussed and position papers are being drafted.	LHG promotes the implementation of IATA's '4-pillar-strategy' into binding international legislation, to provide a guideline for its most effective implementation.
Energy efficiency	Support	LHG also has promoted the implementation of the 'Single European Sky' (SES) at the national and European policy maker level through direct conversations, at policy events and in several published reports/ media (e.g. annual report, sustainability report, "Policy Brief"). The SES is an air traffic management modernization project aiming to tackle the problem of flying longer routes than necessary. The SES' flight efficiency objective tackles the problem of flying longer routes (detours) than ideally necessary. European Air Traffic Management inefficiency is costing 5 bn EUR extra a year to airlines and passengers. A SES would eliminate unnecessary detours – 0.8 to 1.6 tons of CO2 per flight could be saved. For Lufthansa, that would be 1 to 1.8 million tons less CO2 per year. LHG is member of European program Single European Sky Air Traffic Management Research (SESAR), which is the technological pillar of the Single European Sky (SES). The aim of the program is to modernize and harmonize Air Traffic Management in Europe. Several activities in this context aim to enable a sustainable efficiency and capacity gain in the aviation sector. This will be achieved for instance through changes in flight routes or synchronization between airborne and ground infrastructure. EU will invest close to 3 bn EUR in the first implementation package of ATM modernization (2014-2020) as SESAR Deployment projects are co-funded by the European Commission.	LHG promotes the inclusion of the SES into European legislation, to realize the related environment and economic benefits. Through active cooperation in the SESAR program (the technological pillar of Single European Sky) LHG is committed to implementing tangible measures. LHG is promoting the Single European Sky into the measures of the proposed "Green Deal" of the EU.
Other, please specify (Policy research at EU level)	Support	LHG participated in the development of the 'ACARE Flightpath 2050: Europe's Vision for Aviation', the master plan for future climate research projects at the European Union level. In the development phase of ACARE, LHG has been engaging directly with policy makers at the European Union level to discuss the research agenda. LHG is member and an active participant in the various trade associations such as BDL in Germany, A4E (Airlines for Europe) and IATA, where all the Policy issues are being discussed and position papers are being drafted	LHG considers research projects dealing with climate change aspects from aviation important to develop effective counter measures. Therefore, LHG proposes the development of policy instruments to incentivize research and government funding in this field.
Clean energy generation	Support	LHG has signed in 2019 a Memorandum of Understanding for the "PtX Kompetenz Zentrum Lausitz" an initiative of the Environmental Ministry (Bundesministerium für Umwelt BMU) and the state of Brandenburg to support the research of sustainable fuel namely Power-to-liquid technology. The MoU has been also signed by Rolls Royce, BASF, Sunfire and DLR. In addition, the Lufthansa Group is still involved with the cross-sector Powerfuel initiative coordinated by the German Energy Agency (dena). It aims to build an international alliance to develop the future strategic importance of synthetic renewable fuels, to jointly advance a global market for these fuels and to accelerate their market development. "Green hydrogen" is vitally important for synthetic fuels. This is why the Lufthansa Group is taking part in the HySupply initiative launched by the Federation of German Industries and acatech. The aim is to develop a supply chain for green hydrogen from Australia. The World Economic Forum also supports the market launch of SAF. The Lufthansa Group is a member of the working group Clean Skies for Tomorrow. Work is taking place in Germany on a PTL roadmap for the aviation sector to be published in 2021. This joint strategy involves the federal and regional governments, the aviation and fuel industries and equipment manufacturers, and it is coordinated by the Federal Association of the German Aviation Industry and the Federal Transport Ministry. The Lufthansa Group has made an active contribution to the project in order to help shape demonstration projects, production at scale and market launch of PTL fuels. Among others in 2017 Lufthansa Group (LHG) was member of the "Flightpath 2020", a joint initiative of aviation industry and biofuel industry, with participation of the EU Commission. The goal of the initiative is the creation of a functioning supply chain for bio kerosene. LHG is member and an active participant in the various trade associations such as BDL in Germany, A4E (Airlines for Europe) and IATA, where all the Policy issues are being discussed and position papers are being drafted	LHG strongly supports and promotes the development and use of socially, environmentally and economically efficient alternative fuels in aviation, as they help achieving the sector's ambitious goal of carbon neutral growth from 2020 onwards as well as the long-term goal to reduce the net CO2-emissions of aviation. Policy makers therefore urgently need to consider this topic in future policy-making.
Other, please specify (aircraft CO2 standards)	Support	LHG considers the decision made at the ICAO Assembly in October 2016 to implement an aircraft CO2 certification standard an important element to reach the aviation industry's fuel efficiency target of an annual 1.5% improvement by 2020 and the carbon neutral growth target from 2020 onwards. LHG has been promoting the new CO2 standard at the national and international policymaking level through several dialogs and discussion with relevant members of national ministries, which are working in the ICAO working groups. Additionally EASA is working on an ECO Label, LHG is an active participant in this working group. LHG is member and an active participant in the various trade associations such as BDL in Germany, A4E (Airlines for Europe) and IATA, where all the Policy issues are being discussed and position papers are being drafted.	LHG supports the implementation of an appropriate ICAO aircraft CO2 certification standard in future policy-makings regarding carbon management from aviation. LHG supports the idea of having only one global standard and not different standards as air transport is a global business.

