

C0. Introduction

C0.1

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

Lufthansa Group (LHG) is the leading European airline group. It is composed of the segments **Network Airlines**, **Eurowings** and **Aviation Services** Logistics, MRO and Catering) as well as Additional Businesses and Group Functions. LHG is an aviation company with operations worldwide. In the financial year 2019, the LHG generated revenue of **EUR 36.4 bn** and employed an average of **138.353 employees**.

The **Network Airlines** segment comprises Lufthansa German Airlines, SWISS and Austrian 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).

The **Eurowings** segment comprises the flight operations of Eurowings and Brussels Airlines. 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.

**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.

**Catering:** The LSG group offers a comprehensive range of products, concepts and services related to in-flight service. As the strongest revenue driver in the LSG group, LSG Sky Chefs offers classical catering for airlines and rail operators, as well as lounge management. It is present at 205 airports in 59 countries for more than 300 airlines and a growing number of European rail operators.

As Lufthansa Group will be refocussing more towards an airline group, a contract with gategroup was signed in late 2019 for the sale of the LSG group's European business. This divestment not only contributes to a sharper focus on the core airline business but is also intended to open up growth opportunities for the LSG group. As of December 31, 2019, the disposal was still subject to approval by the competition authorities.

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 **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 endeavours and establish social and **environmental responsibility at Executive Board level**.

**Outlook to 2020 - COVID 19**

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, 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/> )

The Lufthansa Group is facing the greatest challenge in its recent history. **The passenger figures at Lufthansa Group in the lockdown phase were at 1% of the previous year's level** - a 99% decline. 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.

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 2019	December 31 2019	Yes	2 years

C0.3

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

Angola  
Argentina  
Austria  
Bahrain  
Belgium  
Brazil  
Bulgaria  
Canada  
Chile  
China  
Czechia  
Democratic People's Republic of Korea  
Denmark  
Estonia  
Finland  
France  
Germany  
Hungary  
India  
Ireland  
Italy  
Japan  
Kenya  
Latvia  
Lithuania  
Luxembourg  
Malta  
Mexico  
Micronesia (Federated States of)  
Myanmar  
New Zealand  
Nigeria  
Norway  
Panama  
Philippines  
Portugal  
Puerto Rico  
Russian Federation  
Singapore  
South Africa  
Spain  
Sweden  
Switzerland  
Thailand  
Turkey  
Ukraine  
United Arab Emirates  
United Kingdom of Great Britain and Northern Ireland  
United Republic of Tanzania  
United States of America  
Venezuela (Bolivarian Republic of)

**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 2019 the "Group Executive Board of Deutsche Lufthansa AG" has been responsible for reviewing the Group's climate related strategy, measures and target setting. The Group Executive Board decided e.g. in the first quarter of 2019a climate and sustainability package that would further advance our commitment to climate protection including the following measures: • 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 and Switzerland • 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 Senior Vice President "Corporate Strategy, Mergers and Acquisitions" and the Senior Vice President "Corporate International Relations and Government Affairs" (both Direct Reports to the Chief Executive Officer) and their teams. Further explanation see C1.1b
Chief Financial Officer (CFO)	Since the implementation of the EU CSR Directive for the first time for the reporting year 2017 and also for the reporting year 2019 the Group's "Chief Financial Officer" had the final oversight of the Non-financial declaration which includes 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. 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
Other, please specify (Corporate Responsible Council)	The Corporate Responsibility Council is 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 organizational changes in 2019 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) which comprises some of the CRC members. The CRC has been headed by the Senior Vice President Corporate Strategy, Mergers & Acquisitions.
Other, please specify (Group Head of Environmental Issues)	In the first half of 2019 the Group's Head of Environmental Issues (GEI) has been reporting to the Senior Vice President "Corporate International Relations and Government Affairs" who directly reports to the Chief Executive Officer 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 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. To fulfil these tasks most effectively, the GEI is supported by an interdivisional forum at Group level, namely the Environmental Forum. In the course of 2019, a new organizational structure has been implemented recognizing the utmost importance of sustainability as a holistic approach. The Group Head of Environmental Issues has become part of the newly established corporate function "Corporate Responsibility" which has been reporting to the "Senior Vice President Corporate Strategy, Mergers and Acquisitions", who also reports directly to the Chief Executive Officer of the Lufthansa Group.

## 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>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. Major decisions in the reporting year 2019 of the Group Executive Board - which have been announced by the CEO at the annual press conference in March 2019 - were to agree on: 1. to carbon neutrality by 2030 in Lufthansa Group home markets (Germany, Austria, Switzerland, Belgium) for ground operations, 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 2019, the Lufthansa Group took delivery of 27 new aircrafts which are up to 25% more fuel efficient. Furthermore the Group Executive Board reviewed and supported the introduction of COMPENSAID an online CO2-compensation platform, in-house developed by the Lufthansa Innovation Hub which can be used by customers to either buy sustainable aviation fuel or to 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 2019 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>	<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>	<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 ongoing reorganization.</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>Environment/ Sustainability manager  <i>In the first half of 2019 the Group's Head of Environmental Issues (GEI) has been reporting to the Senior Vice President "Corporate International Relations and Government Affairs" who directly reports to the Chief Executive Officer 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 including subsidiaries as well as the analysis and development of innovative environmental concepts. The GEI is supported by an interdivisional forum at Group level: the Environmental Forum. In the course of 2019, a new organizational structure has been implemented recognizing the utmost importance of sustainability as a holistic approach. The GEI has become part of the newly established corporate function "Corporate Responsibility" within Corporate Strategy, which Head reports directly to the CEO of LHG.</i></p>	<Not Applicable >	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	As important matters arise
<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": Senior Vice President Group Strategy, Mergers &amp; 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 organizational changes in 2019 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)).</i></p>	<Not Applicable >	Other, please specify (Giving advice on reported climate-related risks and opportunities)	<Not Applicable>	As important matters arise
<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-related Risks and opportunities)	<Not Applicable>	Half-yearly

**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 Risk Officer is also the Executive Vice President Corporate Controlling and has been reporting in 2019 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 Environmental Issues has been the Risk Owner of environmental /climate related risks in 2019. 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 Environmental Issues and with the new structure 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 groupwide 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, Senior Vice President Corporate Communication, Vice President Investor Relations. The CRC usually takes place twice a year or is integrated within the GEC (see below).The CRC is headed by the Executive Vice President Corporate Strategy, Mergers & Acquisitions.

Environment / Sustainability Manager: The Group’s Head of Environmental Issues (GEI) has been reporting to the Senior Vice President "Corporate International Relations and Government Affairs" (Direct report to the CEO) 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 GEI is supported by an interdivisional forum at Group level ("Environmental Forum"). Mid 2019 there has been a reorganization of responsibilities establishing the function "Head of Corporate Responsibility" as direct report to the Senior Vice President Corporate Strategy, Mergers & Acquisitions to whom the Head of Group Environmental Issues is now reporting to.

**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 Board decisions such as climate 7 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. In 2019 environmental, climate-related strategy, targets and measures were prepared by the Vice President Corporate Strategy and Mergers & Acquisitions

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 2019, all Lufthansa Group companies in Germany, Austria and Switzerland use 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 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 three main performance-related and non-performance-related components: basic remuneration, one-year variable remuneration (annual bonus) and the long-term variable remuneration (long-term incentive, LTI). Other non-performance-related components which also form part of the remuneration system, are the ancillary benefits and retirement benefit commitments. The Share Ownership Guidelines are another important component of the remuneration system. They oblige the Executive Board members to hold a multiple of their basic salary in Lufthansa shares for the duration of their work on the Executive Board. Non-financial targets account for 15% of the annual bonus and the long-term incentive, respectively. The non-financial targets are set on an annual base, based on a basket of six different sustainability KPIs.

**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	Efficiency target	For the financial year 2019, the Supervisory Board defined "customers" and "employees" as focal points for the sustainability targets in the one-year variable remuneration. For the long-term variable remuneration granted in 2019 the Supervisory Board has set the parameter "Environment" as the focus for the sustainability criteria. 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. For 2019 the environmental target is therefore measured on the basis of a comparison between the specific CO2 emissions in 2017 and 2018. For 2019 the figures are now available for the first time for the 2019 annual report, so a direct comparison with the previous year is constantly possible for the LTI 2020. Performance in 2019 for the environmental parameter was 53%. At the end of the performance period this figure accounts for one-quarter of the total target achievement of the sustainability factor All Executive Board members of the LHG are obliged to participate in a long-term performance program, which rewards the sustainable increase in company value over several years. The sustainability factor is determined by the Supervisory Board (SuB)

**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	6	The long-term time horizon for climate related risks is aligned with the financial time horizons.

**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/strategic risks. Qualitative risks are long-term developments and challenges with potentially adverse consequences for the LHG. As specific information often is not available, these risks can generally not be quantified precisely or at all. Therefore, risk management amounts to a strategic approach to uncertainty. Qualitative risks are often identified in the form of weak signals. To evaluate them as systematically as possible, estimates are made about their magnitude and significance. For qualitative risks, reasonable assumptions with a certain variety are chosen to quantify a risk spectrum. Significance describes the potential impact of the individual risk or development under consideration of the reputation, the business model or earnings of the LHG. The potential monetary impact of quantitative risks on the LHG can be estimated. The probability of their occurrence, divided into various classes, is used to evaluate qualitative risks. The extent of damage is generally given as the potential monetary impact on the operating result. The thresholds for classifying the monetary earnings effect are defined centrally for the LHG according to a standardized logic. After evaluation, the individual qualitative and quantitative risks are divided into priority classes A, B, C and D to assess their materiality.

