# Sustainability in Aviation

A 2020 ACTION HANDBOOK FOR CHANGE IN BUSINESS AVIATION

VISTA JET



south pole

VISTAJET | SUSTAINABILITY IN AVIATION Contents



VISTAJET | SUSTAINABILITY IN AVIATION 01 | The world can't wait



The world can't wait

# Almost every area of human activity has an impact on the environment and minimizing our impact on the planet is becoming increasingly important. Aviation is no exception.

Our global economy is tightly intertwined with aviation as it facilitates commerce and carries goods. Today, demand for mobility is increasing as wealth grows in emerging economies, businesses continue to accelerate internationally, and prices for flights decline. Present trends suggest that global air passengers could double to 8.2 billion in 20371.

However, as air travel continues to rise, so does a global focus on understanding the environmental impacts of aviation.

Climate change is one of the defining issues of our era. While latest scientific research<sup>2</sup> highlights the damage that past and present human activities have brought onto the natural world – melting glaciers, bleached coral reefs, and extreme weather – there is still time to reverse the damaging impact of environmental degradation. But we need to act fast.

To address climate change and its negative impacts, nearly every nation adopted the Paris Agreement, a global environmental accord by the United Nations Framework Convention on Climate Change in 2015. The agreement aims to radically reduce global greenhouse gas emissions in an effort to limit the global temperature increase in this century to 1.5°C, down from the original 2°C target.

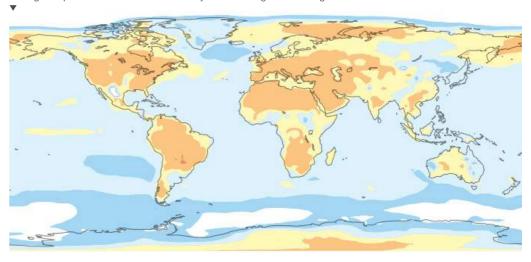
Why is this figure so important? Our planet has already warmed by nearly 1°C compared to pre-industrial levels.3 According to most recent scientific research, the 1.5°C cap provides a chance to safeguard some of the most vulnerable ecosystems and communities on the planet. While the difference between 1.5°C and 2°C might not sound like much, the effects of an extra half-degree of warming are drastic<sup>4</sup>. This is why further initiatives from all companies across all industries can make a substantial difference in fighting climate change and reducing greenhouse gas emissions.

As of 2019, 196 states and the European Union (EU) signed the Paris Agreement<sup>5</sup>. Further, 183 nations and the EU, representing around 97% of greenhouse gas emissions, have ratified the Agreement, including China and the United States - the countries with two of the largest global emissions at around 38% combined<sup>6</sup>. Despite President Donald Trump's announcement in November 2019 to begin the year-long process of formally pulling the U.S. out of the Paris Agreement, a large coalition of U.S. cities, states, businesses and universities remain committed to fighting to avoid the worst consequences of climate change7 through the America's Pledge movement.

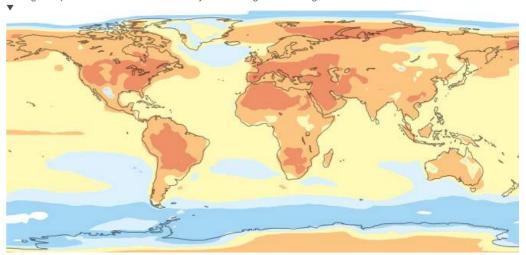
#### Why half a degree matters: How global warming is expected to affect the world8

