South Pole **Climate Solutions**

Final report

2022 Greenhouse Gas (GHG) accounting report

Talon Air

Reporting Period 01/01/2022 to 31/12/2022

October 2023

south pole
The Climate Company

Details

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Acronyms and abbreviations

CH_4	Methane
CO_2	Carbon dioxide
tCO_2e	Tonnes of carbon dioxide equivalent
GHG	Greenhouse gases
HFCs	Hydrofluorocarbons
kg	Kilogram
MWh	Megawatt hour
N_2O	Nitrous oxide
t	tonne
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
WFH	Work-From-Home
GJ	Gigajoules
CEDA	Comprehensive Environmental Data Archive
BEIS	UK Department for Business, Energy & Industrial Strategy

Executive summary

The present summary provides an overview of Talon Air's operational greenhouse gas (GHG) emissions for the 2022 calendar year, based on its reported data.

An operational control approach was taken for this accounting exercise, meaning emissions for all activities conducted under the control of Talon Air were calculated, using a combination of primary and extrapolated data.

A breakdown of emissions and relevant analysis is provided in this report for key sources of emissions, as per the categorisation specified in the GHG Protocol. All assumptions, data challenges, extrapolations, and limitations are described within this report and its annexes.

The office considered in the accounting is located in Wisconsin, United States (US).

Based on the data provided by Talon Air, the total GHG reported emissions for the year 2022 are estimated to be **71,475.93** tonnes of carbon dioxide equivalent (tCO_2e). This represents a 52.99% decrease in emissions from 2021 mainly driven by better primary activity data for Scope 1 and Scope 2 that now include the Upstream leased Assets emissions, which were previously estimated. Scope 1 emissions from the combustion of aviation fuel was the largest contributor to the footprint, and accounted for 53,606.37 tCO_2e, 75.00% of total emissions, in line with 2022 data (52,323tCO_2e).

Key performance indicators (KPIs) are found in Table 1 and an overview of GHG emissions by source is given in Table 2. The emissions intensity of Talon Air has increased from 1,949.15 tCO_2e per employee in 2021 to 433.19 tCO_2e per employee in 2022 due to greater total emissions. The same for emissions per m^2, from 119.58 tCO_2e per m^2 in 2021 to 76.94 tCO_2e per m^2 in 2022.

Please note that, due to rounding of numbers, the figures in the tables in this report may not add up exactly to the totals provided.

Table 1: Summary of key performance indicators (KPIs)

Number of employees	165	**tCO_2e/employee**	433.19
Premises area (m^2)	929	**tCO_2e/ m2**	76.94

(Source: South Pole, based on Talon Air data, 2023)

Table 2: GHG emissions by scope and greenhouse gas

Scope	Total (tCO_2e)	Percentage of total (%)
Scope 1: direct GHG emissions	53,606.37	75.00%
Scope 2: indirect GHG emissions (market-based)	84.59	0.12%
Dual reporting Scope 2: indirect GHG emissions (location-based[1])	84.59	-
Scope 3: other indirect GHG emissions	17,784.97	24.88%
Total GHG emissions (market-based)	71,475.93	100%

(Source: South Pole, based on Talon Air data, 2023)

As a residual mix emission factor in the US is not available, the same emission factor used for location-based estimation has been applied, in line with the GHG Protocol Scope 2 Guidance.

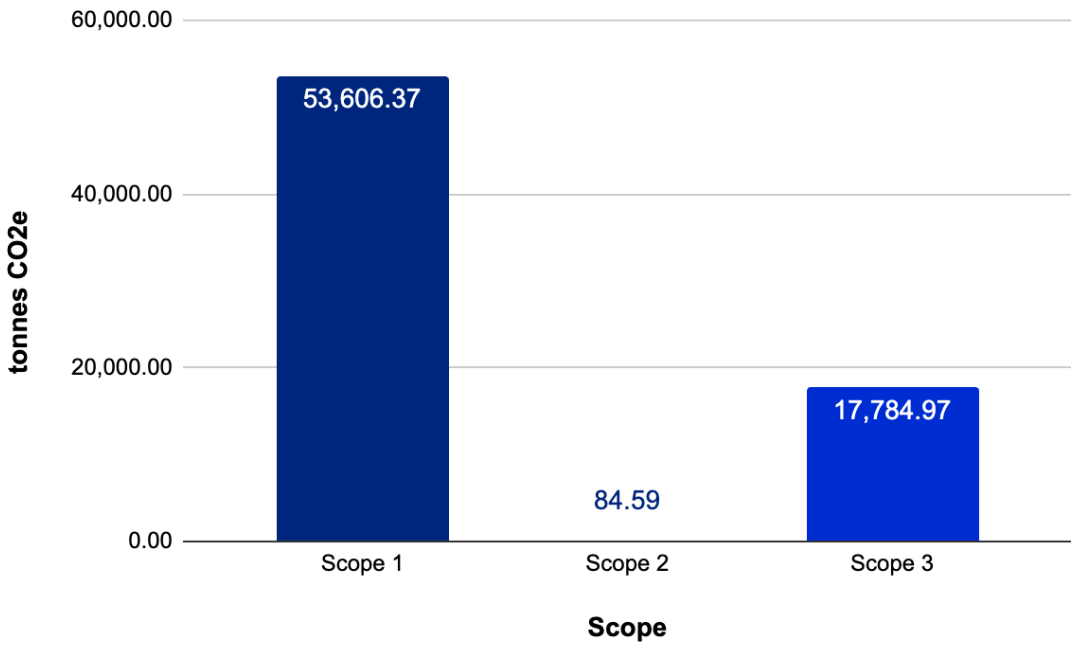

Figure 1: GHG emissions in 2022 by scope

(Source: South Pole, based on Talon Air data, 2023)