**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 Group level. Through that process risks are being assessed and aggregated in a risk map. This process takes into account all kind 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 CC. 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 Climate Change regulations such as changes to existing regulations (EU ETS) and emerging (CORSIA) as risks, which is 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 6 years), LHG has not identified any significant physical risks (see C2.2c.). Nevertheless, LHG actively participates in research projects (e.g. installing measuring instruments on LHG aircrafts) aiming at understanding climate change on the atmosphere and in the wider sense on air traffic, in order to identify and manage potential upcoming physical risks on time. Examples include the MOZAIC, AMDAR, CARIBIC and IAGOS projects, all of which have been initiated by the Europe. Besides this Lufthansa was the first airline worldwide demonstrating the feasibility of using biofuels on scheduled commercial flights in 2011. The systematic identification of 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. The methodological evaluation of risks 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/strategic risks. Qualitative risks are long-term developments and challenges with potentially adverse consequences for the LHG. As specific information often is not available, these risks can generally not be quantified precisely or at all. Therefore, risk management amounts to a strategic approach to uncertainty. Qualitative risks are often identified in the form of weak signals. To evaluate them as systematically as possible, estimates are made about their magnitude and significance. For qualitative risks, reasonable assumptions with a certain variety are chosen to quantify a risk spectrum. Significance describes the potential impact of the individual risk or development under consideration of the reputation, the business model or earnings of the LHG. The potential monetary impact of quantitative risks on the LHG can be estimated. The probability of their occurrence, divided into various classes, is used to evaluate qualitative risks. The extent of damage is generally given as the potential monetary impact on the operating result. The thresholds for classifying the monetary earnings effect are defined centrally for the LHG according to a standardized logic. After evaluation, the individual qualitative and quantitative risks are divided into priority classes A, B, C and D to assess their materiality. 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 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, BDL, econsense, BDF) and international industry associations (e.g. IATA, A4E) which are also monitoring and assessing political developments for the aviation sector. 2. Physical risks LHG has a dedicated environmental department, which is in a continuous dialogue with climate scientists and institutions (e.g. German Aerospace Centre (Deutsches Zentrum für Luft- und Raumfahrt; DLR) and LHG, since 1994, actively participates in research projects aiming at understanding climate change on the atmosphere and in the wider sense on air traffic. Examples include the MOZAIC, AMDAR, CARIBIC and IAGOS climate research projects in cooperation with universities and research centers, all of which have been initiated by the European Union. By these processes LHG experts (engineers, active pilots, scientists) 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) on sustainability topics (latest in 2018). The responses of the stakeholders are combined with top management's assessments in a materiality matrix. Over the years ahead, this matrix will serve the LHG as the base from which to advance the strategic development of corporate responsibility management (including climate topics). Furthermore, 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. In 2019 the existing (since 2012) Luftverkehrsteuer has been discussed in the light of raising the tax due to environmental protection which has been followed closely by LHG. 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 of CORSIA starting with the pilot phase in 2021, the relevance of this risk type is always included in LHG climate-related risk assessments. Furthermore ongoing discussions about introduction of further environmental / CO2 related taxes or mandates
Technology	Not relevant, included	In the frame of our defined time horizon for identifying, and assessing climate-related risks (3 to 6 years) we have not identified any technology related risks for the LHG
Legal	Not relevant, included	In the frame of our defined time horizon for identifying, and assessing climate-related risks (3 to 6 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 (3 to 6 years) we have the following market risks identified for the LHG.: - Market price risks for emission allowances - Competition impact due to emission regulations
Reputation	Relevant, sometimes included	Any negative impact on brand perception has the potential to have impacts on ability to hold customers or to attract new customers, to form partnerships and community relations. This could result in a reduction in passenger/customer preferences and therefore could have impacts on revenue. Aviation has been identified as an 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 is published in the Group's sustainability report Balance and is 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). 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. The effects will usually be local to the ground operation but also 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 "Deutscher Wetterdienst" and research facilities around the world in order to improve climate and weather forecasts by more intensively using aircraft based weather information. The LHG pilots are using during the flights the so called newly developed "Enroute Weather Display" which has the most accurate data e.g. for turbulent areas.
Chronic physical	Not relevant, included	In the frame of our defined time horizon for identifying, and assessing climate-related risks (3 to 6 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)
--------------------	--

**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 EWR and since 2020 between EWR and Switzerland are subject to this scheme – in 2019 around 8.7 mio tons of CO2 of which 63 % is offset by purchasing emissions allowances (EUA's), 37% is offset by the allocation of free allowances. The price EUA's has increased from around 5 EUR per allowance in the fall of 2017 to almost 30 EUR per allowance in less than 24 months. At the 30th of June 2020 the price stands at 27 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 aims at stabilizing airline net emissions from international flights at the level of 2020 (so-called Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)) from 2021 onwards. On 30th June 2020 it has been agreed by ICAO due to COVID 19 crisis, to use only 2019 as baseline. The airlines are obligated to compensate their emissions exceeding the baseline by purchasing emission reduction units. The first projects generating allowances which are permissible to pay the emission debt with, have now been named. Prices between the 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-low

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

200000000

**Potential financial impact figure – minimum (currency)**

&lt;Not Applicable&gt;

**Potential financial impact figure – maximum (currency)**

&lt;Not Applicable&gt;

**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 EUR 66 m to fulfil the EU ETS requirements. Before COVID 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 EUR 450m 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 the ICAO has now also decided to change the CORSIA baseline from 2020 to 2019 the emission costs of the next three year will be considerable lower than the 450 mEUR mentioned above.

**Cost of response to risk**

300000

**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. This has enabled LHG to react more flexible to reduce the financial impact of emission trading schemes. In addition, LHG implemented a total of 21 new fuel-saving projects in 2019, which sustainably reduced CO2 emissions by some 24500 t only in this year. The quantity of kerosene saved amounted to 9.7 million litres. The positive financial impact of these measures came to approx. EUR 3 million. The saved amount of fuel equals ca. 91 return flights from Munich to New York with an aircraft type A350.

**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 EUR 3m for the whole LHG. The running costs of the ETS organization within the LH Group are estimated on EUR 300.000 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)
---------------------	---

**Primary potential financial impact**

Increased indirect (operating) costs

**Climate risk type mapped to traditional financial services industry risk classification**

&lt;Not Applicable&gt;

**Company-specific description**

Risk description: cost incurring from tightening changes in 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 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 EWR 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 fulfil 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 due to parallel work of CORSIA and ETS on same routes.

**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**

Since it is currently not possible to estimate the extent to which the scope or the criteria for the EU ETS will change in the period after 2023 and/or further emissions will be included or further emissions trading systems for aviation will be set up, or to what extent, it is currently not possible to estimate the potential financial impact. The financial impact of CORSIA is difficult to estimate yet because some relevant parameters of the regulation not decided now. Indirect financial impact could result from competition distortion between EU and non EU airlines is difficult to estimate.

**Cost of response to risk**

300000

**Description of response and explanation of cost calculation**

LHG was actively involved in securing 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. 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 and IATA. LHG Head of Environmental Issues and successor are actively working on a monthly to fortnite basis in the SEAC 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 300,000 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
----------------	--

**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. 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)**

5000000

**Potential financial impact figure – maximum (currency)**

10000000

**Explanation of financial impact figure**

In 2019 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 had negative effects on earnings for LHG. However, these costs are difficult to quantify in a meaningful way at the moment.

**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 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. Furthermore, LHG continuously invests in new aircrafts and infrastructure. In 2019 for instance, the LHG has received 27 new aircrafts among which has been the new efficient and technologically state-of-the-art aircrafts such as 5 A320neo, 5 A321, 4 B777, 3 A350.

**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. During the financial year 2019, the Lufthansa Group took delivery of 27 new aircrafts, among which were the new efficient and technologically state-of-the-art aircrafts such as 5 A320neo, 5 A321, 4 B777, 3 A350 which are up to 25% more fuel efficient.

**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
------------	--------------------------------

**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 the LHG or industry in general could result in increasing loss of reputation and a shift of consumer attitude and demand. This particular problem mainly arose from the strong growth of air transport capacity in the past years along with the entrance of the low cost carriers and the strong dependency of the air traffic sector on fossil fuel, which might result in brand damage and reduction of demand.

**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 travel by air might impact global long term growth rate of the airline industry and in turn might mean for the LHG - a long term planning and aircraft-ordering based on overestimated growth rates - an increasingly tougher yield environment due to overcapacity as air travel demand is increasingly not matching the available capacity - a decreasing market value of used aircraft. The potential impact has not been quantified financially.

**Cost of response to risk**

1000000

**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 the publications, executive presentations and media releases. Furthermore, LHG has committed itself to provide a transparent reporting on environmental issues in the annual report and the "Fact Sheet" published on www.lufthansagroup.com on environmental data. Furthermore Executive Board Members, Senior Vice Presidents and Senior Directors of LHG work together with aviation associations on national level (BDL: Bundesverband der Deutschen Luftverkehrswirtschaft) and international level (IATA: International Air Transport Association and A4E: Airlines for Europe) take on the responsibility to develop jointly roadmaps towards a sustainable aviation industry, also involving local governments and the EU. Additionally LHG is actively giving input to numerous consultations from the EU regarding various aspects of the Green Deal such as the further promoting of Sustainable Aviation Fuel. For the first time in 2019 the National Aviation Conference has been taken place opened by Chancellor Merkel 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 support actively the roadmap towards sustainable aviation. The First National Aviation Conference has led to comprehensive media coverage which supported awareness creation about what the industry is already doing, the technological challenges to develop electric or hydrogen aircrafts as well as the development on sustainable aviation fuel. LHG supports customers to buy sustainable aviation fuel: In 2019 LHG has introduced as the first airline group worldwide the CO2 compensation platform COMPENSAID, a LHG own development giving the customers the possibility to either compensate their flights with our partner myclimate or to buy Sustainable Aviation

Fuel or a combination of both.

**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 and sponsoring on environmental/climate protection, The development and maintenance of the CO2 Compensation platform COMPENSAID has been also included

---

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 fuel consumption and CO2 emissions. Since 1990, the 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. The impact of this 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 behaviour, LHG has implemented services like the carbon calculator and the voluntary carbon offset program for our 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. In 2019 LHG has put 27 new fuel efficient aircraft with approximately EUR 3bn investments (list price) into service. Despite the COVID-19 pandemic LHG remains committed to continue modernizing our fleet with e.g. A320neo and Boeing 777, to keep our products competitive, to generate fuel and therefore CO2 efficiencies to improve continuously our environmental footprint.

**Comment**

Capital expenditure for the extensive fleet renewal amounted to EUR 3bn (at list prices) in 2019 as LHG has put 27 new fuel efficient aircraft into service. The development for the CO2 compensation platform COMPENSAID by the Lufthansa Innovation Hub caused costs of approximately 0,5 mio €.

---

**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. 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 (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 least through the involvement of the Lufthansa Group. LHG has implemented a team which works for numerous SES projects such as enhanced IT tools, optimizing flight patterns saving fuel /reducing CO2 emissions.