The impact of a 2°C degree temperature increase on global mean temperatures

Average temperature of the annual hottest day with 1.5°C of global warming



Average temperature of the annual hottest day with 2°C of global warming

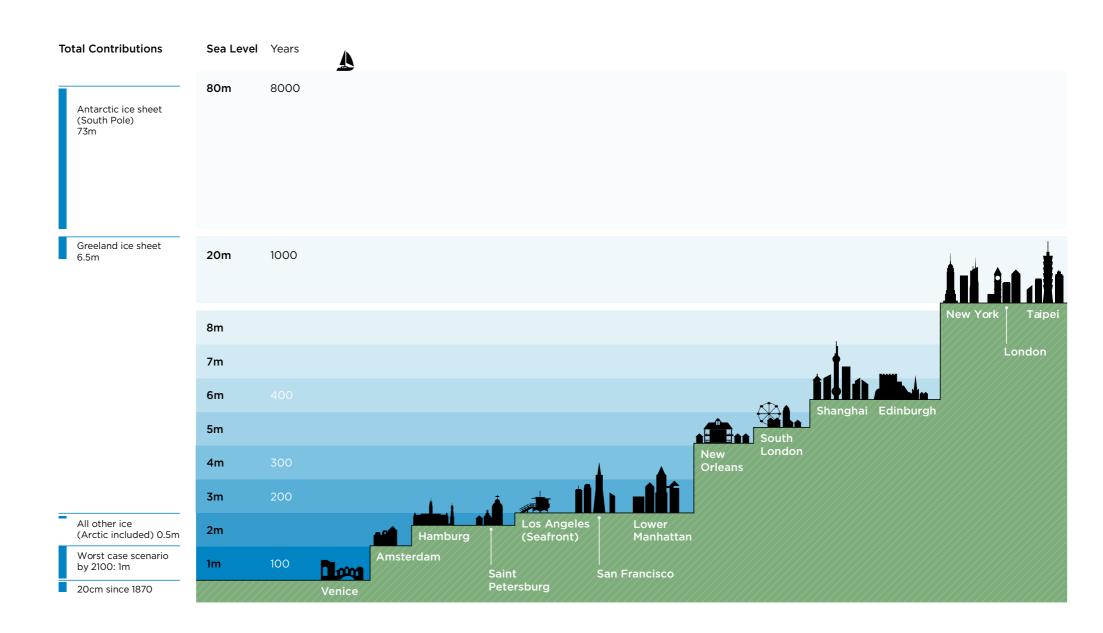


- https://www.iata.org/pressroom/pr/Pages/2018-10-24-02.aspx
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- http://worldpopulationreview.com/countries/paris-climate-agreement-countries
- https://unfccc.int/resource/docs/2015/cop21/eng/10.pdf#page=30
- https://edition.cnn.com/2019/12/09/politics/cop25-trump-climate-change-accelerating-america-pledge-report/index.htm
- Sources: Carbon Brief, 2018 https://interactive.carbonbrief.org/impacts-climate-change-one-point-five-degrees-two-degrees/#; World Resource Institute, 2018 https://www.wri.org/blog/2018/10/half-degree-and-world-apart-difference-climate-impacts-between-15-c-and-2-c-warming

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#### Why half a degree matters: How global warming is expected to affect the world<sup>8</sup>

The impact of a 2°C degree temperature increase on sea-levels



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VISTAJET | SUSTAINABILITY IN AVIATION 02 | Aviation's impact on tomorrow



Aviation plays a relatively limited role in the global landscape of carbon emissions, producing around 2% of global carbon emissions in today's increasingly connected, mobile world.9

Competition in efficiency and operational best practice among manufacturers and operators have been credited for continuous improvement and innovation in keeping the overall emissions of aviation from ballooning. Without further actions, however, emissions from aviation will swell along with passenger traffic, which is projected to grow to over 8.2 billion travelers in 2037. In particular, in the span of just eight years, the number of business airplanes has already nearly doubled. In

Key climate facts on aviation<sup>12</sup>

2%

The global aviation industry produces around 2% of all human-induced CO2 emissions – or 895M tonnes of CO2 versus 42B tonnes.

80%

Around 80% of aviation CO2 emissions are emitted from flights of over 1,500 kilometers, for which there is no practical alternative mode of transport.

**12%** 

Aviation is responsible for 12% of carbon emissions from all transport sources, compared to 74% from road transport.