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Other, please specify (ICAO – Carbon Offsetting)	Support	Lufthansa Group (LHG) has been engaging directly with national and international policy makers, competitors, NGO's and other stakeholders to encourage the adoption of a global market based measure for reducing carbon emissions from aviation, e.g.: - Public policy engagement such as the participation in several (industrial) working groups at the International (IATA/ ICAO / AEA) level on the development of a global market based measure for reducing carbon emissions from aviation - Participation at public meetings, congresses and debates which address this topic – e.g. LHG CEO takes part at a discussion round at the CEO Climate Leaders: Post-Paris Action at the 2019 World Economic Forum in Davos. - LHG has addressed the topic in nearly every conversation with policy makers, as well as in its up to 3 "Policy Briefs" p.a. which are sent to national/European policy makers and media contacts. LHG representatives have been official members of the IATA's Environmental Committee , which advises the Board of Governors, the Director General and other relevant IATA bodies on environmental and Climate Change matters. In 2019 the Environmental Committee has been restructured into the "Sustainability and Environmental Advisory Council" in which LHG participates as well and which has been very active in 2020, issuing together with ATAG the study "Waypoint 2050" which is demonstration the challenges to become net zero CO2 emissions in 2050. LHG is member and an active participant in the various trade associations such as BDL in Germany, A4E (Airlines for Europe) and IATA, where all the Policy issues are being discussed and position papers are being drafted.	LHG considers the adoption of global market-based measures by the International Civil Aviation Organization (ICAO) as an effective means for reducing carbon emissions from aviation, if they fulfil the following criteria: 1. ensure environmental integrity, 2. minimize administrative complexity, and 3. minimize competitive distortions. LHG sees these criteria only fulfilled by a globally harmonized approach and therefore has always recommended the implementation of market-based measures by ICAO. In October 2016, the UN Aviation Organization ICAO passed a resolution calling for a CO2 compensation system from 2020 onwards called CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation). LHG fully support the CORSIA system for international aviation.

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

International Air Transport Association (IATA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

IATA engages with different regulatory bodies i.e. ICAO to advocate the adoption of a global regulatory approach for mitigating carbon emissions from aviation, which does not distort competition among airlines. Furthermore, IATA proposes the implementation of its 4-pillar-strategy that includes 1) investing in technology, 2) improving operational efficiency, 3) building and using efficient infrastructure, and 4) using market-based measures to address climate change. In 2020 ATAG - in cooperation with IATA - has published the Waypoint 2050 Report which has been closely developed with the Airlines and LHG has given a lot of input. "Waypoint 2050" describes via unnumerous assumptions possibilities to become net zero CO2 emissions in 2050 respectively 2060, which will be very challenging and is only possible with the cooperation of the entire aviation industry, and with governmental support and structures.

How have you influenced, or are you attempting to influence their position?