**Time horizon**

Medium-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)**

&lt;Not Applicable&gt;

**Potential financial impact figure – minimum (currency)**

200000000

**Potential financial impact figure – maximum (currency)**

390000000

**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 million tons less CO2 per year. With a consumption of 10 Mio. tons of kerosene in 2019 and corresponding CO2 emissions of 32 Mio. tons of the LHG aircraft fleet, a SES would result in cost savings on EUR 200m to 390m for the LHG depending on actual prices for kerosene and EU ETS certificates.

**Cost to realize opportunity**

0

**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. The various airlines in the Lufthansa Group and Lufthansa Systems are also actively involved as IT providers for SESAR research and demonstration projects e.g. "EffFlug" in cooperation with DLR (German Aerospace Institut). Within EffFlug methods, IT Tools and workflows are derived to optimize the planning of the flight operation such as optimizing flight paths based on 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 and with manpower from the ministry of economics and the DLR (German Aerospace Institut) in order to support more sustainable and environmental friendly airtraffic by flying more efficiently.

**Comment**

No additional management costs. The management cost associated with LH's actions to promote the SES in 2019, incurring for a participation of experts in projects, workshops, task forces etc. has been absorbed within existing capabilities mechanism. plus partly financially funded by the ministry of economics.

---

**Identifier**

Opp3

**Where in the value chain does the opportunity occur?**

Upstream

**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 2019 LHG took delivery of 27 new aircraft of which has been e.g. A320neo 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 2019, the LHG spent around EUR 6.7 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 67m. Added to this are the correspondingly lower expenses for the purchase of CO2 certificates.

#### Cost to realize opportunity

3000000000

#### 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 fall 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 "Operating 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 2019, 21 fuel-saving projects were under way across the Group. They made it possible to permanently avoid another 24,500 t of CO2 emissions in the reporting year.

#### Comment

The estimated cost to realize this opportunity were calculated by the investments of EUR 3bn (list price) which LHG has put in the 27 new fuel efficient aircraft that went into service in 2019. Capital expenditure for the extensive fleet renewal has amounted to EUR 3bn (at list prices) in 2019. 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 a prolongation. In 2020 LHG will receive another 23 aircraft, among which are also the A320neo and the A350 which have proven already to be up to 25% more fuel efficient.

---

#### 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

Likely

#### 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 0,05% of the worlds needed production has been available in 2019 at an extrem high cost up to 2-8 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. Additionally more and more Fundings 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 at trade associations (IATA, A4E, BDL, BDI,...) and at EU Commission asking political and governemental financial and structural 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 in 2019 two letters of intent (LOI) and has been preparing further initiatives which will come into effect in 2020: 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

**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**

- Participation in the PtX Initiative from Ministry of Environment: signed Memorandum of Understanding to jointly support the initiative, providing airline specific Know-how - Participation in Global Alliance Powerfuels (dena): In September 2018, the German Energy Agency (dena) initiated the Global Alliance Powerfuels together with well-known partners like Lufthansa Group. On April 8th, the Global Alliance Powerfuels published a discussion paper at its first round table at Berlin Energy Week. More information about the alliance can be found at [www.powerfuels.org](http://www.powerfuels.org) . - Taking part in upcoming research national projects and EU projects linked to the Green Deal, such as the EU ETS innovation fund

**Time horizon**

Medium-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 their climate-related projects and initiatives for the last 25 years predominantly in the sustainability report BALANCE. 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

**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, 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.

**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**

Resource 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, 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) Does your organization use climate-related scenario analysis to inform its strategy?**

Yes, qualitative and quantitative

C3.1b

**(C3.1b) 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 includes new aircraft (based on the fleet plan until 2030, extrapolated to 2050), operations efficiency (based on average performance), Single European Sky (at 50 % of targeted benefit) and carbon offsetting (CORSIA and duty travel compensation). In all modelled scenarios a gap remains between the projected 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. .
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 gap became larger, i.e. more sustainable fuel or 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 onwards 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 onwards.

C3.1d

**(C3.1d) 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. Within our product and service strategy LHG has been developing products and services to reduce and / or compensate carbon emissions. In 2019 LHG has introduced for the network airlines (Lufthansa, Swiss, Austrian Airlines) the pilot project "Corporate Value Fares". The concept includes full CO2-compensation of all European flights. As this pilot concept has been greatly accepted by Corporate Customers in 2019 it has been decided to offer this kind of "Corporate Value Fares" (inclusive of CO2 compensation on European routes) to all our Corporate Customers, who are signing a contract with us starting in 2020. LHG has further continued our longstanding partnership with myclimate and Climate Austria. Additionally to the existing partnerships of Lufthansa, Swiss, Austrian Airlines with myclimate respectively Climate Austria, in 2019 customers now have the possibility to use myclimate at Miles&More and Eurowings. In 2019 LHG has launched as the first airline worldwide the CO2 compensation platform COMPENSAID, which has been developed inhouse by the Lufthansa Innovation Hub. With COMPENSAID our customers have the opportunity to buy directly Sustainable Aviation Fuel to compensate their flights regardless if flown within the LHG or with other airlines. Within COMPENSAID our customers and passengers of all other airlines have also the opportunity to buy a mixture of Sustainable Aviation Fuel and CO2 compensation projects. LHG continuously raises the number of "Express Rail" destinations and frequencies. In December 2019 LHG offered e.g. 392 connections from Frankfurt, 19 Lufthansa Express connections from Cologne to Frankfurt airport, 105 connections to and from Düsseldorf, 77 from Stuttgart. LHG offers Express-Rail Service for 14 German cities. "Lufthansa Innovation Hub" has developed the app "Rydes". Based on individual user behavior, the app 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-sharing car, rental bike, train or plane. "Lufthansa Technik" has developed a special engine wash "Cyclean" which helps to reduce fuel consumption respectively reduces CO2 emissions.
Supply chain and/or value chain	Yes	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 also promotes / supports the development of e-mobility at airports to lower local emissions (NOx, CO2 and ultra-fines) e.g. electric tugs, busses, catering trucks. Especially at our German hubs Frankfurt and Munich LHG is intensively engaged in cooperation with FRAPORT and Munich airport FMG. LHG cooperates with Deutsche Bahn, Australian 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.
Investment in R&D	Yes	SAF: 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 for the previously approved production processes. It therefore requires greater research and development efforts, a broader sustainable raw material base and the expansion of production capacity. In order to advance the development of alternative fuels. LHG is involved in various SAF projects and alliances: 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, to which five percent power-to-liquid (PtL) fuel has been added from their PtL production. The process is based on wind power, water and CO2 from a cement plant. Hydrogen is first generated from water by electrolysis. This hydrogen is converted into a synthesis gas with the CO2 in chemical processes and converted into a synthetic kerosene via the intermediate methanol. It shall be used on our flights from Hamburg. Additionally LHG signed a MoU with Power-to-X Kompetenz Zentrum Lausitz (the state of Brandenburg, Rolls Royce, BASF, Sunfire, University of Brandenburg). CLIMATE RESEARCH: Since decades LHG is partnering with universities (e.g. KIT, RWTH Aachen) the DLR (German Aerospace 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 (Civil Aircraft for the Regular Investigation of the atmosphere Based on an Instrument Container), an association of 12 European research institutes to better understand climate change and develop targeted measures for sustainable aviation. OPERATIONAL CO2 REDUCTION: Lufthansa Technik 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.
Operations	Yes	FUEL EFFICIENCY PROJECTS: In 2019 LHG conducted 21 fuel efficiency projects to reduce within flight operation the fuel consumption via weight reduction, Flight route optimization. In the reporting year an additional 24,5 TSD tons of CO2- Emissions could be saved which comes to 91 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 2019 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 concept "Target Times" has been introduced. In 2019 the Executive Board of LHG has decided to become carbon -neutral on the Ground operation 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.

**C3.1e**

**(C3.1e) 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 Capital expenditures Capital allocation Assets	DIRECT COSTS: -Jet Fuel: LHG business strategy and financial planning is always linked to emissions reductions as any fuel saved helps reducing CO2 emissions and direct costs. Reducing emissions of LHG 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. In fact, LHG aims at improving fuel efficiency by 1,5% p.a. until 2020 - Funds for voluntary CO2 compensation: Financial funds have been provided to compensate CO2 on a voluntary basis: all LHG duty flights are 100% compensated via our partner myclimate since 2019 - Funds for Green electricity: Financial funds have been provided to use 100% Green electricity in Germany, Austria, Switzerland and Belgium CAPEX: - The Group's investments primarily focus on the renewal of its fleet, which is the Group's most effective lever to reduce CO2 emissions. Fleet investments amounted to more than 3 billion euros per annum before the crisis. 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. Customers are also given the opportunity to compensate the emissions of their journey, for example by the purchase of Sustainable Aviation Fuel (SAF). Both may influence the customer choice of the airline to travel with and willingness to pay for the underlying fare, influencing the Group's customer communication and pricing.

**C3.1f**

**(C3.1f) 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 concretized and implemented by a working group managed by the 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 "Customer 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: "ESG Management". The Head of ESG Management reports directly to the Executive Board Member "Customer and Corporate Responsibility".

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 cost, while also reducing their 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. In fact, LHG aims at improving carbon efficiency by 25% year on year to 2020 (in comparison to 2006 and also supports the aviation sector targets (agreed 2009) on the following global targets:

1. Fuel efficiency (i.e. fuel consumption per revenue tonne kilometer) is to be improved by 1.5% per year until 2020.
2. Growth in air traffic should be CO2 neutral from 2020 onwards.
3. By 2050, air traffic's net CO2 emissions are to decline by 50% compared with 2005.

The Lufthansa Group was closely involved in the development of the IATA targets and shares the industry's aims. A key strategic short-term priority and company specific milestone for LHG is to improve fuel efficiency with an ambitious target set by the Executive Board to achieve an efficiency improvement of 25% by 2020 compared to 2006 level

Investing in fleet modernisation has been one of the most substantial business decisions of LHG in 2019 that have been influenced by the climate change driven aspects of the strategy, because it comes at very high costs. The most important driver for reducing CO2 emissions from flight operations is investing continuously in modern, particularly fuel-efficient aircraft and engine technologies. In 2019, the airlines in the Lufthansa Group took delivery of 27 new aircraft. 5 more Airbus A350-900 went into service, for instance, whose emissions are around 25% lower than those of comparable aircraft types.

With regard to flight operational measures, in financial year 2019, 21 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 2018, they made it possible to permanently avoid another 24.5 thousand tonnes of CO2 emissions in the reporting year.