20<sup>th</sup>

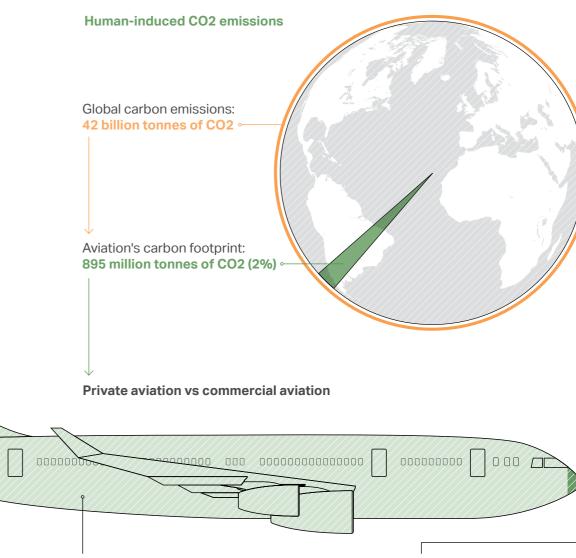
If aviation were a country, it would rank 20th in the world in terms of gross domestic product (GDP), generating \$704.4 billion of GDP per year – considerably larger than some of the members of the G20, and around the same size as Switzerland.

80%

Jet aircraft in service today are well over 80% more fuel efficient per seat/kilometer than the first jets in the 1960s.

\$1.5T

By 2036, it is forecasted that aviation will directly contribute \$1.5 trillion to the world GDP.



98%

COMMERCIAL AVIATION'S CURRENT SHARE OF THE AVIATION INDUSTRY'S GLOBAL CARBON FOOTPRINT

Commercial aviation refers to the sector of aviation involving the transport of passengers, cargo or that counts all commercial air transport (airlines/taxi/air ambulance operations).<sup>13</sup>