[1] A location-based method reflects the average emissions intensity of grids on which energy consumption occurs (using mostly grid-average emission factor data). A market-based method reflects emissions from electricity that companies have purposefully chosen (or their lack of choice): it derives emission factors from contractual instruments, which include any type of contract between two parties for the sale and purchase of energy bundled with attributes about the energy generation or for unbundled attribute claims (e.g. RECs, GOs, etc.).

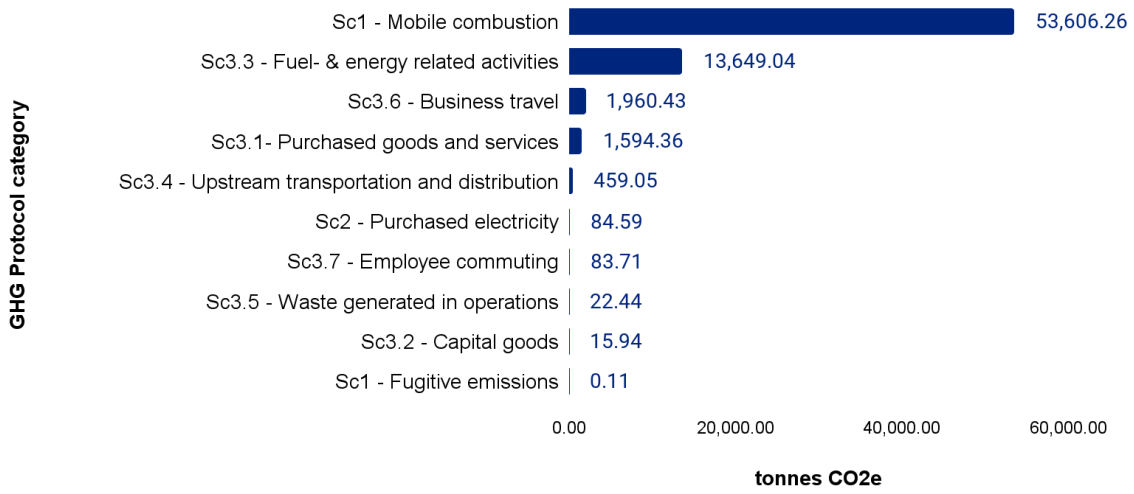

Figure 2: Talon Air´s total footprint by GHG Protocol category
(Source: South Pole, based on Talon Air data, 2023)

Introduction

Vista Global Holding Limited (Vista), the world's leading global private aviation group, has previously undertaken GHG inventories for 2019, 2020 and 2021. Talon Air was included in the 2021 inventory. This report provides an account of the GHG emissions from Talon Air's global operations from 1st January 2022 to the 31st December 2022, based on reported data by the client. It includes an analysis of key sources of emissions, as well as targeted recommendations focused on data improvement and decarbonisation.

Company information and the reporting period are presented in Table 3.

Table 3: Company information

Company information	
Website	www.talonairjets.com
Business sector	Private aviation company
Reporting period	January 1 to December 31, 2022

(Source: South Pole, based on Talon Air data, 2023)

Methodology

The GHG accounting and reporting procedure is based on the 'The Greenhouse Gas Protocol: GHG Protocol: A Corporate Accounting and Reporting Standard – Revised Edition' (GHG Protocol) and the complementary 'Corporate Value Chain (Scope 3) Accounting and Reporting Standard' – the most widely used international accounting tools for government and business leaders to understand, quantify, and manage GHG emissions. The standards were developed in partnership between the World Resources Institute and the World Business Council for Sustainable Development.

All accounting is based on the principles of the 'GHG Protocol':

- **Relevance:** establishing an appropriate inventory boundary that reflects the GHG emissions of the company and serves the decision-making needs of users;
- **Completeness:** including all emission sources within the chosen inventory boundary. Any specific exclusion is disclosed and specified;
- **Consistency:** ensuring meaningful comparison of information over time and transparently documented changes to the data;
- **Transparency:** guaranteeing data inventory sufficiency and clarity, where relevant issues are addressed in a coherent manner; and
- **Accuracy:** minimising uncertainty and avoiding systematic over- or under-quantification of GHG emissions.

Global warming potential (GWP)

Global warming potential (GWP) is a measure of the climate impact of a GHG compared to carbon dioxide over a time horizon. GHG emissions have different GWP values depending on their efficiency at absorbing longwave radiation, and the atmospheric lifetime of the gas. The GWP values used in GHG accounting include the six GHGs covered by the United Nations Framework

Convention on Climate Change (UNFCCC) and Kyoto Protocol, as presented in Table 4. These are the GWP used by the United Kingdom Department for Business, Energy and Industrial Strategy (BEIS) and are based on the 'Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5), unless otherwise stated.

