

AIR HAMBURG

2023 TCFD Report

Details

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Acronyms and abbreviations

BAU	business as usual
CAMO	Compliance Monitoring Manager
CO2	carbon dioxide
CO2e	carbon dioxide equivalent
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
ETS	Emissions Trading Scheme
EU	European Union
EU-RED	EU Renewable Energy Directive
EXCO	Executive Committee
FDM	Flight Data Monitoring
FSB	Financial Stability Board
GHG	greenhouse gas
MRA	Malta Resources Authority
NZ	net zero
RCP	Representative Concentration Pathway
R&O	risks and opportunities
SAF	Sustainable Aviation Fuel
SAG	Safety Action Group
SRB	Safety Review Board
SSP	Shared Socioeconomic Pathways
TCFD	Task Force on Climate-Related Financial Disclosures
US	United States



01 Introduction

In 2023, AIR HAMBURG is committed to better understanding its climate risks and opportunities, integrating these into its strategy, and increasing resilience to future challenges presented by climate change. With the release of its first Task Force on Climate-related Financial Disclosures (TCFD) report, AIR HAMBURG is taking key steps in achieving its ambitious sustainability goals and transparently disclosing climate-related information, guided by the TCFD framework.

Mark Carney and Michael Bloomberg played a key role in establishing the TCFD framework in 2017 by the Financial Stability Board (FSB). The aim of the FSB was to assist companies in effectively communicating climate-related information across every sector and market. Currently supported by over 4000 stakeholders, this framework relies on four key pillars: governance, strategy, risk management, and metrics and targets.

The first section of this report introduces the Governance structures that focus on identifying and managing climate-

related topics across the company, followed by the Strategy section which lays out how climate risks and opportunities are identified, analysed and addressed strategically. The third section of the report describes the Risk Management processes by which AIR HAMBURG assesses and integrates climate-related risks and opportunities into its internal risk management systems. In the final section, AIR HAMBURG's Metrics and Targets are presented, including the greenhouse gas (GHG) emissions calculated for 2022, and the initiatives in place to reduce emissions and increase resilience to climate risks.



02 Governance

Vista level governance structure is attributed to each individual company within the Vista group, including AIR HAMBURG. The Executive Committee (EXCO), the Chief Sustainability Officer representing the Sustainability Department, the Safety Review Board (SRB) and the Safety Action Group (SAG) are the main bodies in Vista’s climate governance structure with the ultimate responsibility for overseeing climate-related issues falling on the Executive Committee (EXCO), which is in charge of shaping Vista’s strategy, from creating opportunities for customers to offset their emissions, to investing in sustainable aviation fuels. The EXCO monitors risks and opportunities, including those related to climate change (e.g., changes in carbon pricing regulations) and approves Vista’s climate strategy and targets.

The Sustainability Department reports to the Chief Sustainability Officer and is responsible for implementing and monitoring Vista’s climate strategy and targets and developing the GHG accounting and TCFD report, supported by an external consultancy.

In 2023, Vista is further working on integrating sustainability issues into its governance structure, by introducing the role of a Chief Sustainability Officer, with the existing overall governance structure undergoing changes with the goal of achieving further improvements.

The Safety Review Board involves functional or senior management and has the objective of providing a forum

to discuss safety issues. The SRB meets at least twice per year. The Safety Action Group reports to and takes strategic direction from the SRB. The composition of the SAG varies based on the process under analysis, but meetings are always attended by members of the Safety Department and by personnel with expertise in the relevant areas. The SAG meets quarterly or more often if deemed necessary.

The Sustainability Department oversees the development of the yearly GHG accounting and TCFD reports and overall sustainability reporting, as well as the implementation and monitoring of Vista’s climate strategy and targets. The diagram below summarises how these departments are structured.