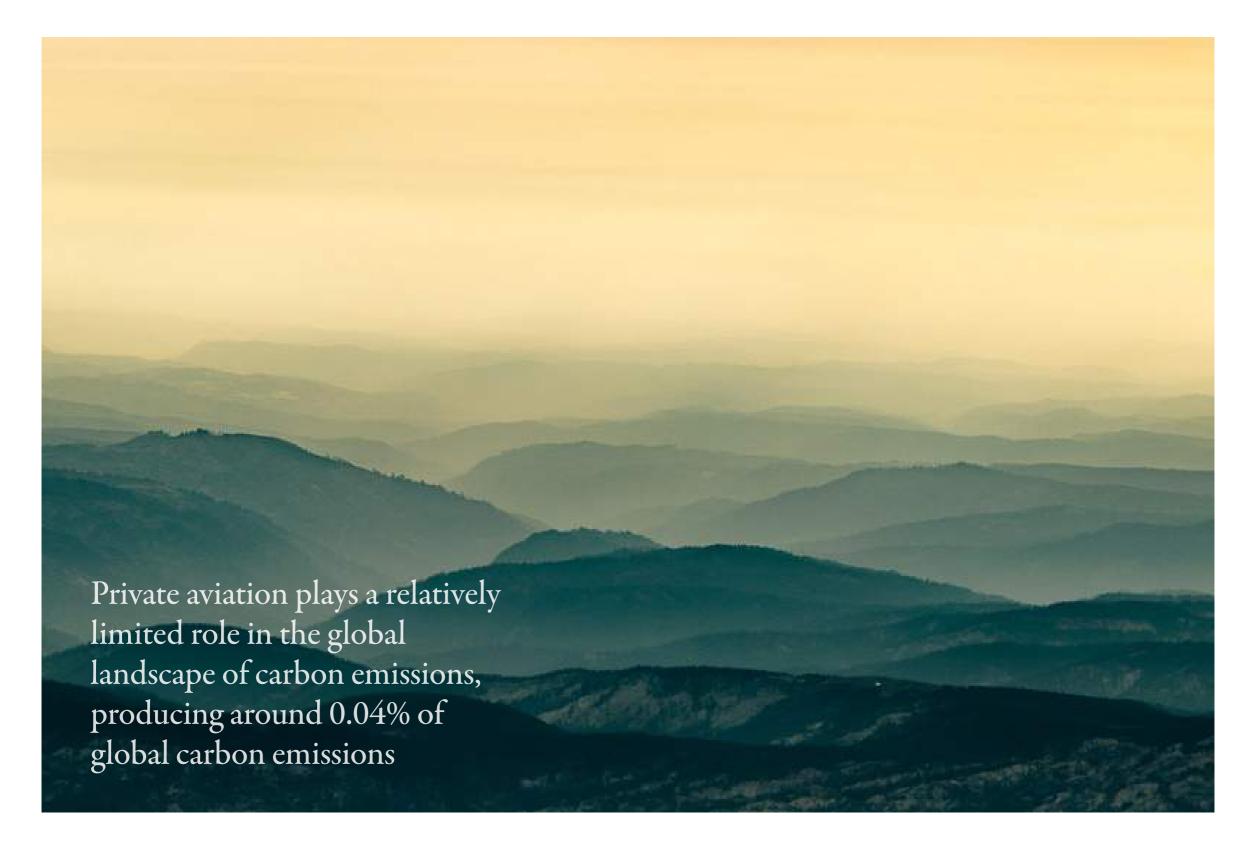
2%

PRIVATE AVIATION'S CURRENT SHARE OF THE AVIATION INDUSTRY'S GLOBAL CARBON FOOTPRINT — SO 0.04% OF TOTAL GLOBAL CO2 EMISSIONS.

Business, or private, aviation refers to all flights that are not conducted by the military or scheduled airlines.<sup>14</sup>

- 9 https://www.atag.org/facts-figures.html
- 10 https://www.iata.org/pressroom/pr/Pages/2018-10-24-02.aspx
- 11 2018 Annual Report General Aviation Manufacturers Association / GAMA
- 12 https://www.atag.org/facts-figures.html
- 13 https://www.ebaa.org/app/uploads/2018/01/About-business-aviation-.pdf
- 14 https://nbaa.org/business-aviation/

VISTAJET | SUSTAINABILITY IN AVIATION 02 | Aviation's impact on tomorrow





While there is a clear recognition of the contribution of aviation activities to climate change and their adverse effects on air quality, the continued growth of the sector has also spurred economic benefits and connectivity worldwide and continues to stimulate investment in new technology.<sup>15</sup>

The industry is now acting on multiple fronts, together with regulators, to ensure future innovation goes hand in hand with environmental stewardship.

Aviation is not included in the Paris Agreement<sup>16</sup> and has often been cited as an emissions laggard – but improvements may finally be in sight: the industry is undergoing a paradigm shift, ushered by a combination of technological disruption and societal expectations, with frequent fliers being increasingly aware of and alarmed<sup>17</sup> over climate change. As a result, global aviation has set climate goals that will chart its path for the coming decade: continue with 1.5% annual fuel efficiency improvements until the end of 2020, carbon neutral growth from 2020 onwards and halving of emissions by 2050 (compared to what they were in 2005)<sup>18</sup>. The industry consensus is converging on achieving these climate goals through a four-pillar strategy:

#### 1. OPERATIONS

Operational measures include identifying weight savings in current fleets, which in turn reduced the amount of fuel required to fly.