Table 4: Applied global warming potentials (GWPs)

GHG	GWP (100 years)
Carbon dioxide (CO_2)	1
Methane (CH_4)	28
Nitrous oxide (N_2O)	265
Hydrofluorocarbons (HFCs)	See IPCC AR5
Perfluorocarbons (PFCs)	See IPCC AR5
Refrigerants	See IPCC AR5

(Source: IPCC AR5, 2014)

System Boundaries

Organisational boundaries

Rew Wing Aviation GHG inventory follows the operational control approach, in accordance with the GHG Protocol. Under the operational control approach, a company accounts for 100% of emissions from operations over which it or one of its subsidiaries has operational control. The 2022 GHG accounting includes an office in Wisconsin, United States.

Table 5 shows the countries and offices that were included in the 2021 GHG inventory.

Table 5: Key figures for office and region

Site location	Type of facility	Area (m^2)	Headcount
New York	Office	929	165
Total	-	929	165

(Source: South Pole, based on Talon Air data, 2023)

Operational boundaries

Under the 'GHG Protocol', emissions are divided into direct and indirect emissions. Direct emissions are those originating from sources owned or controlled by the reporting entity. Indirect emissions are generated as a result of the reporting entity's activities but occur at sources owned or controlled by another entity.

The direct and indirect emissions are divided into three scopes as found below.

Scope 1

Scope 1 includes all carbon emissions that can be directly managed by the organisation (direct GHG emissions). This includes the emissions from the combustion of fossil fuels in mobile and stationary sources (e.g. fuels for mobile sources for passenger aircraft, power generators and vehicles) and carbon emissions generated by chemical and physical processes, as well as fugitive emissions from the use of cooling and air-conditioning (AC) equipment. Table 6 (below) gives an overview of the emission sources considered in scope 1, based on the information provided by Talon Air.

Table 6: Overview of scope 1 emission sources for 2022

Category	Emission sources	Boundary and justification for exclusion
Stationary combustion	Generation of heat	Not applicable
Mobile combustion	Fuels for mobile sources for passenger aircraft	Included
Physical or chemical processing	Manufacture or processing of chemicals and materials	Not applicable
Fugitive emissions	Emissions from the use of cooling systems and AC equipment	Included

Scope 2

Scope 2 includes indirect GHG emissions from the generation of purchased electricity, steam, heat or cooling purchased by the organisation from external energy providers. As required by the GHG Protocol, Scope 2 emissions are reported using both the location-based method and the market-based method[2]. This dual reporting allows corporates to compare their individual purchasing decisions to the overall GHG-intensity of the grids on which they operate.

The market-based method reflects emissions that result from electricity purchases that the company has purposefully chosen. When a contract is set up for the sale of electricity and the origin of energy generation can be guaranteed, then those specific and relevant emissions factors can be applied. The location-based method applies average emission factors that correspond to the grid where consumption occurs. The default method applied to Talon Air reporting is market-based; location-based results are shown for completeness and transparency.

Table 7 below gives an overview of the emission sources considered in scope 2.

[2] A location-based method reflects the average emissions intensity of grids on which energy consumption occurs (using mostly grid-average emission factor data). A market-based method reflects emissions from electricity that companies have purposefully chosen (or their lack of choice): it derives emission factors from contractual instruments, which include any type of contract between two parties for the sale and purchase of energy bundled with attributes about the energy generation or for unbundled attribute claims (e.g. RECs, GOs, etc.).

Table 7: Overview of scope 2 emission sources for 2022

Category	Emission sources	Boundary
Electricity	Purchased electricity	Included
Steam	Purchased steam	Not applicable
District heating	Purchased district heating	Not applicable
District cooling	Purchased district cooling	Not applicable

Scope 3

Scope 3 includes other indirect emissions, such as emissions from the extraction and production of purchased materials and services, vehicles not owned or controlled by the reporting entity, outsourced activities, or waste disposal.

According to the 'GHG Protocol', companies shall separately account for and report on emissions from scope 1 and 2. Scope 3 is an optional reporting category according to the 'GHG Protocol', but as it is the most important scope for many organisations, companies are expected to assess at least the most relevant categories. In addition, it is best practice to include scope 3 emissions and it is a requirement for setting science-based targets (SBTs).

Table 8 presents an overview of the emission sources considered in scope 3.

Table 8: Overview of scope 3 emission sources for 2022

Category	Emission sources	Boundary
Purchased goods and services	Purchased goods (raw materials) and services	Included
Capital goods	Production of capital goods (information technology [IT] equipment, machinery, buildings etc.)	Included
Fuel- and energy-related activities	Emissions from fuel and electricity generation, including transmission and distribution (T&D) losses	Included
Upstream transportation and distribution	Transportation and distribution of goods and services purchased by the reporting company	Included
Waste generated in operations	Waste management of operational waste (landfilling, recycling, etc.)	Included
Business travel	Travel and accommodation of employees/contractors	Included

Category	Emission sources	Boundary
Employee commuting and teleworking	Employee travel between home and work and incremental emissions related to working from home	Included
Upstream leased assets	Operation of assets leased by the organisation (lessee) in the reporting year and not included in scope 1 or 2	Not material. Not included
Downstream transportation and distribution	Transportation and distribution of products not purchased by the reporting company	Not material. Not included
Processing of sold products	Processing of intermediate products sold by the organisation	Not material. Not included
Use of sold products	Emissions from the use of sold products (e.g. energy consumption during use)	Not material. Not included
End-of-life treatment of sold products	Waste disposal and treatment of sold products	Not material. Not included
Downstream leased assets	Operation of assets owned by the company (lessor) and leased to other entities, not included in scope 1 or 2	Not material. Not included
Franchises	Operation of franchises not included in scope 1 or 2	Not material. Not included
Investments	Operation of investments not included in scope 1 or 2	Not material. Not included

Data inventory and assumptions

Overall, the data inventory, emission factors, and assumptions are based on the 'GHG Protocol'. The choice of assumptions and emission factors followed a conservative approach. Unless otherwise specified, all emission values in this report are given in metric tonnes of carbon dioxide equivalent (tCO_2e).