03 Strategy

Following TCFD guidance, AIR HAMBURG assessed two types of risks and opportunities (R&O): physical and transition. Physical R&O are defined as those that affect companies due to changes in the climate, for example more frequent and/or intense heatwaves, extreme rainfall events, and flooding. The impact of physical risks can translate into operational interruptions and delays as well as damage to infrastructure and aircraft. Transition R&O, meanwhile, are associated with the economic and policy shifts necessary to mitigate climate change and transition to a low-carbon economy, such as regulatory and policy changes, and technological advancements. The impact of transition risks can be translated into increased costs of investment in green technologies, while opportunities can be harnessed in the form of enhanced reputation and consumer confidence due to strong sustainable offerings.

AIR HAMBURG is analysing climate related-risk and opportunities for the short, medium and long-term. The time horizons are defined as follows:

- Short: Current day (baseline)
- Medium: 2030
- Long term: 2050

3.1 Physical risks

The analysis focused on the company’s strategic locations, including 18 airports representing 50% of legs flown in the year 2022, as well as key assets considered important from an operational perspective (for example, offices, training and maintenance facilities). Future exposure to physical risks was evaluated by assessing the future changes as projected under a high emissions scenario typically referred to as a 4°C scenario. Under this scenario, GHG emissions continue rising until the end of the century, with little mitigation efforts. As a result, physical risks become more severe, intense, and/or frequent, with the exact magnitude of the change depending on the region and risk.

A qualitative rating was assigned to each physical risk, varying from very low to very high, according to its projected degree of change from historical conditions until a medium-term (2030) and a long-term (2050 onwards) time horizon.



In line with the analysis of other companies within the Vista group, AIR HAMBURG analysed the physical risks to which group companies had reported the highest impacts based on historical records, complemented by physical risks that sector publications consider key risks.

The physical risks selected for the analysis were: extreme temperatures, storms and tropical cyclones, riverine and coastal flooding, extreme rainfall, thunderstorms and hail, frost, snowfall, high winds, and clear-air turbulence.

The key impacts of these hazards as well as the risk rating based on the results of the climate scenario analysis are shown in the table below.

Table 1. Summary of the selected physical risks, and their potential impacts and risk levels under two time horizons under a 4°C scenario.

¹ 4°C refers to the temperature change by the end of the century compared to preindustrial levels. The correct scientific name for the scenarios are Representative Concentration Pathway (RCP) 8.5 or the new Shared Socioeconomic Pathway (SSP) 5-8.5

Table 1. Summary of the selected physical risks, and their potential impacts and risk levels under two time horizons under a 4°C scenario.

Hazard	High-level impact	2030	2050
Extreme temperatures	Extreme temperatures can affect AIR HAMBURG's operations by decreasing an aircraft payload capacity as well as potentially causing delays in takeoff and landing due to melting runways. The office in Northern Germany and airports in Spain, France, Italy, and Germany are projected to have the largest increases in annual maximum temperatures and hot days		
Riverine flooding	Flooding caused by the overflowing of rivers can lead to operational interruptions and road closures. The Barcelona airport is projected to have the highest inundation heights		
Coastal flooding	Coastal flooding can lead to operational interruptions and road closures. The airport in Amsterdam is projected to have the highest inundation heights		
Extreme rainfall	Extreme precipitation can impact AIR HAMBURG's operations by causing flooding and potentially causing interruption of operations and closure of roads nearby airports. Airports and offices located in Central Europe are projected to have the highest increases in extreme rainfall amount over one day and five consecutive days		
Thunderstorms	Thunderstorms and lighting strikes can damage aircraft. In the long term, airports located in northern and eastern Europe and to a lesser extent, in central Europe, are projected to experience moderate to high increases.		
Storms and tropical cyclones	Storms can affect aircraft take-off, cause delays and cancellations, or even a total interruption of ground operations. Severe storms can cause damage to office and airport infrastructure, increasing operational costs. No marked increases in storm strength are projected at AIR HAMBURG's key locations.		
Frost	Frost can damage aircrafts. Decreases in the number of cold days ($T_{min} < 0^{\circ}C$) were found in all of AIR HAMBURG's key airports and offices.		
Extreme snowfall	Extreme snowfall can cause damage to aircraft, as well as operational delays by interrupting takeoff and landing. Decreases in heavy snowfall days were found in all locations.		
High winds	High winds can affect take-off and landing, cause delays, or even total interruption of operations, as well as aircraft damage. No changes in the highest and the average wind speeds were found at the locations.		
Clear air turbulence	Sudden severe turbulence can harm crew and passengers, cause aircraft damage, and increase operational costs due to safety inspections. Airports in North America are projected to have the largest increases in the long term		