#### 2. INFRASTRUCTURE

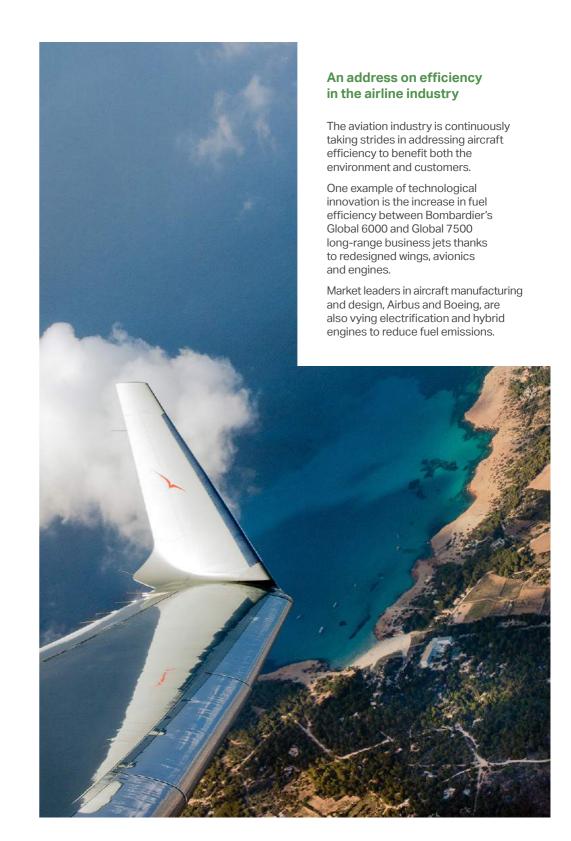
Infrastructure improvements are mostly focused on navigational improvements, such as improving the routes taken by aircraft to minimize flight time and optimizing the layout of airports to reduce idle time.

#### 3. TECHNOLOGY

The development of more efficient engines and aircraft can drastically decrease carbon emissions. New aircraft are, on average, around 15-20% more fuel-efficient than the models they replace. Sustainable jet fuels, already used on some commercial flights, have the potential to cut emissions by up to 80%.

#### 4. MARKET-BASED MEASURES

A single global market-based measure to fill the remaining emissions gap.



<sup>15</sup> European Aviation Environmental Report 2019

<sup>16</sup> https://unfccc.int/news/shipping-aviation-and-paris

<sup>17</sup> https://uk.reuters.com/article/us-airlines-iata-environment-analysis/airlines-scramble-to-overcome-polluter stigma-as-flight-shame-movement-grows-idUKKCN1T4220

<sup>18</sup> https://www.iata.org/pressroom/facts\_figures/fact\_sheets/Documents/fact-sheet-climate-change.pdf

When it comes to market-based measures, the aviation industry is subject to two schemes: the European Emissions Trading System, known as EU ETS, and the UN-led Carbon Offsetting and Reduction Scheme for International Aviation, also known as CORSIA. Both plans address emissions from aviation but differ in how they function.

The EU ETS works on a 'cap and trade' principle by setting a cap on the total amount of greenhouse gases that can be emitted by actors covered by the system. The cap is reduced over time so that total emissions fall. Carbon emissions from aviation have been included in the EU ETS since 2012<sup>19</sup>. It is mandatory for all airlines operating in EU to monitor, report and verify the emissions of intra-EU flights, and to surrender allowances against them.

The UN International Civil Aviation Organization (ICAO), which manages the planning and development of international air transport, established CORSIA in 2016. The aim of this global scheme is to stabilize carbon emissions from aviation at 2020 levels by requiring airlines to offset the growth of their emissions after 2020<sup>20</sup>. This means that from 2021 onwards, aircraft operators covered by the scheme will be required to monitor, report and offset the growth of their emissions. Although all EU countries will join the scheme from the start, it will only become mandatory from 2027 onwards for all 193 ICAO member states.