Where activity data of the inventory was lacking, extrapolations and estimations were made. The complete overview of activity data, extrapolations, and estimations is summarised in Annex II. While every effort has been made to calculate emissions as accurately as possible, GHG emissions calculations carry an inherent level of limitation and uncertainty. As standard practice and in line with the GHG protocol, the choice of assumptions and emission factors followed a conservative approach.

The quality of activity data provided for a GHG inventory has a significant impact on the reliability and accuracy of emissions calculations. Primary activity data, such as the kWh of electricity

purchased within a reporting year, yields that highest quality calculations. Spend based data, which relies on a far greater number of assumptions, results in the least accurate.

Results

Based on the data provided by Talon Air and the assumptions made to fill the data gaps, the total GHG reported emissions for the year 2022 are estimated at **71,475.93 tCO_2e**. Table 9 below illustrates the key figures in terms of GHG emissions (in tCO_2e) and energy intensity (in gigajoules [GJ]) relevant to corporate sustainability reporting, in accordance with the GRI Standards. Please note that, due to rounding of numbers, the figures may not add up exactly to the total provided.

Table 9: Key figures according to the Global Reporting Initiative (GRI)

GRI Standard		Topic	Quantity	Unit
302-1	e	Energy consumption within the organisation	1,500,030.12	GJ
	a	Total fuel consumption from non-renewable sources Aviation fuel	749,737.86 749,737.86	GJ GJ
	b	Total fuel consumption from renewable sources	0.0	GJ
	c	Total electricity consumption	554.40	GJ
305-1	a	Direct GHG emissions (scope 1)	53,606.37	tCO_2e
305-2	a	Location-based energy indirect GHG emissions (scope 2)	84.59	tCO_2e
	b	Market-based energy indirect GHG emissions (scope 2)	84.59	tCO_2e
305-3	a	Other indirect GHG emissions (scope 3)	17,784.97	tCO_2e
302-4		GHG emissions intensity	433.19	tCO_2e/ employee

(Source: South Pole, based on Talon Air data, 2023)

Table 10: GHG emissions by scope and activity for 2022

Activity	Consumption	Unit	Emissions (tCO_2e)	Percentage of total (%)
Scope 1: direct GHG emissions			53,606.37	75.00%
Mobile combustion			53,606.26	75.00%
Aviation fuel	5,843,913.00	gal	53,606.26	75.00%
Refrigerant leakage	929	m^2	0.11	<0.01%
Scope 2: indirect GHG emissions from purchased electricity, heating and cooling (market-based)			84.59	0.12%
Electricity	154.00	MWh	84.59	0.12%
Grid	154.00	MWh	84.59	0.12%
Scope 3: other indirect GHG emissions			17,784.97	24.88%
Category 1: Purchased goods and services			1,594.36	2.23%

Activity	Consumption	Unit	Emissions (tCO_2e)	Percentage of total (%)
Water supply	795.57	m^3	0.12	<0.01%
Aircraft parts	6,647,973.97	USD	1,580.69	2.21%
Food and drink products (non-flights)	22,352.90	USD	13.56	0.02%
Category 2: Capital goods			15.94	0.02%
IT equipment - PCs	232,195.38	USD	15.94	0.02%
Category 3: Fuel- and energy-related activities			13,649.04	19.10%
Aviation fuel	5,843,913.00	gal	13,645.23	19.10%
Electricity	154.00	MWh	3.81	0.01%
Category 4: Upstream transportation and distribution			459.05	0.65%
Freight			459.05	0.65%
Air	220,847.40	USD	427.02	0.60%
Air	12,626.10	tkm	27.27	0.04%
Road	1,217.28	tmi	0.26	<0.01%
Road	6,691.03	USD	4.51	0.01%
Category 5: Waste generated in operations		m^3	22.44	0.03%
Commercial and industrial waste	50.00	ton	18.99	0.03%
Oil Waste	162.50	ton	3.46	<0.01%
Category 6: Business travel			1,960.43	2.74%
Flights	8,145,248.67	pkm	1,575.69	2.20%
Short-haul < 463 km - economy	113,428.28	pkm	30.93	0.04%
Medium-haul 463 - 3,700 km - economy	4,532,930.54	pkm	759.17	1.06%
Medium-haul 463 - 3,700 km - business	627,229.85	pkm	157.56	0.22%
Medium-haul 463 - 3,700 km - first	273,752.71	pkm	68.77	0.10%
Long-haul > 3,700 km - economy	1,072,728.94	pkm	229.70	0.32%
Long-haul > 3,700 km - business	465,829.40	pkm	221.52	0.31%
Long-haul > 3,700 km - first	164,737.95	pkm	108.05	0.15%
Ground transportation	894,611.00	USD	384.74	0.54%
Category 7: Employee commuting			83.71	0.12%