Furthermore, in 2019, the Lufthansa Group has decided to take part in a cross-sector initiative, which aims 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 climate protection goals of LHG and the whole aviation sector (target: reduction of net CO2 emissions by 50% by 2050 compared to 2005).

In March 2019 LHG CEO announced the climate and sustainability package that would further advance our commitment to climate protection including the following measures:

- 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 and Switzerland
- Switch to carbon neutral electricity in 2019 for all LHG-buildings in Germany, Austria and Switzerland.

In addition to the mandatory EU Emission Trading scheme, the Lufthansa Group already offers its customers the option of voluntary CO2 compensation. Corporate customers have had the option of flying CO2-neutrally with the network airlines in Europe of the Lufthansa Group since January 1, 2019. For this purpose, the Group has started a test run with selected customers in Germany, Austria and Switzerland who have a contract within the PartnerPlus Progress Program. Through the latter, the program's "Added Value Fund" is debited for 50 percent of the cost due for CO2 compensation for all flights customers take within Germany and the EU with Lufthansa Group network airlines. The Lufthansa Group assumes the remaining 50 percent of the compensation cost. Additionally, the participating companies can compensate long-haul flights on a voluntary basis.

## 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)**

116372

**% of target achieved [auto-calculated]**

41.3087367269253

**Target status in reporting year**

New

**Is this a science-based target?**

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

**Please explain (including target coverage)**

% of emissions in scope relates on all production sites Lufthansa Technik AG and its subsidiaries worldwide. Reduction target of Lufthansa Technik AG production sites in metric tonnes CO2: 32,444 Attention: Lufthansa Technik is a provider of maintenance, repair and overhaul services (MRO) for civilian commercial 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 (%)**

50

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

10646886

**Covered emissions in reporting year (metric tons CO2e)**

33120224

**% of target achieved [auto-calculated]**

-111.078976519519

**Target status in reporting year**

Underway

**Is this a science-based target?**

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

**Please explain (including target coverage)**

% of emissions in scope relates on LH Group aircraft fleet (passenger and cargo). Target aligns with the industry goal of reducing absolute carbon emissions by 50% by 2050, compared to 2005 levels.

---

**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)**

56104

**% of target achieved [auto-calculated]**

0

**Target status in reporting year**

New

**Is this a science-based target?**

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

**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.

---

**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)**

12122

**% of target achieved [auto-calculated]**

0

**Target status in reporting year**

New

**Is this a science-based target?**

No, but we are reporting another target that is science-based

**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.

---

**Target reference number**

Abs 5

**Year target was set**

2019

**Target coverage**

Other, please specify (Own Duty flights)

**Scope(s) (or Scope 3 category)**

Scope 1

**Base year**

2019

**Covered emissions in base year (metric tons CO2e)**

102355

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

0.3

**Target year**

2019

**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**

New

**Is this a science-based target?**

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

**Please explain (including target coverage)**

The Lufthansa Group itself has been offsetting the carbon emissions of all employees' duty flights around the world in 2019. The corresponding CO2 emissions are offset by financing high-quality, certified carbon offset projects initiated and managed by our cooperation partner myclimate.

---

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)**

0.87

**% of target achieved [auto-calculated]**

36.3636363636363

**Target status in reporting year**

Underway

**Is this a science-based target?**

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

**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 a reduction of specific fuel consumption / CO2-emissions will be not sufficient enough to achieve a reduction in absolute emissions in the past. But due to the COVID-19 effects on the aviation sector absolute carbon emissions will decrease radical in 2020 and also in following years. Currently forecasts indicate that traffic returns to 2019 levels in 2024 according to IATA.

---

**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

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)**

Please select

**Target denominator (intensity targets only)**

<Not Applicable>

**Base year**

2019

**Figure or percentage in base year**

22

**Target year**

2020

**Figure or percentage in target year**

100

**Figure or percentage in reporting year**

22

**% of target achieved [auto-calculated]**

0

**Target status in reporting year**

New

**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.

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

Other, please specify (Part of relevant SDG goals which were supported by Lufthansa Group: Goal 7: Affordable and clean energy 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 have been 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
---------------------	--

**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

New

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 7: Affordable and clean energy 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 Januar 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 current company fleet mentioned above are a rough estimate. Exact shares are not available at present.

Target reference number

Oth 2

Year target was set

2019

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)
-----------------------	--

Target denominator (intensity targets only)

<Not Applicable>

Base year

2019

Figure or percentage in base year

0

Target year

2019

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

New

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 7: Affordable and clean energy 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 2019. 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.

C4.3

(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	475	
To be implemented*	32	30031
Implementation commenced*	33	76397
Implemented*	11	30268
Not to be implemented	351	

C4.3b

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

Initiative category & Initiative type

Energy efficiency in production processes	Other, please specify (Engine update)
---	---------------------------------------

Estimated annual CO2e savings (metric tonnes CO2e)

14842

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

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

1802000

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

0

Payback period

<1 year

Estimated lifetime of the initiative

>30 years

Comment

Modification of Trent 900 engines on A380 aircrafts (Lufthansa Passage Airlines) to install optimized hardware. The lifetime of initiative is theoretically unlimited, as long as said part of the fleet is in service.

Initiative category & Initiative type

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

Estimated annual CO2e savings (metric tonnes CO2e)

5843

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

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

1137000

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

0

Payback period

<1 year

Estimated lifetime of the initiative

>30 years

Comment

Introducing of the Embraer (Austrian Airlines) Cost Index Ops Inflight Performance Software. The lifetime of initiative is theoretically unlimited, as long as said part of the

fleet is in service.

---

**Initiative category & Initiative type**

Energy efficiency in production processes	Other, please specify (Engine swap)
---	-------------------------------------

**Estimated annual CO2e savings (metric tonnes CO2e)**

1979

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

518000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

>30 years

**Comment**

Install "fittest" engines on airplanes of the A32x family (Swiss Airlines) where most fuel burn occurs in combination with a life cycle limit optimization. The lifetime of initiative is theoretically unlimited, as long as said aircraft type and engine is in service.

---

**Initiative category & Initiative type**

Energy efficiency in production processes	Other, please specify (Pilots briefing)
---	---

**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)**

398000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

>30 years

**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 (Swiss Airlines). The lifetime of initiative is theoretically unlimited.

---

**Initiative category & Initiative type**

Energy efficiency in production processes	Other, please specify (Technical procedures)
---	--

**Estimated annual CO2e savings (metric tonnes CO2e)**

1839

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

344000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

>30 years

**Comment**

New rudder rigging procedure, that leads to less fuel consumption on the B748 fleet (Lufthansa Passage Airline). The lifetime of initiative is theoretically unlimited, as long as said part of the fleet is in service.

**Initiative category & Initiative type**

Other, please specify	Other, please specify (Weight reduction at aircraft by removal of unused equipment)
-----------------------	---

**Estimated annual CO2e savings (metric tonnes CO2e)**

714

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

123000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

>30 years

**Comment**

Removal of the Cabin SAT Phone & IFE Center Rack on the A330/A346 fleet (Lufthansa Passage Airlines). The lifetime of initiative is theoretically unlimited, as long as said part of the fleet is in service.

**Initiative category & Initiative type**

Other, please specify	Other, please specify (Technical enhancement - Retrofit of technical equipment)
-----------------------	---

**Estimated annual CO2e savings (metric tonnes CO2e)**

503

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

1800000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

>30 years

**Comment**

Retrofit of the das Scavenge Pump System at the B777 fleet (Austrian Airlines). The lifetime of initiative is theoretically unlimited, as long as said part of the fleet is in service.

**Initiative category & Initiative type**

Energy efficiency in production processes	Other, please specify (weight reduction)
---	--

**Estimated annual CO2e savings (metric tonnes CO2e)**

360

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

71000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

>30 years

**Comment**

Weight reduction due to a new standard beverage trolley (Austrian Airlines). The lifetime of initiative is theoretically unlimited, as long as said equipment is in service.

**Initiative category & Initiative type**

Energy efficiency in production processes	Machine/equipment replacement
---	-------------------------------

**Estimated annual CO2e savings (metric tonnes CO2e)**

325

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

41000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

>30 years

**Comment**

Weight reduction: Exchange of old torch lights running with bulb lights and retrofit of lighter LED-torch lights (Lufthansa Passage Airlines). The lifetime of initiative is theoretically unlimited, as long as said equipment is in service.

**Initiative category & Initiative type**

Energy efficiency in production processes	Machine/equipment replacement
---	-------------------------------

**Estimated annual CO2e savings (metric tonnes CO2e)**

71

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

13000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

>30 years

**Comment**

Weight reduction by removal of MMP+A330 ETOPS Manual from Cockpit - Removal due to eTLB introduction by LHT (Lufthansa Passage Airlines).

**Initiative category & Initiative type**

Energy efficiency in production processes	Machine/equipment replacement
---	-------------------------------

**Estimated annual CO2e savings (metric tonnes CO2e)**

49

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

10000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

&gt;30 years

**Comment**

Weight reduction: Removal of the OHAR seats on the B777 fleet (Austrian Airlines).