Very Low

Low

Moderate

High

Very High

The hazards that are projected to have the highest change in the future under a 4°C scenario, particularly in the long term, are extreme temperatures, thunderstorms and clear air turbulence. Other hazards, such as frost days, high winds, and extreme snowfall, are projected to experience decreases in both the medium and the long term at almost all of the locations analysed. The number of facilities at risk of riverine and coastal flooding are projected to remain stable overtime.

AIR HAMBURG will continue monitoring the climate physical risks material to the company. Currently, the impacts of physical climate risks are mitigated by measures already in place. For example, when a tropical cyclone is projected to impact a city where the company operates, aircraft are safely parked and put out of harm's way, meanwhile there is a increase in flights booked leaving the affected areas before the tropical cyclone hits, so the impact of the extreme weather events is rarely translated into a loss of bookings. Turbulence is constantly monitored and avoided as part of flight safety. The impact of extreme temperatures is managed by avoiding scheduling flights at the peak hottest times of the day in the warmest locations.

By continuously monitoring the weather, AIR HAMBURG reduces the exposure of its aircraft and avoids its damage, which is the biggest source of financial impact due to weather events.



3.2 Transition risks and opportunities

The transition risks and opportunities selected for the analysis were: price and availability of biofuels and other sustainable fuels, customer demand, ticket prices, low carbon technologies aimed to reduce emissions, and policies impacting the private airline industry.

The analysis focused on AIR HAMBURG's key regions of operation with special focus on North America and Europe. Future exposure to transition risks and opportunities was primarily assessed under a 1.5°C scenario², with consideration of current data and trends under a business as usual scenario (BAU), reflecting current policies and trajectories.

Similarly to physical risks, a qualitative rating was assigned to each transition risk and opportunity according to the strength and direction of its change relative to current conditions for a medium-term (2030) and a long-term (2050 onwards) time horizon.

A summary of the selected risks, potential impacts and risk levels, can be seen in Table 2.

Table 2. Summary of the selected transition risks, and their potential impacts and risk levels under two time horizons under a business as usual and a 1.5°C scenario.

The hazards that are projected to have the highest change in the future, particularly under a 1.5°C scenario are those concerning the biofuels market, policy changes, and low-carbon technologies, with the biggest changes projected to occur in Europe and North America. AIR HAMBURG continues to monitor the latest developments in carbon policy and the use of SAFs, while in the long term, the company acknowledges that it is crucial to increase efficiency through the adoption of new, low-carbon technologies and scaling up the production and adoption of SAFs.

Compared to physical risks, AIR HAMBURG finds itself more exposed to transition risks, which are continuously monitored and assessed by internal stakeholders. Given the nature of its operations as an aircraft operator, AIR HAMBURG is exposed to constantly evolving regulations and developments regarding emerging technologies, sustainable fuels, and carbon taxes. More information about how these risks are monitored and managed can be found in the Risk Management section.

² The scenario assumptions are based on the International Energy Agency's 2022 World Energy Outlook and sector-specific projections and plans 8.5 or the new Shared Socioeconomic Pathway (SSP)5-8.5

Strategy

Table 2. Summary of the selected transition risks, and their potential impacts and risk levels under two time horizons under a business as usual and a 1.5°C scenario.