Activity	Consumption	Unit	Emissions (tCO_2e)	Percentage of total (%)
Car	265,276.22	km	58.18	0.08%
Other (taxi and motorbike)	24,116.02	km	4.87	0.01%
Public transport (bus and train)	159,165.73	pkm	13.20	0.02%
Teleworking	5,550.00	person-days	7.45	0.01%
Walk	33,762.43	pkm	0.00	0.00%
Total GHG emissions (location-based)			71,475.93	-
Total GHG emissions (market-based)			71,475.93	100%

(Source: South Pole, based on Talon Air data, 2023)

Overall results - Vista

Figure 3 presents a breakdown of Vista's GHG emissions for each of its eight business units. In 2022 Talon Air is the sixth in terms of highest GHG emissions of all eight global entities, at 71,475.93 tCO_2e, accounting for 4.96% of the overall global footprint.

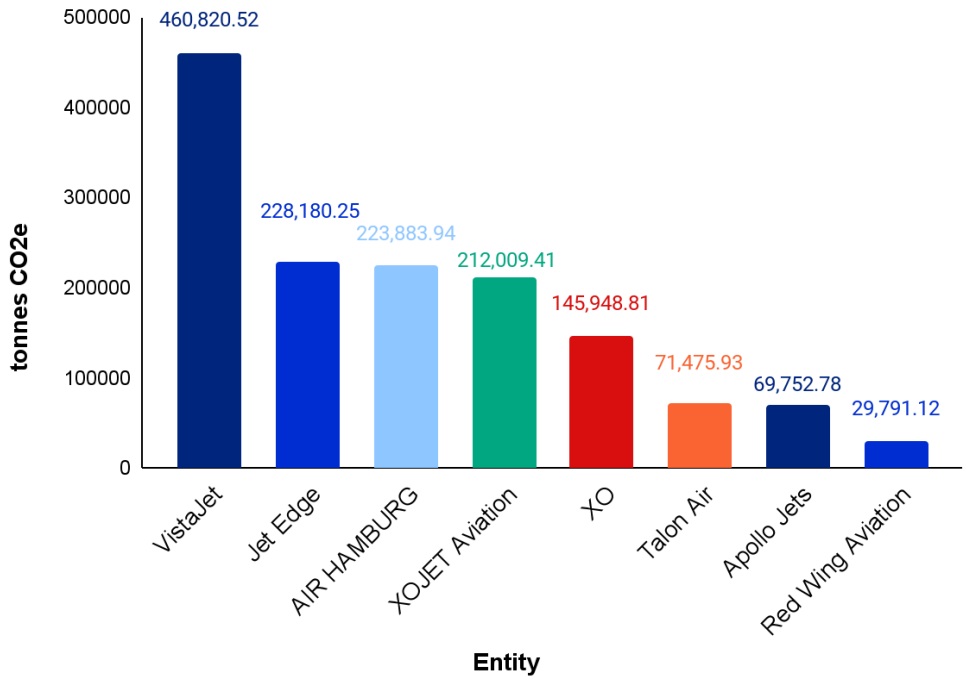

Figure 3: Vista overall 2022 GHG emissions by business entity

(Source: South Pole, based on Vista, 2023)

Category-level results

Figure 4 presents a breakdown of Talon Air's overall 2022 emissions by scope. The vast majority of emissions - 75.00% - fall under Scope 1. This is largely driven by emissions associated with the burning of aviation fuel, which accounts for over 99.99% of the Scope 1 footprint.

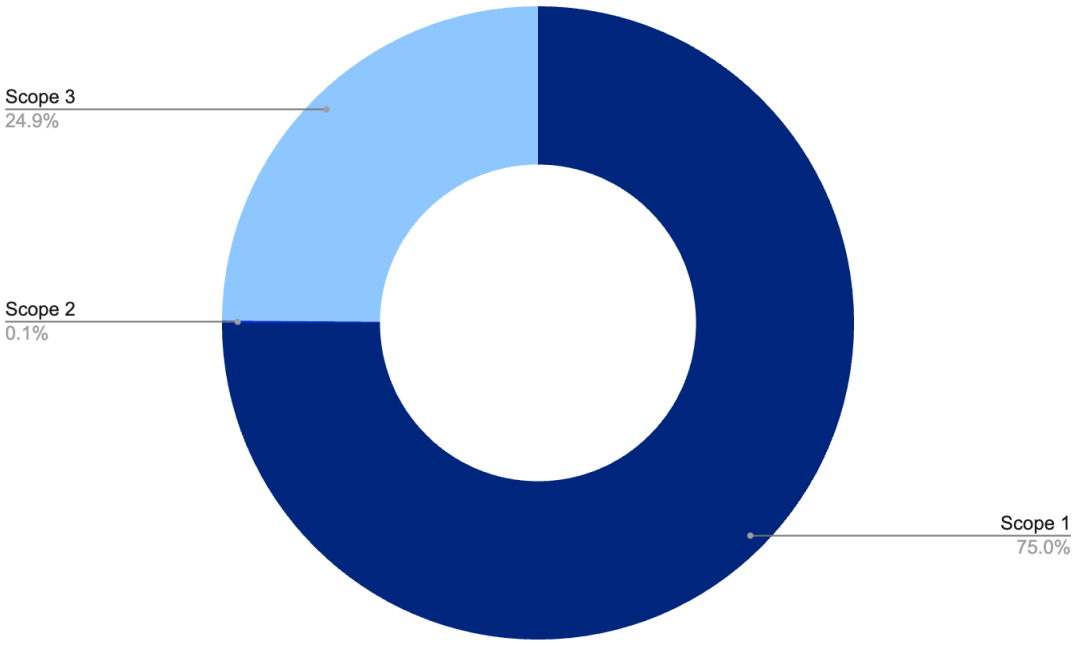

Figure 4: GHG emissions in 2022 by scope
(Source: South Pole, based on Talon Air data, 2023)

Figure 5 further provides a breakdown of emissions by GHG Protocol category. Mobile combustion is the largest source of emissions, accounting for 61.3% of the overall footprint.