## C4.3c

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

Method	Comment
Compliance with regulatory requirements/standards	Implementing 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: At the moment the flight operations efficiency department of Lufthansa Group (LHG) supports several active projects to reduce overall fuel consumption. Moreover, the entire pipeline of fuel efficiency projects includes 475 projects on different levels of implementation (including projects under investigation, projects to be implemented, and projects with a commenced implementation). One topic of 2019 was the implementation of already identified fuel efficiency measures, like weight reduction and to prioritize projects according to their impact on fuel within the airlines at LHG. Furthermore, the steps to a holistic control with regards to an efficient overall system are undertaken.
Dedicated budget for low-carbon product R&D	Voluntary Initiative: Participation in Fuel Efficiency Projects. LHG actively participates in several projects on national and European level which focus on achieving fuel efficiency improvements and noise reduction. 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	Voluntary Initiative: LHG is regularly conducting sustainable alternative kerosene projects. The first project LHG has initiated was the burnFAIR research project in the context of which Lufthansa tested biofuel on commercial flights. With this initiative, Lufthansa was the first airline worldwide to use bio kerosene on regular flight operations. From July 2011 onwards for a period of six months, Lufthansa deployed an Airbus A321 which used a blended fuel containing 50% biosynthetic kerosene in one of its engines in flight operations on the Hamburg–Frankfurt–Hamburg route. The main aim of this long-term project was to investigate the effects of bio kerosene on aircraft operation, airframe and engine maintenance and on the environment. LHG invested some EUR 3.7m in the project, out of which EUR 1.5m were funded by the German government. Another milestone in LHG's pioneering work in the testing of alternative fuels happened in September 2014, when Lufthansa operated the first European farnesane flight, using a ten percent blend of a new sugar-based biofuel component called farnesane on a scheduled flight from Frankfurt to Berlin. In 2016, the Lufthansa Group refueled its aircraft at Oslo Airport with a fuel blend that contained 5 percent biokerosene. Air BP Aviation, the Norwegian airport operator Avinor and the biofuel specialist SkyNRG joined forces to offer jet biofuel to airlines serving Gardermoen Airport. For a period of one year, Air BP Aviation fed 1.25 million liters of sustainably produced and appropriately certified biofuel into the tanks at Oslo Airport. During this time, about 5,000 flights operated by the airlines of the Lufthansa Group flew on jet fuel blended with biokerosene. They included Lufthansa, SWISS, Austrian Airlines, Germanwings and Brussels Airlines. On 14 February 2019, Deutsche Lufthansa AG signed a letter of intent with Raffinerie Heide (Heide refinery) for the production and use of environmentally friendly synthetic kerosene. This is to be developed and produced by using regionally generated wind energy in the KEROSyN100 research project under the direction of the University of Bremen with the Heide refinery and five other partners from science and industry. In August 2019 LHG signed MoU with PTX Kompetenz Zentrum Lausitz: this project is part of the PTX initiative of the Ministry of Environment.
Dedicated budget for energy efficiency	Voluntary Initiative: Fleet modernization program. At year-end 2019, there were 198 aircraft on the Lufthansa Group's order list. Of these, six aircraft were delivered and two orders cancelled up to the beginning of March 2020. The 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. This number included five Airbus A320neos, five A321neos, four Boeing 777s and three A350s that emit up to 25% less emissions than comparable aircraft types.

## 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**

The Lufthansa Group has conducted a test with corporate customers in the reporting year in order to evaluate the popularity of carbon offsetting among corporate customers. Some of them were given the option of also choosing carbon offsetting in the included optional services. Until now only other services such as exemption from rebooking fees, lounge and Wi-Fi vouchers, and additional luggage were available. The offer proved very popular and has been expanded to a significantly larger participant group in 2020.

**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 aircrafts 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**

59

**% of total portfolio value**

<Not Applicable>

**Asset classes/ product types**

<Not Applicable>

**Comment**

This product/service offered selected company customers which are flying with LHG Network Airlines segment comprises Lufthansa German Airlines, SWISS and Austrian Airlines. With their multi-hub strategy, the Network Airlines offer their passengers a premium, high-quality product and service, and a comprehensive route network combined with the highest level of travel flexibility. The proportion of revenues generated at these business segments during the reporting year amounts to 59 % of total revenues of LHG. In 2019 LHG has offsetting more than 43.000 t of CO2 for selected corporate customers. The offer proved very popular and has been expanded to a significantly larger participant group in 2020.

---

**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)**

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 1**

###### **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 2**

###### **Gross global Scope 1 emissions (metric tons CO2e)**

30584190

###### **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 operation 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 were 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**

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 were 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 like in the CDP-guidance instructed. Therefore, we used location-based factors also for sites, where 100 % green power were used.

**Past year 1**

**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 2017). Scope 2 market-based figure is calculated with market-based factors for electricity delivered by our energy suppliers were available. For all other sites, where market-based-factors were not available, we used location-based factors to complete the market-based figure. In the CDP-report, we calculated our Scope 2 location-based emissions like in the CDP-guidance instructed. Therefore, we used location-based factors also for sites, where 100 % green power were used.

**Past year 2**

**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 2017).

---

**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 from which 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**

No emissions from this source

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

No emissions from this source

**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**

Relevant, calculated

**Metric tonnes CO<sub>2</sub>e**

12100

**Emissions calculation methodology**

This category includes 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 2019 LHG has bought three new flight simulators (1x medium sized aircraft model, 2x large sized aircraft model).

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

30

**Please explain**

Emissions from aircraft / engine manufacturing are relevant to Lufthansa Group. According to the GHG Protocol these can be accounted either for "Purchased goods and services" or "Capital goods" (cp. "Guidance for Calculating Scope 3 Emissions" from the Greenhouse Gas Protocol, p.23). Hence, GHG emissions from aircraft and engine manufacturing were accounted to capital goods. This category includes GHG emissions from the production of flight simulators, which LHG bought in 2019.

**Capital goods**

**Evaluation status**

Relevant, calculated

**Metric tonnes CO<sub>2</sub>e**

806400

**Emissions calculation methodology**

Aircraft / Engine manufacturing: GHG emissions which are emitted through the process of aircraft and engine manufacturing. The emission factor comes from a research paper published by the University of California (Berkeley) in 2008. The emissions calculated reflect the LHG aircraft deliveries in 2019. 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 2019 LHG has entered into service 25 new aircraft (18 medium sized and 7 large sized aircraft).

---

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

### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

7892623

### Emissions calculation methodology

According to Greenhouse Gas Protocol aggregated number from the following subcategories: A) Upstream emissions of purchased fuels: CO<sub>2</sub> 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 CO<sub>2</sub>e

1441305

### 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 data-warehouse 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 provided CLECAT-study ("Calculating GHG Emissions for Freight Forwarding and Logistics Services" (2012)) - Airport operation: The GHG emissions which arise due to airport operation. The data was requested from 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 resulting from flights for LHG services from third parties. Further in this category also emissions associated with airport operation are included. The Lufthansa Express Rail (former AirRail) and the bus service are not included in the aggregated number of upstream transportation and distribution as they are not significant for LHG. In the past two years each amounted for less than 1% of the Scope 3 emissions.

## Waste generated in operations

### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

270601

### Emissions calculation methodology

Waste data for 2019 was only available partly. Waste generated at German locations is available for most of LHG companies. For LSG Sky Chefs, which makes the bulk part of waste generation, international data is included, originating from 2018.

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

70

### Please explain

Most waste is generated by the 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 CO<sub>2</sub>e

62959

### 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. The emissions for staff accommodation and business flights are not significant for LHG as they amounted for less than 1% of the Scope 3 emissions in the past two years. They emissions for staff accommodation were calculated based on average crew size and layover. 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

30

### Please explain

## Employee commuting

### Evaluation status

Not relevant, calculated

### Metric tonnes CO2e

37867

### 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](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 is not available for other countries the same numbers were projected on all group employees. 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

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 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 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 CO<sub>2</sub>e

<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 CO<sub>2</sub>e

<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 CO<sub>2</sub>e

64854

### 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

An average of two Lufthansa Group owned, medium sized aircrafts were leased to other airlines outside the Lufthansa Group.

## Franchises

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO<sub>2</sub>e

<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 CO<sub>2</sub>e

<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 downstream emissions are covered by the downstream 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**

0.000921

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

33549110

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

36424000000

**Scope 2 figure used**

Market-based

**% change from previous year**

0

**Direction of change**

No change

**Reason for change**

Last year's calculation included a typing error in the field "Intensity figure"

---

**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**

0.000875

**Metric numerator: emissions in metric tons CO2e**

33120224

**Metric denominator: unit**

t.km

**Metric denominator: unit total**

37750467266

**% change from previous year**

0.46

**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 Lufthansa aircraft. Exclusion of ground based freight transport (all with subcontractors). The intensity figure represents the CO2-emissions in kg CO2 per RTK. There are no relevant changes from previous year in the emissions intensity .

**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)	33120224
Germany	103606
Other, please specify (Rest of world)	125464

**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	143686
Aircraft Maintenance, repair and overhaul (LHT)	74804
Aircraft & ground operations of passenger airlines	31395577
Cargo	1731493
Services (IT, Flight Training, additional customer services like miles&more)	3733

**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	33120224	<Not Applicable>	For 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	130460	81954	372511	29398
Other, please specify (Rest of the world (without Germany))	129068	117863	354388	46127

**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.)	92516	86696
Aircraft Maintenance, repair and overhaul (LHT)	93094	63893
Airline Offices (Administration)	36187	24412
Cargo	19387	13475
Services (IT, Flight Training, additional customer services like miles&more)	18343	11341

(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	37887	55575	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?  
 Increased

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	4451	Decreased	0.01	This decrease results from more sites switching to renewable energy and buying green energy certificates, as well as choosing less carbon intensive energy suppliers. The change in emissions includes all CO2e save by buying electricity from zero carbon energy sources or green energy certificates.
Other emissions reduction activities	30268	Decreased	0.09	The decrease is the result of major efforts on fuel efficiency across Lufthansa fleet - projects implemented in the reporting year. Comparing 30268 t CO2 from various reduction projects as stated in 4.3a to the total Scope1+2 emissions from 2018 this equals 0.541% Calculation: $30,268 / 32,984,837 \times 100 = 0,54065$
Divestment		<Not Applicable >		
Acquisitions		<Not Applicable >		
Mergers		<Not Applicable >		
Change in output	564273	Increased	1.71	Due to an increased capacity offered, fuel consumption and thereby the CO2 emissions Scope 1 and 2 were increasing. Calculation of scope 1 emissions of aircraft fleet based on the fuel consumption of the aircraft fleet of LH Group multiplied with the emissions factor of 3.15. The emissions that resulted from change in output were calculated like that: total Scope 1+2 2019 minus total Scope 1+2 2018= 564,273 t CO2e (33,549,110 - 32,984,837) Since there was no other source of additional CO2 other than a change in output all of these emissions can be accounted to change in output. $(564,273/32,984,837) \times 100 = 1.71$
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 15% but less than or equal to 20%

**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	129450779	129450779
Consumption of purchased or acquired electricity	<Not Applicable>	75525	461001	536526
Consumption of purchased or acquired heat	<Not Applicable>	0	114982	114982
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	0	114982	114982
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	75525	130026762	130102287

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**

128800871

**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 CO2 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**

451690

**MWh fuel consumed for self-generation of electricity**

**MWh fuel consumed for self-generation of heat**

**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****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**

143157

**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 CO2 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**

38017

**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**

2409

**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**

17044

**MWh fuel consumed for self-generation of electricity**

**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 source**

IPCC 2006 ([https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2\\_Volume2/V2\\_2\\_Ch2\\_Stationary\\_Combustion.pdf](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**

3853

**MWh fuel consumed for self-generation of electricity**

**MWh fuel consumed for self-generation of heat**

**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**

**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				
Heat				
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/region of consumption of low-carbon electricity, heat, steam or cooling**

Other, please specify (Europe)

**MWh consumed accounted for at a zero emission factor**

75525

**Comment**

This includes following green electricity products: Brussels Airlines: Contract with supplier with zero carbon electricity in Belgium. The Brussels Airlines, located in Belgium, has purchased all its electricity in the reporting year from this supplier. Austrian Airlines: Contract with suppliers at all locations within Austria for supply with zero carbon electricity. Lufthansa CityLine has purchased green energy certificates to cover their electricity consumption in the reporting year. Lufthansa Technik: The Lufthansa Technik (site Hamburg) has purchased 25,000 MWh in green energy certificates to cover most of their electricity consumption at its Headquarter in Hamburg in the reporting year. Furthermore Lufthansa Technik subsidiary sites in Ireland has contract with suppliers at all locations within Ireland for supply with zero carbon electricity. Swiss: The Swiss Headquarter in Zurich has a contract with suppliers for supply with zero carbon electricity. AirPlus: The AirPlus Headquarter in Neu-Isenburg/Germany has purchased green energy certificates to cover their electricity consumption in the reporting year. .