Hazard	Scenario	High-level impact	North America		Europe		Global	
			2030	2050	2030	2050	2030	2050
Biofuels market	BAU	As SAF is considered the main component to reach NZ emissions in this sector, its consumption is expected to increase gradually to 2030, with an accelerated demand thereafter and up to 2050 and expecting higher consumption particularly in the 1.5°C degrees scenario and especially in the EU and US, based on their climate targets and aviation plans respectively. Likewise, policies and regulations from governments on fuel consumption and blending mandates (such as REFuelEU and the United States' Renewable Fuel Standard), are expected to make SAF the most common air transport fuel in the long term.						
	1.5°C							
Customer preferences and behaviours	BAU	Although demand for air travel is expected to grow in the medium and long term, in advanced economies the pace of growth is expected to be lower. Additionally, the increase of alternative, more sustainable transport modes such as high-speed rail, which will provide increased land-based connectivity at reduced travel times, is expected to decrease air travel demand in advanced economies.						
	1.5°C							
Air-flight tickets market	BAU	Increased carbon tax-related policies could lead to a decrease in air-flight ticket demand. In advanced economies, carbon pricing schemes to cover emissions from the airline sector in domestic and international flights are expected to increase ticket prices, especially for short routes. Likewise, carbon prices for CO2 emissions per mile travelled could drive a decrease in demand for air travel, especially for non-frequent travellers.						
	1.5°C							
Low-carbon technologies	BAU	In the long term, technologies such as electric engines, hydrogen engines and unconventional aircraft configurations are expected to support decarbonisation of the sector, especially for domestic flights and smaller aircraft where change is expected in a shorter period, however, their contribution to avoiding emissions will be significantly lower than those avoided using alternative modes of transport and SAFs						
	1.5°C							
Policy changes	BAU	North America and the EU have ambitious aviation decarbonisation targets that are likely to be supported by stronger policy measures, as evidenced by the strengthening of carbon pricing measures for aviation in the EU and the introduction of mandatory offsetting requirements in line with CORSIA. Globally, coordinated efforts by international organisations are expected to drive the sector's NZ target, but will depend on national policy guidance to ensure its achievement, following the example of regions such as the EU and its targets for sustainable fuel consumption or implementation of new technologies.						
	1.5°C							

Risk

Very Low	Low	Moderate	High	Very High
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Opportunity

Very Low	Low	Moderate	High	Very High
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04 Risk Management

This section explores how climate-related risks and opportunities are detected, assessed, and integrated into AIR HAMBURG's risk management processes.

In order to assess the future changes and impacts of physical and transition R&O, scenario analysis was conducted following a four-step approach. Firstly, a long list of possible climate-related risks and opportunities was prepared, taking into account key hazards previously identified for other Vista companies, assessing any relevant updates in the landscape and reviewing the latest aviation publications. Secondly, company-specific data including historical records and financial impacts of past events was taken into account to narrow down which R&O are most likely to impact AIR HAMBURG in the future. Thirdly, a working session was prepared with key Vista stakeholders with oversight of operations across all companies, including members from the Sustainability, Finance, and Operations departments, to confirm the short list and align on prioritisation and perceived impact to the company. The final step involved the assessment of the key risks using scenario analysis.

In AIR HAMBURG's Safety Handbook, the importance of avoiding weather damage, namely, that caused by hail and thunderstorms is highlighted. A process is in place to thoroughly inspect aircrafts that are suspected to have suffered damage during their flight. The crew is also expected to inform the Compliance Monitoring Manager (CAMO). A safety procedure has also been implemented for cases when the aircraft encounters turbulence, to avoid any harm to passengers and crew as well as aircraft damage. To plan routes and monitor weather conditions on route, for example, turbulence, tools like significant weather charts and Connex Weather are accessed.