The upstream scope 3 emissions associated with burning aviation fuel - which- are accounted for under *Category 3 - Fuel and energy related activities* is the second largest source of emissions, and specifically accounts for 19.10% of the 2022 footprint. Overall, aviation fuel is therefore responsible for 94.08% of the total emissions for 2022.

Business travel and purchased goods and services are the third and fourth highest sources of emissions, accounting for 2.7% (1,960.43 tCO_2e) and 2.2% (1,594.36 tCO_2e) as presented in Figure 5, mainly driven by aviation fuel consumption due to private flights services, staff air travel and purchase of aircraft parts.

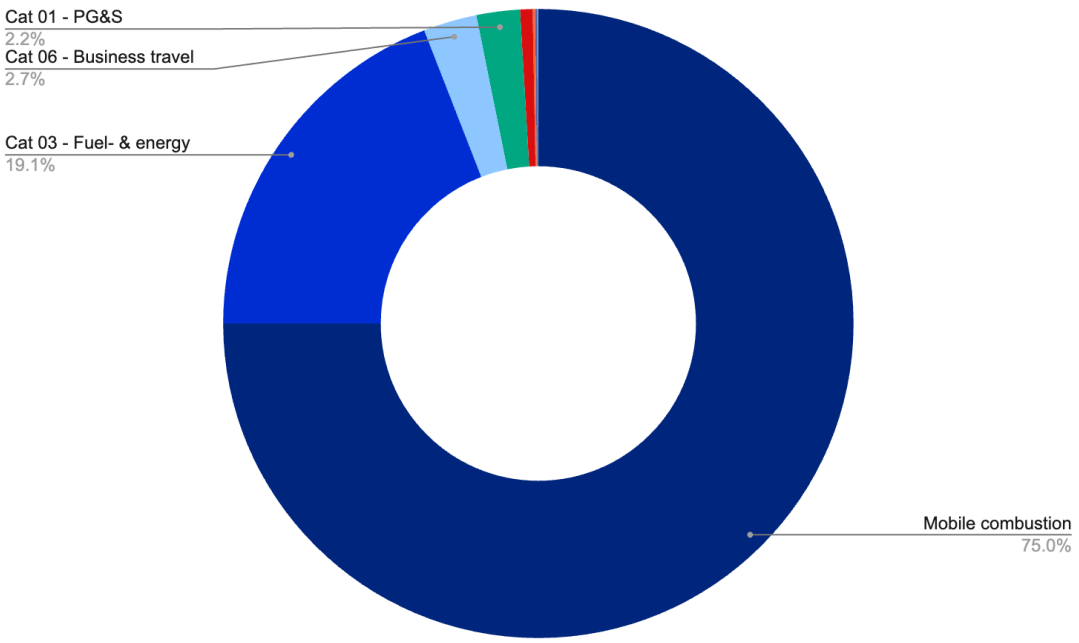

Figure 5: GHG emissions in 2022 by GHG Protocol category

(Source: South Pole, based on Talon Air data, 2023)

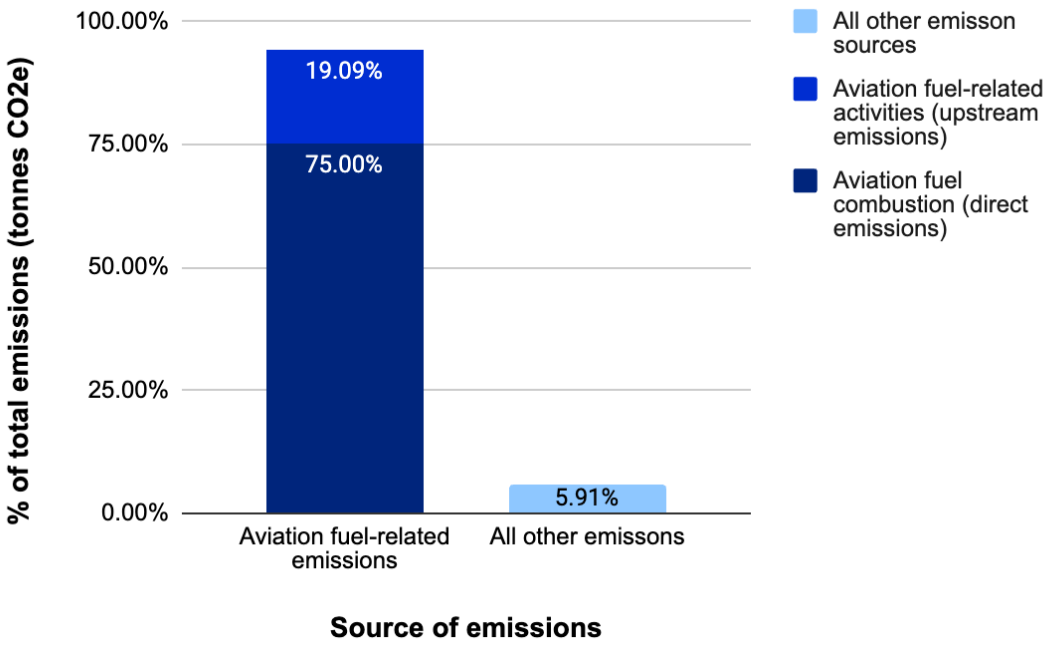

Figure 6: Comparison of Talon Air's aviation fuel emissions and all other emissions