#### How CORSIA will affect aviation<sup>21</sup>

## 2019 **Baseline period begins** All aircraft operators with international emissions above 10.000 tCO2 per year must monitor, report, and verify fuel consumption and CO2 emissions data for all international flights, irrespective of routes. Humanitarian, medical and firefighting operations, as well as aircraft with less than 5,700kg of Maximum Take Off Mass, are exempt<sup>22</sup>. This means that many of the world's private jets are exempt from CORSIA. 2021 Voluntary pilot phase begins All aircraft operators operating routes between any state that volunteered to participate in CORSIA are subject to the offsetting requirements. In practice, it means that aircraft operators need to buy carbon Voluntary phase offsets from other sectors to compensate for any growth in their own emissions post-2020. Alternatively, they can use lower carbon fuels considered eligible<sup>23</sup> under CORSIA. As of July 2019, 81 states, representing 76.63% of the international aviation activity, volunteered to participate in CORSIA<sup>24</sup>. 2024 Voluntary phase begins Similar requirements apply as in the voluntary pilot phase. Mandatory phase begins Starting from 2027, offsetting requirements become mandatory for all aircraft operators flying routes between almost all ICAO member states<sup>25</sup>. This means that the vast majority of international flights will Mandatory pha **CORSIA** is reviewed ICAO decides whether the scheme should be continued after 2035 and, if so, how it should be improved. Second phase ends

<sup>19</sup> https://ec.europa.eu/clima/policies/transport/aviation\_en

<sup>20</sup> https://ec.europa.eu/clima/policies/transport/aviation\_en

<sup>21</sup> Source: Ecosystems Marketplace and ICAO

<sup>22</sup> https://www.icao.int/environmental-protection/Documents/A39\_CORSIA\_FAQs.pdf

<sup>23</sup> https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-Eligible-Fuels.aspx

<sup>24</sup> https://www.icao.int/environmental-protection/CORSIA/Pages/state-pairs.aspx

<sup>25</sup> With exclusion of countries with low aviation activity and Least Developed Countries, Small Island Developing States, and Landlocked Developing Countries, unless they volunteer to participate).







# Closing the emissions gap requires more ambitious action by governments, but also significant commitment from the private sector.

In the face of often limited progress from national governments and official bodies, it is imperative that businesses help accelerate the pace of climate action and join forces in the quest to reduce emissions and invest in low-carbon technologies. This is where carbon compensation, also referred to as offsetting, comes into play.

Carbon compensation is an internationally recognized way to counteract unavoidable carbon emissions. It means compensating for the greenhouse gas emissions of an individual or an organization (or, in other words, their carbon footprint) by preventing the same amount of emissions from entering the atmosphere elsewhere on Earth. As climate change is a global problem, the geographical location of the emission reduction does not have any bearing on its effectiveness on the world landscape.

A carbon credit is a certificate that corresponds to the reduction or avoidance of one ton of CO2 equivalent. By purchasing carbon credits, an organization or individual can advance the development of projects in areas such as renewable energy and energy efficiency, whilst supporting climate adaptation efforts in local communities, offering further social benefits around the globe.





Time is of the essence for airlines to reach the world's collective climate targets. In addition to adhering to market-based measures and improving existing infrastructure, enhancing operational measures and developing new technological innovations is crucial.



The single largest potential reduction in aviation's greenhouse gas emissions is through the broad adoption of more sustainable jet fuel.

Around 15% of global oil demand growth up to 2030 is anticipated to come from aviation<sup>26</sup>. Such a rise would mean that aviation's share of global carbon emissions by 2030 would be around 3.5%, up from approximately 2% today, despite ongoing advancements in aviation efficiency.

There is a growing recognition among the aviation industry that to meet their collective targets, and to ensure a decarbonization pathway as set by the Paris Agreement, all available measures and solutions are needed. Sustainable Aviation Fuels (SAF) have been identified as the most realistic option today for greener flying<sup>27</sup>: biofuels, derived from sources such as algae or waste by-products that are not in competition with any food crops, have already been shown to reduce the carbon footprint of aviation fuel by up to 80% over their full lifecycle<sup>28</sup>. As well as being cleaner than kerosene, another benefit is that they can be blended with conventional jet fuel, allowing for a gradual introduction into supply chains without the need for any expensive engine adaptation<sup>29</sup>. Consequently, ICAO has agreed that biofuels should be an option to comply with CORSIA.