In the reporting year LHG's CEO took over the presidency for one year as of June 2020. Lufthansa Group's (LHG) Head of ESG Reporting and Rating was the LHG representative of SEAC, the Sustainability Environmental Advisory and is represented in several Task Forces, the goal of which is to advise the Board of Governors, the Director General and other relevant IATA bodies on environmental and climate change matters. As part of this membership, LHG has been supporting the development of the Committee's viewpoints on environmental issues, which also represent LHG's position. The SEAC initiated a comprehensive study about the way towards sustainable aviation until 2050, which was released in autumn 2020. LHG being a nominated member of the SEAC has given input and feedback on the study's assumptions. The study is named "Waypoint 2050".

Trade association

International Air Transport Association (IATA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

As a member of IATA, the aviation industry's trade association, LHG has been advocating the implementation of a mandatory global fuel and CO2-reporting tool for airlines, that shall serve as basis for governments and regulatory bodies in future policy making. IATA has been advocating its implementation amongst regulatory decision-makers on behalf of LHG and its other member airlines.

How have you influenced, or are you attempting to influence their position?

LHG supports IATA's "Fuel Reporting & Emissions Database" (FRED), an online reporting tool launched in 2014 and developed to facilitate the mandatory requirement of submitting fuel consumption data to IATA, and proposes its usage as the standard method to calculate fuel consumption and carbon emissions, also as part of international policy instruments.

Trade association

Association of German Aviation Industry (BDL)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Climate change: The BDL recognizes aviation's contribution to climate change and acknowledges the sector's responsibility to reduce its environmental footprint. Emissions Trading: The BDL supports the use of market-based measures to mitigate carbon emissions from aviation if they are implemented at the global level, which ensures maximum effectiveness and minimum competitive distortions.

How have you influenced, or are you attempting to influence their position?

The CEO of Brussels Airlines (LHG) and the Lufthansa Cargo CEO are members of the presidium of the BDL. Furthermore, LHG managers are participating actively in several working groups (WG) of the BDL to promote its position. Examples include working group "Sustainability", working group "Strategy and Policy", working group

"Communication".

Trade association

Deutsches Verkehrsforum (German Mobility Forum, multi-modal European industry association).

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The German Mobility Forum reinforces the following climate change-related interests of the transport industry in dialogues with business, politics and science: 1) to protect the global climate by reducing emissions, increasing efficiency and using resource-saving technologies, 2) to promote related research and the prompt implementation of the research results, and 3) to ensure fair competitive conditions for all transport providers at national and international level.

How have you influenced, or are you attempting to influence their position?

A member of the Lufthansa Executive Board is member of the chair of the German Mobility Forum. Currently the Chief Customer Officer also being responsible for Corporate Responsibility. At this steering committee, Lufthansa Group takes part at the coordination of the position of the German Mobility Forum to climate change legislation.

Trade association

Airlines for Europe (A4E)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

A4E promotes efforts to include CO2 emissions from aviation in a robust global climate change framework. To be both environmentally effective and economically efficient and to minimize the risk of competitive distortions and carbon leakage, policy action must be taken at a global not national or regional level.

How have you influenced, or are you attempting to influence their position?

LHG's CEO is regularly participating in the A4E President Meetings in 2020 to discuss and coordinate the A4E position on climate change. Furthermore, Head of ESG Rating and Reporting of LHG has been member of the A4E Environmental Working Group. In 2020, A4E initiated together with all aviation partners such as airports, ATC, manufacturers and energy suppliers a study called "Destination 2050", which has been released early 2021. LHG has given a lot of input and technical data to the researchers, which has been discussed in nearly every meeting of A4E since November 2019. The roadmap will also portray a way towards sustainable aviation.

C12.3d

(C12.3d) Do you publicly disclose a list of all research organizations that you fund?

No

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

Lufthansa Group (LHG) has been supporting scientific climate and environmental research for many years, aiming at developing a basis for political decision-making.

Examples include LHG's engagement in the MOZAIC, AMDAR, CARIBIC and IAGOS climate research projects, all of which have been initiated by the European Union (EU). The goal of these projects is to assess the environmental impact of air transport on the atmosphere; the results form the basis for the Group's effective environmental care, as well as future policy-making at the EU level. LHG supports these projects i.e. by measuring and collecting atmospheric data on its flights. This data then serves as key input for scientists to assess aviation's impact on climate change and is being considered as guidance in the development of new economic measures to reduce aviation's footprint.