(Source: South Pole, based on Talon Air, 2023)

Figure 7 presents a comparison of Talon Air's GHG inventories from 2021-2022. From 2021 to 2022 emissions have decreased by 81,742.03 tCO_2e, or 52.99%. This was predominantly driven by better primary activity data and improvements in the methodology for estimations.

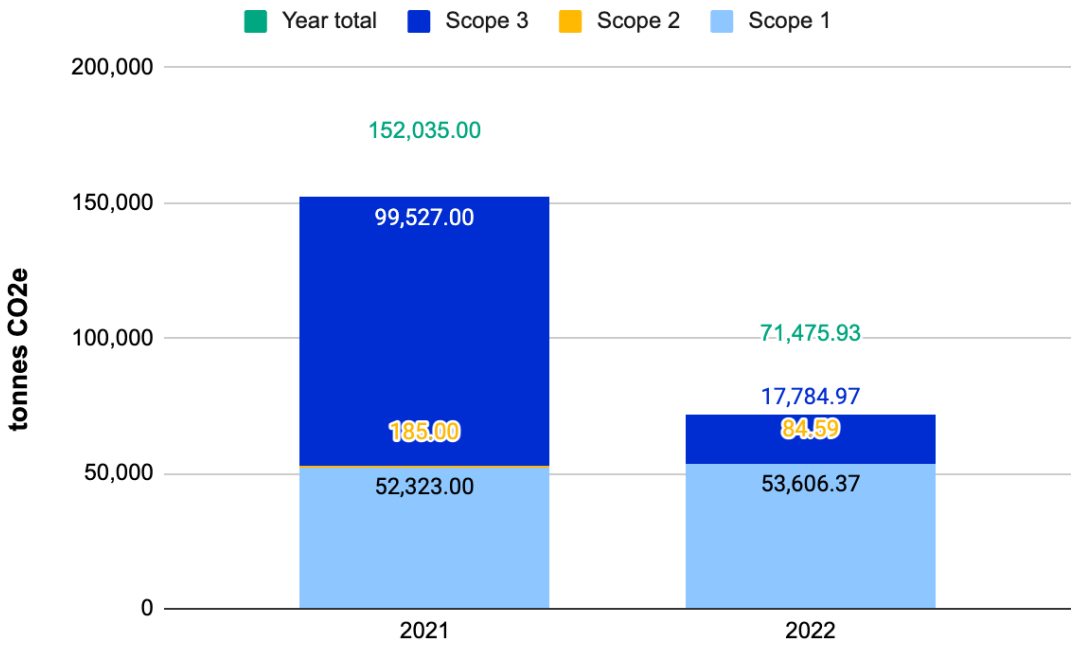

Figure 7: Talon Air's GHG emissions from 2021-2022 by scope
(Source: South Pole, based on Talon Air data, 2023)

In 2022 aviation fuel emissions accounted for 94.08% (67,251.49 tCO_2e) of all emissions corresponding to mobile combustion in Scope 1 and fuel and energy related activities category 3 Scope 3, while in 2021 were responsible for only 41.54% (63,152.42 tCO_2e) of the total footprint (Figure 8). The overall pattern of emissions is consistent across years, with scope 1 emissions (from aviation fuel) dominating the footprint.