Within the transport sector, aviation is well positioned to pilot the roll-out of alternative, more sustainable bio-based fuels for several reasons: the industry has a relatively low number of operators, a relatively small distribution network compared to the automotive industry<sup>30</sup>, a prevalence of fleets (as opposed to individual owners of cars, for instance), high economic incentives to take action given the proportion of fixed costs that fuel represents, and, most importantly, an industry and a clientele<sup>31</sup> that is more inclined to moving towards more sustainable modes of operating.

The development of biofuels for jet airplanes has, however, been painfully slow due to financial, technical, and regulatory reasons, including the lengthy process for certifying new types of fuels and the ability to produce bio-based fuel at a commercial scale<sup>32,33</sup>.

The fact that air travel is centered around hubs, and that the 20 busiest airports in the world handle nearly one-fifth of all air passenger traffic, should make it easier for SAF to be fully adopted by operators<sup>34</sup>. However, seven years after their introduction to commercial flights, there are only a few hubs globally where SAF is available and they still only account for less than 0.1% of total aviation fuel consumption, with airlines struggling to break away from fossil fuels.

Sustainable Aviation Fuels will only be able to compete effectively when they can be produced in sufficient quantities and be available across more locations to support global air travel. Thus far the focus for the adoption of SAF has been on regional commercial airlines and manufacturers (OEMs), with regulatory bodies being reticent to include global business operators in the conversation and developments. Overcoming this dilemma requires a new form of collaboration between all stakeholders from across the industry.

<sup>26</sup> https://www.iea.org/newsroom/news/2019/march/are-aviation-biofuels-ready-for-take-off.html

<sup>27</sup> https://www.weforum.org/agenda/2019/08/carbon-neutral-flying/

<sup>28</sup> https://www.atag.org/facts-figures.html

<sup>29</sup> https://www.weforum.org/agenda/2019/08/carbon-neutral-flying/

<sup>30</sup> https://www.ebaa.org/app/uploads/2018/05/14271-BBA-Business-Aviation-Guide-to-SAJF-A4\_MAY-2018\_PROOF.pdf

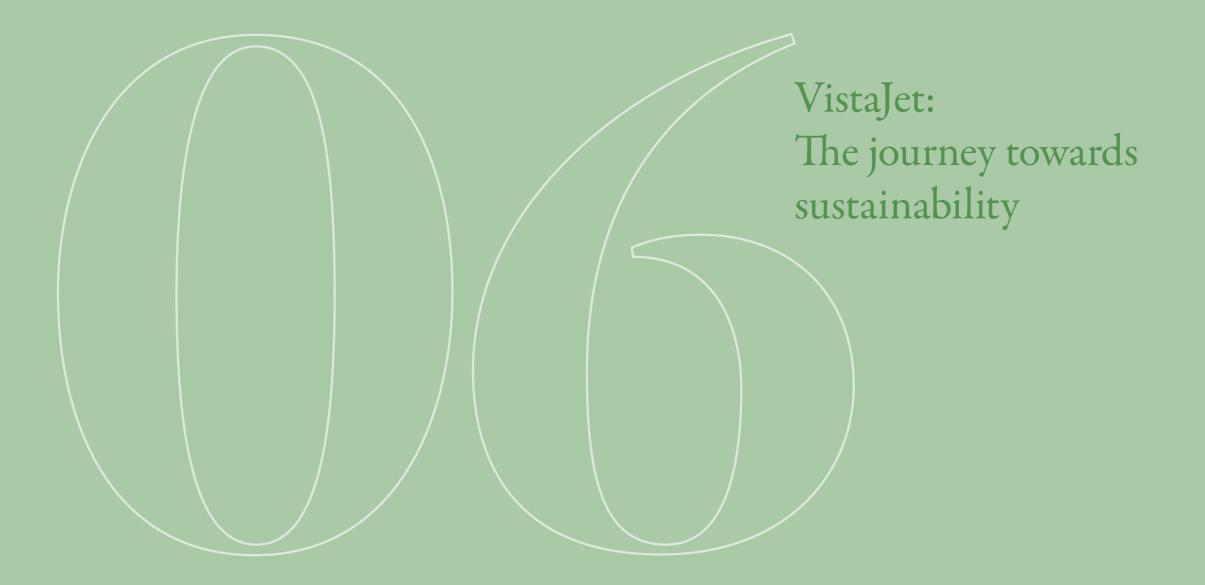
<sup>31</sup> https://biofuels-news.com/display news/14829/iata research shows air passenger demand for sustainable aviation fuels