---

**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**

0.348

**Metric numerator**

Liters of fuel

**Metric denominator**

t.km

**Metric numerator: Unit total**

13142946032

**Metric denominator: Unit total**

37750467266

**% change from last year**

8.8

**Please explain**

The main reason for change in fuel intensity, are the effects of switch to another calculation of the metric denominator in comparison to previous year.

---

**C9. Additional metrics**

---

**C9.1**

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

**Description**

Please select

**Metric value**

**Metric numerator**

**Metric denominator (intensity metric only)**

**% change from previous year**

**Direction of change**

<Not Applicable>

**Please explain**

---

**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.**

(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**

Alternative fuels

**Stage of development in the reporting year**

Applied research and development

**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 has been involved in researching and using alternative fuels in air transport for many years being the first airline having used biofuel in a commercial aircraft already in 2011. In February 2019, the Lufthansa Group signed a letter of intent with the refinery "Heide" pledging to accept environmentally friendly synthetic kerosene. In August 2019, the Lufthansa Group signed a declaration together with the state of Brandenburg and a number of leading companies in this field and research institutes to support the PtX initiative in Lausitz aimed at producing industrial-standard sustainable fuels from renewable energy sources. The PtX Initiative in Lausitz is part of the action plan of the German Ministry for Environment. The Lufthansa Group is still involved with the cross-sector Powerfuel initiative coordinated by the German Energy Agency (dena). It aims to launch and build an international alliance to develop the future strategic importance of synthetic renewable energy sources, to jointly advance a global market for these energy sources and to accelerate their market development.

**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 November 2019, Lufthansa Technik works 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), is being tested by attaching it to the lower fuselage of a Boeing 747-400 from the Lufthansa fleet where 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 tonnes of fuel and therefore almost 1,300 tonnes of CO2 emissions. If the flight tests confirm these figures, it has been planned prior to COVID-19 pandemic to attach the riblet film to the entire Boeing 747-400 fleet as well as other aircraft types in 2020 and the film will be made available to other airlines by Lufthansa Technik. This is an example and opportunity, to make older aircrafts 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 a reduction of the CO2 emissions: e.g. In the SESAR demonstration "Augmented Approaches to Land-2" (AAL2) last year, 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 in 2020.

**Activity**

Aviation

**Technology area**

Alternative fuels

**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)**

500000

**Comment**

The Lufthansa Innovation Hub launched the offsetting platform COMPENSAID in August 2019. This is the first platform worldwide that offers travellers to replace fossil fuels with sustainable aviation fuel (SAF). LHG provides the infrastructure and purchases on behalf of the traveller the SAF, 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 with any airline worldwide and can be therefore commercialized and support climate change in a way that more and more passengers buy SAF and reduce CO2 emissions.

**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**

Lufthansa\_Verifizierungserklaerung\_CDP\_EN\_2020 - with annex.pdf

**Page/ section reference**

**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**

Lufthansa\_Verifizierungserklaerung\_CDP\_EN\_2020 - with annex.pdf

**Page/ section reference**

**Relevant standard**

Airport Carbon Accreditation (ACA) des Airports Council International Europe

**Proportion of reported emissions verified (%)**

100

---

**Scope 2 approach**

Scope 2 market-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**

Lufthansa\_Verifizierungserklaerung\_CDP\_EN\_2020 - with annex.pdf

**Page/ section reference**

**Relevant standard**

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**

Lufthansa\_Verifizierungserklaerung\_CDP\_EN\_2020 - with annex.pdf

**Page/section reference**

**Relevant standard**

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**

Lufthansa\_Verifizierungserklaerung\_CDP\_EN\_2020 - with annex.pdf

**Page/section reference****Relevant standard**

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**

Lufthansa\_Verifizierungserklaerung\_CDP\_EN\_2020 - with annex.pdf

**Page/section reference****Relevant standard**

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**

Lufthansa\_Verifizierungserklaerung\_CDP\_EN\_2020 - with annex.pdf

**Page/section reference****Relevant standard**

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**

Moderate assurance

**Attach the statement**

Lufthansa\_Verifizierungserklaerung\_CDP\_EN\_2020 - with annex.pdf

**Page/section reference****Relevant standard**

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**

Lufthansa\_Verifizierungserklaerung\_CDP\_EN\_2020 - with annex.pdf

**Page/section reference****Relevant standard**

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**

Lufthansa\_Verifizierungserklaerung\_CDP\_EN\_2020 - with annex.pdf

**Page/section reference****Relevant standard**

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**

Please select

**Attach the statement**

Lufthansa\_Verifizierungserklaerung\_CDP\_EN\_2020 - with annex.pdf

**Page/section reference****Relevant standard**

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
C7. Emissions breakdown	Other, please specify (Scope 1 and 2 emissions by country /region as well as by business activity)	- EU Emissions Trading Scheme (EU ETS) Directive and EU ETS related national implementation laws - 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. Lufthansa_Verifizierungserklaerung_CDP_EN_2020 - with annex.pdf
C8. Energy	Energy consumption	- EU Emissions Trading Scheme (EU ETS) Directive and EU ETS related national implementation laws - 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 C8.2a, C8.2c, C8.2e were verified by third party . - the verification was carried out on a yearly basis via the entire LHG organization. Lufthansa_Verifizierungserklaerung_CDP_EN_2020 - with annex.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

### 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

26

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1 2019

Period end date

December 31 2019

Allowances allocated

3226000

Allowances purchased

7513000

Verified Scope 1 emissions in metric tons CO<sub>2</sub>e

8509000

Verified Scope 2 emissions in metric tons CO<sub>2</sub>e

0

Details of ownership

Facilities we own and operate

Comment

## Switzerland ETS

### % of Scope 1 emissions covered by the ETS

0

### % of Scope 2 emissions covered by the ETS

0

### Period start date

January 1 2019

### Period end date

December 31 2019

### 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

In 2019 Switzerland ETS did not yet apply to airline traffic. The inclusion of airline traffic started with the 1st of January 2020. Allowance purchased included in the purchases for EU ETS as the same type of allowance can be used in CH ETS. In purchasing we take already future emissions of the year 2020 and 2021 into account.

## 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 constant legal compliance through close monitoring and reporting of externally verified emissions and a close cooperation with national emission authorities. Furthermore, LHG has implemented a strategy to hedge the CO2-price risk in the form of forward purchases. In addition, the Group Risk Management regulatory monitors all carbon emission related risks. Besides this LHG constantly strives to exploring all opportunities to reduce fuel consumption and 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, forrest etc))

#### Project identification

e.g. Efficient cookstoves, Siaya, Kenia. <https://www.myclimate.org/information/climate-protection-projects/detail-climate-protectionprojects/show/Project/kenya-efficient-cook-stoves-7137/> COP Stove Efficient Clean Cooking China (<https://www.myclimate.org/information/climate-protection-projects/detail-climateprotection-projects/china-efficient-cook-stoves-biomass-7136/>) Community Reforestation (<https://www.myclimate.org/information/climate-protection-projects/detail-climate-protection-projects/nicaragua-forestry-7186/>)

#### Verified to which standard

Other, please specify (different standard depends on project: Gold Standard , Plan Vivo)

#### Number of credits (metric tonnes CO2e)

102355

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

102355

#### 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

#### GHG Scope

Scope 1  
Scope 2

#### Application

The Lufthansa Group uses an internal CO<sub>2</sub> 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 CO<sub>2</sub> price risk is increasingly taken into account in investment or project decisions. LHG also has set ambitious CO<sub>2</sub> 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. Therefor 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 EUR 5-40 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> footprint). We also use an internal CO<sub>2</sub>-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

**% 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**

For Lufthansa Group climate aspects are an integral part of the business strategy. Lufthansa Group constantly improve their climate and environmental measures and involves their 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**

Lufthansa Group has integrated their understanding of environmental responsibility in the 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](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 their suppliers to comply with laws, guidelines and regulations referring to a fair competition, integrity and responsible behaviour. The Group 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 performance of informed and unannounced audits by Lufthansa Group companies 4. The granting of the right, in case of violation of the law agreements to terminate the contractual relationship Through these guidelines, the Lufthansa Group is aiming to create a responsible action to suppliers and thus to ensure that the company's own entrepreneurial to live up to our responsibility. Further, Lufthansa Group expects the suppliers who work with us, to adhere to the principles embedded in our Code of Conduct. This Code of Conduct includes environmental protection and therefore climate-related issues.

**Comment**

---

**Type of engagement**

Information collection (understanding supplier behavior)

**Details of engagement**

Other, please specify (Before signing a contract with a new 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 supplier 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 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 - Fulfil 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 - Fulfil all requirements for environmental protection and occupational safety from EU regulations

**Comment**

---

**C12.1b**

---



**(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 educate customers about the climate change impacts of (using) your products, goods, and/or services

**% of customers by number**

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

**Portfolio coverage (total or outstanding)**

<Not Applicable>

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

To engage customers about GHG emissions and climate change strategies, Lufthansa Group Airlines - Lufthansa German Airlines, SWISS and Austrian 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. In the reporting year, LHG pushed the communication about voluntary offsets via different channels: The various airlines homepages, interview, speeches of the LHG's CEO, in which he pointed out the option to compensate on a voluntary basis as LHG is doing it at 100% with their own duty trips worldwide, for which LHG has spent almost 1million EUR. For 2020, it is planned to integrate further LHG airlines: Brussels Airlines, Eurowings, Air Dolomiti.