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

On Lufthansa Group level, all environmentally related topics are being systematically coordinated by the Head of Corporate Responsibility and the Head of Corporate International Relations and Government Affairs in Berlin and Brussels.

The Head of Corporate Responsibility coordinates Group-wide environmental goals, strategies, policies and measures. This includes the Group's overall climate change strategy, as well as all direct and indirect engagement activities to influence policy makers/policy-making on topics related to climate change. In addition, the Head of Corporate Responsibility regularly coordinates environmental activities with the Group subsidiaries, and develops and analyzes innovative environmental concepts – always in close cooperation with the departments concerned. The Head of Corporate Responsibility acts as interface between the different departments dealing with environmental topics across the LHG and the Group's Executive Board, promoting knowledge exchange and information flow in both directions, which promotes a consistent viewpoint on climate change related aspects across the Group.

To facilitate a common point-of-view among the different environmental experts across the LHG engaging directly and indirectly on CC policy issues, the Head of Corporate Responsibility organizes regular "exchange forums", which includes all Group environmental experts and meets at least once a year to share information on joint goals, viewpoints and activities.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In mainstream reports, incorporating the TCFD recommendations

Status

Complete

Attach the document

LH-TCFD-Report-2020.pdf

Page/Section reference

<https://investor-relations.lufthansagroup.com/fileadmin/downloads/en/more/LH-TCFD-Report-2020.pdf>

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

Publication

In other regulatory filings

Status

Complete

Attach the document

LH-AR-2020-e.pdf

Page/Section reference

<https://investor-relations.lufthansagroup.com/fileadmin/downloads/en/financial-reports/annual-reports/LH-AR-2020-e.pdf> Non Financial declaration as part of the Annual Report 2020, published 04.03.2021 p. 86-117

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

Publication

In voluntary sustainability report

Status

Complete

Attach the document

LH-Factsheet-Sustainability-2020.pdf

Page/Section reference

<https://www.lufthansagroup.com/media/downloads/en/responsibility/LH-Factsheet-Sustainability-2020.pdf> LHG Sustainability Factsheet 2020, published April 2021

Content elements

Emissions figures

Emission targets
Other metrics

Comment

Publication

In mainstream reports

Status

Complete

Attach the document

LH-SASB-Report-2020.pdf

Page/Section reference

SASB Report 2020 <https://investor-relations.lufthansagroup.com/fileadmin/downloads/en/more/LH-SASB-Report-2020.pdf>

Content elements

Strategy
Emissions figures
Emission targets
Other metrics

Comment

Publication

Please select

Status

<Not Applicable>

Attach the document

<Not Applicable>

Page/Section reference

<Not Applicable>

Content elements

<Not Applicable>

Comment

C15. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

COVID-19 and additional general information relating to the actual situation.

LHG has answered the CDP Questionnaire for the financial year 01.01.2020 - 31.12.2020 in 2021. Global air transport is currently experiencing its worst crisis ever.

The Lufthansa Group is still facing the greatest challenge in its recent history.

To face this crisis, the Lufthansa Group has initiated severe cost cutting and restructuring measures and the companies of the Lufthansa Group are working at full speed to get their operations up and running again. At the extraordinary General Meeting on June 25, 2020 the shareholders of Deutsche Lufthansa AG voted in favor of accepting the capital measures and the participation of the Economic Stabilization Fund (WSF) of the Federal Republic of Germany in Deutsche Lufthansa AG. The package provides for stabilization measures and loans of up to 9 billion euros. Despite the severe situation in the reporting year, LHG takes on its responsibility for sustainability through e.g. substantial investments into fuel-efficient aircraft. Furthermore, Lufthansa Groups' commitment for sustainability is also demonstrated by the disclose of our climate related activities according to TCFD recommendations and SASB for the first time in the reporting year 2020.

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Head of ESG Rating and Reporting , Deutsche Lufthansa AG	Other, please specify (Senior Director Corporate Responsibility)

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.