Further safety and operational measures are considered during extremely cold conditions, for example, by undertaking inspections to remove any icing or snow that can affect the engines, blades wings, or fans, with other prevention measures also including the use of anti-icing systems. In case of icing or snowing conditions, measures are taken to avoid any issues during parking or refuelling.

The Operations team at AIR HAMBURG actively manages physical risks associated with meteorological events as part of their day-to-day operations, undertaking daily reviews of

weather conditions and communicating any potential risks to the duty manager. The pilots also conduct risk assessments, deciding whether to involve the maintenance team and take precautionary measures to protect the aircraft. For example, when strong wind gusts pose a threat to grounded aircraft, adjustments are made to prevent damage, such as reaching out to the maintenance team. In case of extreme events, such as severe flooding at critical airports, risks are escalated to the Executive Committee (EXCO) for further action.

To monitor risks that may affect flights, AIR HAMBURG implemented a Flight Data Monitoring (FDM) programme, which uses digital flight data from routine operations to identify, quantify, assess, and address operational risks. By automatically detecting risk events, the company can gather accurate and objective safety data, mitigating the chances of significant incidents or aircraft damage. The collected data is analysed to identify patterns and trends, supporting information reported by the flight crew and aiding in incident investigations, such as turbulence occurrences during flight routes. AIR HAMBURG also monitors fuel consumption to identify areas for improvement in current fuel-saving policies specific to their fleet. For a long term understanding of its physical risk exposure AIR HAMBURG takes into account the results of the scenario analysis undertaken following the TCFD recommendations.

AIR HAMBURG receives notifications regarding developments in carbon markets, including EU ETS, Swiss ETS, and CORSIA, directly from DEHSt (the German Emissions Trading Authority). UK ETS notifications are received from the UK Environmental Agency. Any regulatory changes are promptly assessed and communicated to the CEO, along with relevant departments such as Billing, Finance, and Ground Operations. Our Quality and Ground Operations teams keep a vigilant eye on fuel regulations updates, while fluctuations in fuel prices are closely monitored on a weekly basis and shared with the EXCO and other pertinent departments. One additional measure to assess AIR HAMBURG's evolving exposure to transition risks is to collaborate with South Pole, an external climate services provider, in the identification and analysis of any new risks. The goal of this ongoing process is to fully integrate climate-related risks and opportunities into AIR HAMBURG's internal processes.

AIR HAMBURG undertakes the following process to identify, assess, and manage risks:



Figure 2. Risk management process



05 Metrics and Targets

Starting in 2023, AIR HAMBURG will undertake yearly assessments of greenhouse gas (GHG) inventories, adhering to the recommendations outlined in 'The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition' (GHG Protocol), alongside the accompanying 'Corporate Value Chain (Scope 3) Accounting and Reporting Standard'.

In line with best practices, AIR HAMBURG reports its Scope 1, Scope 2 and Scope 3 emissions.

- Scope 1: Emissions directly generated from sources owned or controlled by the company
- Scope 2: Emissions generated by the generation of purchased electricity
- Scope 3: Emissions indirectly generated as a result of the activities of the company from sources that the company does not own or control

AIR HAMBURG's total carbon footprint for the calendar year 2022 was calculated to be 223,882.20 tonnes of carbon dioxide equivalent (tCO₂e). Both direct and indirect emissions were measured, and a breakdown by scope (Scope 1, Scope 2 and Scope 3) can be seen in Table 3.

Scope 1 has the highest contribution to the overall GHG emissions, accounting for 65.4% of the total footprint, followed by Scope 3 with 34.5% and Scope 2 with 0.1%.

AIR HAMBURG continues to monitor developments in the SAFs market and advocates for its adoption across the aviation industry.

Total emissions for Scopes 1, 2, and 3 for AIR HAMBURG in the calendar year 2022, in thousands of tCO₂ eq

GHG Scope	2022
Scope 1	146.4
Scope 2	0.2
Scope 3	77.3
Total	223.9