**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 2019, the amount of credits adds up to 31,379 tonnes of CO2. In total, customers have spent more than EUR 689,821 on voluntary carbon offsetting, almost 5 times as much as in the previous year. LHG has spent almost 1 million EUR for their employees' duty trips.

---

**Type of engagement**

Collaboration & innovation

**Details of engagement**

Run a campaign to encourage innovation to reduce climate change impacts

**% of customers by number**

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

**Portfolio coverage (total or outstanding)**

<Not Applicable>

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

In the reporting year 2019 LHG has run an innovative pilot project for corporate customers, having a contract with LHG, to include the CO2 compensation into the corporate fares for European flights. Instead of getting incentives such as lounge access or vouchers for additional baggage, the compensation of CO2 via myclimate was offered to corporate customers. The pilot project was very successful, that from 2020 onwards the corporate fares will have CO2 compensation included in all European Corporate Value Fares - "Green Bundles"

**Impact of engagement, including measures of success**

For the corporate customers accepting this new corporate fare model, LHG has paid 349,000 € for CO2 compensation to our partner myclimate for CO2 reduction projects. Each corporate has received an overview of their CO2 emissions by the LHG network carriers and a certificate from myclimate.

---

**Type of engagement**

Collaboration & innovation

**Details of engagement**

Other, please specify (Development of an innovative online B2C platform "COMPENSAID" for buying Sustainable Aviation Fuel)

**% of customers by number**

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

**Portfolio coverage (total or outstanding)**

<Not Applicable>

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

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 available in 2019 for Lufthansa and SWISS flights and is planned to be rolled out for all LHG airlines.

**Impact of engagement, including measures of success**

LHG has invested ca. 500,000€ for the development and maintenance of the platform in the reporting year of 2019

---

**C12.1d**

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

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 limitations in funding and men power, implementation is paused or reduced to a minimum and expected to be reactivated with an economic recovery.arbon 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 limitations in funding and men power, implementation is paused or reduced to a minimum and expected to be reactivated with an economic recovery.**arbon 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 limitations in funding and men power, implementation is paused or reduced to a minimum and expected to be reactivated with an economic recovery.

To make resource efficiency even more sustainable, the Group is implementing, researching and testing this promising technology in ground transportation. 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 everyday operation will be analyzed. The effects of the widespread use of electric vehicles on the airport's power grid are also considered.

**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
Cap and trade	Support with major exceptions	Lufthansa Group (LHG) has been engaging directly with national 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) 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 2019 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 first National Aviation Conference in September in Leipzig, which has been even opened by chancellor Angela Merkel. 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 considers the adoption of market-based measures 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 proposes the implementation of market-based measures at the global level. In early 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. Within the reporting year discussions already started about alignment between EU ETS and CORSIA on different levels and organizations such as A4E, BDL (Bündnis der Deutschen Luftverkehrswirtschaft), IATA, which are going on in 2020 where a revision of the EU ETS and consultation papers on EU level take place. LHG is and will be deeply involved in all associations' discussions.
Energy efficiency	Support	LHG has also been engaging directly with national as well as international policy makers to encourage the implementation of IATA's '4-pillar-strategy' to CC 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 1) in nearly every conversation with policy makers, as well as 2) in its "Policy Briefs", which are being sent to national/European policy makers and media contacts.	LHG promotes the implementation of the 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 than ideally necessary. European Air Traffic Management inefficiency is costing EUR 5 billion 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 3bn € 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 considers research projects dealing with CC 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 "PX Kompetenz Zentrum Lausnitz" 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. 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 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 by 50 % until 2050 in comparison to 2005. Policy makers therefore should 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.	LHG supports the implementation of an appropriate ICAO aircraft CO2 certification standard in future policy-making related to carbon management from aviation.
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 1) in nearly every conversation with policy makers, as well as 2) in its up to 3 "Policy Briefs", which are being 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 has been of as well.	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 early 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 to advocate the adoption of a global regulatory approach for mitigating carbon emissions from aviation, which does not distort competition amongst 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 CC.

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

In the reporting Year LHG's CEO took over the presidency for 1 year as of June 2020. Lufthansa Group's (LHG) Head of Environmental Issues was official member in IATA's Environmental Committee later restructured into SEAC 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 CC 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. which has been renamed into SEAC (Sustainability and Environmental Advisory Council) in 2019. The SEAC initiated a comprehensive study about the way towards sustainable aviation until 2050, which will be 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 CC 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?**

One LHG Executive Board Member and 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 WG Sustainability, WG Strategy and Policy, WG 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 CC-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. 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 carbon dioxide 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 taking part regularly at the A4E President Meetings in 2019 to discuss and coordinate the A4E position on CC. Furthermore, Head on Environmental Issues of LHG and the successor have been member of the A4E Environmental Working Group. A4E initiated together with all aviation partners such as airports, ATC, manufacturers and energy suppliers to a study in 2019 European Sustainability Aviation Roadmap (ESAR), which will be released in late autumn 2020. 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 in 2050.

### 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 (CC) 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?**

Lufthansa Group (LHG), all environmentally related topics are being systematically coordinated by the Head of Environmental Issues and his department (GEI) and successor. Within the first half year of 2019 the GEI has been a direct report to the Executive Vice President Corporate International Relations and Government Affairs. Mid 2019 the environmental issues have been integrated into the newly established function Corporate Responsibility within the area of the Executive Vice President Corporate Strategy and Mergers&Acquisitions reporting directly to the LHG CEO.

The GEI coordinates Group-wide environmental goals, strategies 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 (CC). In addition, the GEI regularly coordinates environmental activities with the Environmental Issues Contact Partners at the Group subsidiaries, and develops and analyzes innovative environmental concepts – always in close cooperation with the departments concerned. The GEI 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 CC 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 GEI organizes regular "exchange forums" such as the "Environmental Forum (EF)", 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 voluntary sustainability report

**Status**

Complete

**Attach the document**

Factsheet\_Sustainability 2019.pdf

**Page/Section reference**

page 2: brief version strategy pages 3-7: environmental data, CO2 emissions absolute and specific, Fuel consumption page 8: Verification statement scope 1-3 page 12: further qualitative environmental information

**Content elements**

Strategy  
Emissions figures  
Other metrics

**Comment**

Due to COVID-19 - the BALANCE Report, which has been our sustainability report for the last 25 years, has been suspended due to extraordinary financial situation and shortterm work. Nevertheless, LHG has summarized the most important environmental data into a Fact Sheet, in the same structure as it has been reported previously in BALANCE. The Factsheet has been published on time with the General Annual Meeting 05.05.2020. It is publicly available on the LHG's website under "Sustainability" and under "Investor Relations" and it is also attached. There will be most likely a light version of the usual BALANCE report most likely available as "Report on progress" for UN Global Compact

---

**Publication**

In other regulatory filings

**Status**

Complete

**Attach the document**

LHG\_Non\_Financial\_Report\_2019.pdf

**Page/Section reference**

pages 79-81: Strategy, governance pages 82 and following: Climate protection pages 104-105: GRI Index page 244: Independent Practitioner's Report (limited assurance)

**Content elements**

Governance  
Strategy  
Emissions figures  
Emission targets  
Other metrics  
Other, please specify (Social responsibility: Employee aspects and Human Rights, Compliance)

**Comment**

Since 2017 LHG is obliged to disclose a non-financial statement as part of the annual report. Within this report the most relevant aspects are the environmental issues. The entire Non-Financial Statement has been voluntary audited by PwC with limited assurance.

---

**Publication**

In voluntary communications

**Status**

Complete

**Attach the document**

LH-PB\_2019-1\_en.pdf  
LHG-PB\_2019-4\_en.pdf  
LHG-PB\_2019-3\_en.pdf  
LHG-PB\_2019-2\_en.pdf

**Page/Section reference**

Policy Brief 1: p. 1 + p. 6 Policy Brief 2: p. 1 + p. 6 Policy Brief 3:entire Policy Brief Policy Brief 4: p. 1 + p. 2

**Content elements**

Strategy  
Risks & opportunities  
Other, please specify (Information about LHG environmental activities towards politicians, media, public)

**Comment**

LHG has published in 2019 in total 4 Politics Briefs. Each of them contained information about environmental issues mainly related to CO2 emissions and approaches how to mitigate them.

---

## 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 01.01.2019 - 31.12.2019 in 2020 and after the COVID-19 pandemic outbreak.

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 semi-annual 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, 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/> )

The Lufthansa Group is facing the greatest challenge in its recent history. **The passenger figures at Lufthansa in the lockdown phase were at 1% of the previous year's level** - a 99% decline. 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 LHG takes on its responsibility for sustainability and it is of great importance for us to disclose our climate related activities.

**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	Senior Director ESG Rating and Reporting	Environment/Sustainability manager

**SC. Supply chain module**

---

**SC0.0**

---

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

The Lufthansa Group (LHG) is the leading European airline group with operations worldwide and more than 550 subsidiaries. It is composed of the segments **Network Airlines, Eurowings** and **Aviation Services** (Logistics, MRO and Catering) as well as Additional Businesses and Group Functions. In the financial year 2019, the LHG generated revenue of **EUR 36.4 bn** and employed an average of **138.353 employees**.

The **Network Airlines** segment comprises Lufthansa German Airlines, SWISS and Austrian 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).

The **Eurowings** segment comprises the flight operations of Eurowings and Brussels Airlines. 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.

**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.

**Catering:** The LSG group offers a comprehensive range of products, concepts and services related to in-flight service. As the strongest revenue driver in the LSG group, LSG Sky Chefs offers classical catering for airlines and rail operators, as well as lounge management. It is present at 205 airports in 59 countries for more than 300 airlines and a growing number of European rail operators.

As Lufthansa Group will be refocussing more towards an airline group, a contract with Gategroup was signed in late 2019 for the sale of the LSG group's European business. This divestment not only contributes to a sharper focus on the core airline business but is also intended to open up growth opportunities for the LSG group. As of December 31, 2019, the disposal was still subject to approval by the competition authorities.