Lufthansa Group (LHG), headed by Deutsche Lufthansa AG is a leading European airline group with operations worldwide. It plays a leading role in its European home markets. LHG is composed of the segments **Network Airlines, Eurowings**, Logistics, Technics (MRO) and Catering as well as Additional Businesses and Group Functions. LHG is an aviation group with operations worldwide. In the financial year 2020, the LHG generated revenue of **13.6 bn EUR** and employed as of 31-12-20 **110,065 employees** and **757 aircraft**.

The **Network Airlines** segment comprises Lufthansa German Airlines, SWISS, Austrian Airlines and Brussels Airlines. With their multi-hub strategy, the Network Airlines offer their passengers a premium, high-quality product and service, with the multi-hub strategy which includes the hubs of Frankfurt, Munich, Vienna, Zurich, Brussels and a comprehensive route network an outstanding degree of travel flexibility. The strategic focus on quality has been rewarded by numerous titles awarded to Lufthansa Group Airlines by renowned agencies like Skytrax or the Airport Transport World (ATW).

Eurowings focuses on short-haul routes in direct traffic. The equity investment in SunExpress is also part of this segment. Eurowings provides an innovative and competitive offering for price-sensitive and service-oriented customers in the growing European direct traffic segment.

With the **Aviation Services Companies**, LHG has several global leaders in their respective markets.

Catering: As part of the focus on the airline business, a contract with gategroup was signed in late 2019 for the sale of the LSG group's European business. The sale was closed on 2 December 2020 once the purchaser, gategroup, had met the conditions set by the European Commission. LSG group's international activities are to be sold as soon as the operating environment permits. The Lufthansa Group also comprises the Additional Businesses and Group Functions, which consist of e.g. Lufthansa AirPlus.

Lufthansa Aviation Training, and Lufthansa Systems. The business segments and the airlines are each under their own management. Overall coordination is by means of the Executive Board of Deutsche Lufthansa AG or the Group Executive Committee, which essentially consist of the members of the Executive Board of Deutsche Lufthansa AG and the CEOs of the main companies. The supervisory Board of Deutsche Lufthansa AG consists of 20 members - 10 shareholder representatives and 10 employee representatives.

Logistics: In addition to Lufthansa Cargo AG, the Lufthansa Group's logistics specialists, the Logistics segment includes the airfreight container management specialist Jettainer Group, the time:matters subsidiary, which specialises in particularly urgent consignments, and the equity investment in the cargo airline AeroLogic.

MRO: Lufthansa Technik is the world's leading independent provider of maintenance, repair and overhaul services (MRO) for civilian commercial aircraft. Lufthansa Technik AG serves more than 850 customers worldwide, including OEMs, aircraft leasing companies and operators of VIP jets, as well as airlines.

The business segments and the airlines are each under their own management. Overall coordination is by means of the Executive Board of the Lufthansa Group and the Group Executive Committee, which consist of the members of the Executive Board of the Lufthansa Group and the CEOs of the main companies.

The **Executive Board of Deutsche Lufthansa AG was restructured** in terms of responsibilities and individuals as of **1 January 2020**. Its new formation reflects the strategic transition of the Lufthansa Group from an aviation group to an airline group. This should serve to sharpen customer focus, strengthen digitalization endeavors and establish social and **environmental responsibility at Executive Board level**.

LHG assumes **corporate responsibility by integrating sustainability into the procurement process**. In most sectors, CO2-emissions of the supply chain are exceeding the emissions of the purchasing organization's own emissions. This is not the case in air transport because of the fuel burnt by the aircraft fleet. This is reflected in the breakdown of the LHG carbon footprint (**Scope 1: 76.0 %**, **Scope 2: 0.9 %**, **Scope 3: 23.1 %**) **which is verified** by independent **auditors Müller BBM**.

In 2019 LHG introduced in addition to the already existing Code of Conduct a Supplier Code of Conduct. The guidelines are meant as an umbrella directive for all of the Group companies' purchasing guidelines.

SC0.1

(SC0.1) What is your company's annual revenue for the stated reporting period?

	Annual Revenue
Row 1	13589000000

SC0.2

(SC0.2) Do you have an ISIN for your company that you would be willing to share with CDP?

Yes

SC0.2a