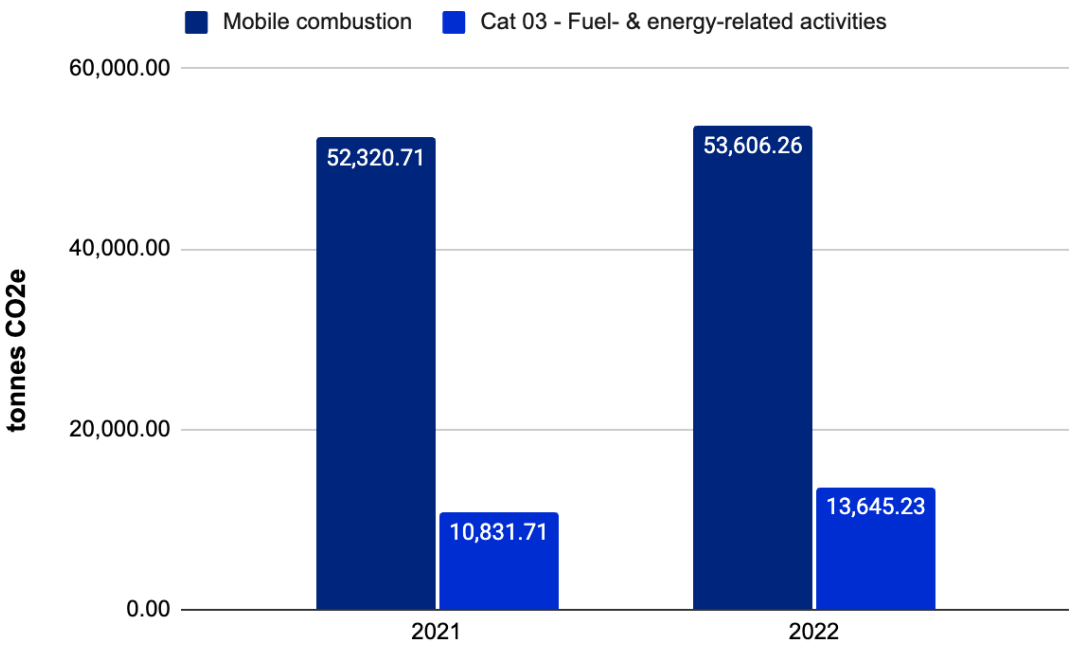

Figure 8: Aviation fuel emissions comparative 2021 vs 2022
(Source: South Pole, based on Talon Air data, 2023)

Conclusions

The annual measurement of GHG emissions is an essential first step that organisations must take on their journey to mitigating climate impact.

This report has presented a summary of Talon Air's 2022 GHG footprint. As with previous years, the mobile combustion of aviation fuel is the primary driver of emissions. In 2022, emissions were lower than in 2021, reflecting better primary activity data and improvements in the methodology .

It is important that Talon Air takes steps to continue improving the quality and accuracy of its GHG footprint, and implements measures to decarbonise its operations. Glasgow's COP26 and the 2021 IPCC report shone a spotlight on the critical need to achieve Net Zero emissions to keep global warming within the 1.5 degree limit. Private aviation is a highly emissions intensive industry, and Talon Air has an important role to play in this transition.

In order to improve the quality of the GHG footprint, the following courses of action are recommended:

- **Collect primary activity data:** Talon Air can improve data quality by collecting primary consumption data as activity volumes for all sources of emissions. This allows for far more accurate and reliable GHG calculations than spend-based data.
- **Continue establishing formalised data collection procedures:** Formalised data collection procedures, with internal quality controls, supplier communication, assigned roles, and clear frameworks allow for a more streamlined data collection processes and limits the risk of missed data.
- **Review data assumptions in Annex 2:** Annex 2 in this document provides more granular breakdown of key data assumptions. Treat these as priority emission sources to act on and improve data collection procedures for.

The following next steps are recommended for Talon Air to continue on its decarbonisation journey.

- **Prioritise investment in and uptake of Sustainable Aviation Fuel (SAF):** The 2022 GHG footprint re-emphasised the centrality of aviation fuel as a driver of Talon Air's emissions. Decarbonising fuel, for instance by switching to SAF, should be an absolute priority for Talon Air if it wishes to act on its climate ambitions.
- **Set science based targets with SBTi: —** The Science Based Targets initiative drives ambitious climate action in the private sector by enabling companies to set science-based emissions targets. Talon Air should demonstrate its commitment to sustainability in the aviation sector, and cement its position as a sector leader, by setting targets with SBTi.

Annex I

Emission factors sources

Table 11: Emission factors sources

Activity	Emission factor reference[3]
Fuel	BEIS 2022, SBTi Aviation Tool 2.0
Refrigerants	ADEME 2022; BC V8.8
Electricity (market-based)	eGrid 2021
Electricity (location-based)	eGrid 2021
Purchased goods and services	BEIS 2022, CEDA Global 6, 2022
Capital goods	CEDA Global 6, 2022
Freight	US EPA 2022, BEIS 2022, CEDA Global 6, 2022
Waste	BEIS 2022
Business travel	BEIS 2022, CEDA Global 6, 2022
Commuter travel	BEIS 2022
Teleworking	IEA energy indicators 2022; Anthesis, 2020; BEIS 2022; eGRID, 2021; SP custom EF's

[3] South Pole derives its emission factors from reliable and credible sources. South Pole is not responsible for inaccuracies in emission factors provided by third parties.

Annex II

Data assumptions and extrapolations

Table 12: Data assumptions and extrapolations

Category	Sub-Category	Assumption
Fugitive emissions	Refrigerants	Emissions from refrigerant leakage were estimated based on average sectoral consumption values and applied to Talon Air sites based on total site area.
Purchased goods and services	Water supply	Emissions from water supply were estimated based on figures for country/regional level water consumption and extrapolated based on site headcount.
Business travel	All	When applicable, Scope 3 emissions include Well-to-tank (WTT) emissions, which are those associated with the upstream production and distribution of the fuel and energy.
Business travel	Accommodation	No estimation was conducted for accommodation emissions because it was considered not significant.
Business travel	Flights	Flight emissions include a radiative forcing index (RFI) multiplier of 1.9, which accounts for the effects of non-CO2 emissions (e.g. contrails, water vapour, nitrogen oxides and soot). This is in line with BEIS recommendations, which are informed by wider industry research.
Employee commuting	Teleworking	Teleworking emissions were estimated based on country and regional electricity and heating consumption for employees working from home, and applied to sites based on headcount.
Employee commuting	Travel	Employee travel emissions were estimated based on country and regional travel data for modes of commuter transport and applied to sites based on headcount.


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