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 **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 endeavours 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 huge quantity of fuel burnt by the aircraft. Breakdown of the LHG carbon footprint: **Scope 1: 75,6 % Scope 2: 0,4%, Scope 3: 24,0%- 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.

**Outlook to 2020 - COVID 19**

Global air transport is currently experiencing its worst crisis ever. IATA published a forecast on July 28: in the base case scenario, global passenger traffic will not return to pre-COVID-19 levels until 2024.

LHG is facing the greatest challenge in its recent history. **The passenger figures at Lufthansa in the lockdown phase were at 1% of the previous year's level** - a 99% decline. 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.

**SC0.1**

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

	Annual Revenue
Row 1	36424000000

**SC0.2**

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

Yes

**SC0.2a**



(SC0.2a) Please use the table below to share your ISIN.

	ISIN country code (2 letters)	ISIN numeric identifier and single check digit (10 numbers overall)
Row 1	DE	0008232125

## SC1.1

(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

**Requesting member**

Accenture

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO2e**

19713

**Uncertainty (±%)**

2

**Major sources of emissions**

Source of emissions: Scope 1 emissions, which equal 75,6 % of Lufthansa Groups total CO2 emissions (Scope 1-3). Scope 1 emissions result mostly from the jet fuel consumption of our aircraft.

**Verified**

No

**Allocation method**

Other, please specify (Allocation is based on the number of flights purchased, the kilometres flown and a calculated average Lufthansa fleet carbon factor (including the use of weight factors for different booking classes).)

**Please explain how you have identified the GHG source, including major limitations to this process and assumptions made**

Allocation is based on the number of flights purchased, the kilometres flown and a calculated average Lufthansa Group fleet carbon factor (including the use of weight factors for different booking classes). 99% of total Scope 1 emissions of Lufthansa Group result from jet kerosene consumption of aircraft. The emissions factor for jet kerosene is 3.15 metric tonnes CO2e per metric tonnes kerosene. Allocation is based on all flights booked by Accenture group company accounts with following Lufthansa Group Airlines: Lufthansa German Airlines incl. Lufthansa CityLine and Air Dolomiti, SWISS International Air Lines, Austrian Airlines, Edelweiss Air, Brussels Airlines and Eurowings/Germanwings.

**Requesting member**

BT Group

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO2e**

305

**Uncertainty (±%)**

2

**Major sources of emissions**

Source of emissions: Scope 1 emissions, which equal 75,6 % of Lufthansa Groups total CO2 emissions (Scope 1-3). Scope 1 emissions result mostly from the jet fuel consumption of our aircraft.

**Verified**

No

**Allocation method**

Other, please specify (Allocation is based on the number of flights purchased, the kilometres flown and a calculated average Lufthansa fleet carbon factor (including the use of weight factors for different booking classes).)

**Please explain how you have identified the GHG source, including major limitations to this process and assumptions made**

Allocation is based on the number of flights purchased, the kilometres flown and a calculated average Lufthansa fleet carbon factor (including the use of weight factors for different booking classes). 99% of total Scope 1 emissions of Lufthansa Group result from jet kerosene consumption of aircraft. The emissions factor for jet kerosene is 3.15 metric tonnes CO2e per metric tonnes kerosene. Allocation is based on all flights booked by BT group company accounts with following Lufthansa Group Airlines: Lufthansa German Airlines incl. Lufthansa CityLine and Air Dolomiti, SWISS International Air Lines, Austrian Airlines, Edelweiss Air, Brussels Airlines and Eurowings/Germanwings. Figures contains following separate company accounts: BT Germany GmbH & Co. OHG BT Group Plc Celia Gullen United Kingdom BT Telecommunications Belarus BT Switzerland Ltd. London BT Limited Czech Republic

**Requesting member**

L'Oréal

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO2e**

471

**Uncertainty (±%)**

2

**Major sources of emissions**

Source of emissions: Scope 1 emissions, which equal 75,6 % of Lufthansa Groups total CO2 emissions (Scope 1-3). Scope 1 emissions result mostly from the jet fuel consumption of our aircraft.

**Verified**

No

**Allocation method**

Other, please specify (Allocation is based on the number of flights purchased, the kilometres flown and a calculated average Lufthansa fleet carbon factor (including the use of weight factors for different booking classes).)

**Please explain how you have identified the GHG source, including major limitations to this process and assumptions made**

Allocation is based on the number of flights purchased, the kilometres flown and a calculated average Lufthansa fleet carbon factor (including the use of weight factors for different booking classes). 99% of total Scope 1 emissions of Lufthansa Group result from jet kerosene consumption of aircraft. The emissions factor for jet kerosene is 3.15 metric tonnes CO2e per metric tonnes kerosene. Allocation is based on all flights booked by L'Oreal company accounts with following Lufthansa Group Airlines: Lufthansa German Airlines incl. Lufthansa CityLine and Air Dolomiti, SWISS International Air Lines, Austrian Airlines, Edelweiss Air, Brussels Airlines and Eurowings/Germanwings.

---

**Requesting member**

Vodafone Group

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO2e**

1531

**Uncertainty (±%)**

2

**Major sources of emissions**

Source of emissions: Scope 1 emissions, which equal 75,6 % of Lufthansa Groups total CO2 emissions (Scope 1-3). Scope 1 emissions result mostly from the jet fuel consumption of our aircraft.

**Verified**

No

**Allocation method**

Other, please specify (allocation is based on the number of flights purchased, the kilometres flown and a calculated average Lufthansa fleet carbon factor (including the use of weight factors for different booking classes).)

**Please explain how you have identified the GHG source, including major limitations to this process and assumptions made**

Allocation is based on the number of flights purchased, the kilometres flown and a calculated average Lufthansa fleet carbon factor (including the use of weight factors for different booking classes). 99% of total Scope 1 emissions of Lufthansa Group result from jet kerosene consumption of aircraft. The emissions factor for jet kerosene is 3.15 metric tonnes CO2e per metric tonnes kerosene. Allocation is based on all flights booked by Vodafone Ltd company account with following Lufthansa Group Airlines: Lufthansa German Airlines incl. Lufthansa CityLine and Air Dolomiti, SWISS International Air Lines, Austrian Airlines, Edelweiss Air, Brussels Airlines and Eurowings/Germanwings.

---

**SC1.2**

**(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).**

We have used primary data for each flight of our customers with Lufthansa aircrafts (e.g. number of flown tickets, distance). Carbon emissions are calculated by using real operating data from individual routes (averaged over busiest month in year) taking into account:

- the type of aircraft regularly operated on the route
- average fuel consumption
- average number of passengers on board
- the weight of baggage and cargo
- weighting factor for different booking classes (economy, premium economy, business or first class)

Lufthansa Group CO2 calculator was developed together with our carbon offset partner "myclimate". For more details on the calculation method, see <https://lufthansa.myclimate.org/en/calculations>

**SC1.3**

**(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?**

Allocation challenges	Please explain what would help you overcome these challenges
We face no challenges	

**SC1.4**

**(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?**

Yes

**SC1.4a**

**(SC1.4a) Describe how you plan to develop your capabilities.**

Lufthansa Group subsidiary "AirPlus" has already implemented an emissions calculation tool ("Green Reports") that is able to calculate and report the GHG emissions of the whole business travel exactly to their customers. Furthermore customers can decide to compensate the business travel related carbon emissions with one of the carbon offset partners of AirPlus ([www.airplus.com](http://www.airplus.com)).

Besides this Lufthansa Group customers can use a Carbon Calculator to allocate the carbon emissions from there flights and could offset these emissions in a further step. For Lufthansa see <http://lufthansa.myclimate.org/EN> or <http://www.lufthansa.com/de/de/flug-kompensieren> / same for SWISS (<http://swiss.myclimate.org/EN> or <http://swiss.compensaid.com/contribute/filight>) and Austrian Airlines (<https://www.austrian.com/at/en/carbon-neutral-flying>).

At the end of 2018 Lufthansa Group has started a CO2 offsetting option test case with local & global corporate customers for **contract year 2019**. As part of the Lufthansa Added Value Fund, selected customers had the opportunity to offset the CO2 emissions of flights through climate protection projects (with Gold Standard verification). 50% of CO2 compensation value deducted from customer value fund 50% of CO2 compensation value invested by Lufthansa Group. With these Green Bundles, CO2 emission is financially compensated for all European flights by LHG network airlines in contract period 2019. Customers have received Carbon offsetting certificate stating the compensated amount of CO2. As this pilot project has been very successful, LHG network airlines decided to offer 100% compensation of European flights with LHG network airlines to their corporate customers having a contract with LHG.

In order to actively engage our customers for environmental issues and to meet their increased awareness for these issues resulting in changing consumer behaviour, LHG has implemented services like the carbon calculator and the voluntary carbon offset program for our customers. In 2019 LHG (**Lufthansa Innovation Hub**) 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. In this respect **LHG has been the first airline group worldwide** which gives customers the possibility to purchase the amount of Sustainable Aviation Fuel equivalent to their fuel consumption.

In 2019 LHG has integrated the carbon offsetting options more directly within the booking process at the booking platforms of LHG airlines Lufthansa, SWISS, Edelweiss and Austrian Airlines. As an outlook into 2020 LHG has planned to introduce COMPENSAID into booking platforms of further airlines (Eurowings, Brussels Airline, Air Dolomiti).

**SC2.1**

(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

**Requesting member**

Accenture

**Group type of project**

New product or service

**Type of project**

New product or service that has a lower upstream emissions footprint

**Emissions targeted**

Actions that would reduce both our own and our customers' emissions

**Estimated timeframe for carbon reductions to be realized**

1-3 years

**Estimated lifetime CO2e savings**

**Estimated payback**

Other, please specify (Transition to alternative energy sources)

**Details of proposal**

In future we could think of collaboration on the usage of sustainable aviation fuels.

SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?

No

SC3.1

(SC3.1) Do you want to enroll in the 2020-2021 CDP Action Exchange initiative?

No

SC3.2

(SC3.2) Is your company a participating supplier in CDP's 2019-2020 Action Exchange initiative?

No

SC4.1

(SC4.1) Are you providing product level data for your organization's goods or services?

No, I am not providing data

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission	Are you ready to submit the additional Supply Chain Questions?
I am submitting my response	Investors Customers	Public	Yes, submit Supply Chain Questions now

Please confirm below

I have read and accept the applicable Terms