<sup>32</sup> https://www.ebaa.org/app/uploads/2018/05/14271-BBA-Business-Aviation-Guide-to-SAJF-A4 MAY-2018 PROOF.pdf

<sup>33</sup> European Aviation Environmental Report 2019

<sup>34</sup> https://www.weforum.org/agenda/2019/08/carbon-neutral-flying/





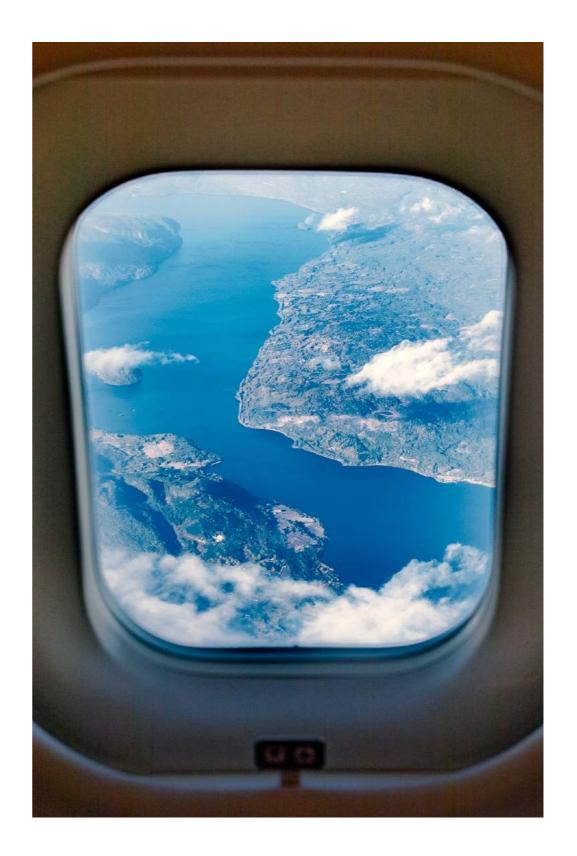
Leaders of the airline industry cannot wait. Taking steps now to reduce carbon emissions, manage climate-related risks, and capitalize on low-carbon opportunities is the only way for the fragmented private aviation industry to show full responsibility.

VistaJet has embarked on a company-wide sustainability journey – to make better use of scarce resources, going beyond compliance with environmental regulations and, ultimately, provide a more environmentally conscious flying experience for its customers.

Every sector of the global travel industry has a responsibility to address environmental impact and sustainability. VistaJet has always been a leader of this very traditional industry. The VistaJet Program revolutionized the market with its focus on shared economy principles. By granting its Members access to a global fleet of over 70 aircraft around the globe, it has increased utilization and minimized inefficient ferry flights, and reduced the number of privately owned aircraft.

Although both private and commercial aviation still have a long way to go to reduce the environmental impact that the international demand for flights generates, VistaJet will build on the success of its core business model to further reduce the environmental impact of private flying. Through the continued evolution and investment in new standards, VistaJet has dedicated itself to reduce its environmental footprint and affect positive change through innovation.

VistaJet's commitment to the environment includes setting company-wide emission reduction targets, optimizing its flying through investments in Artificial Intelligence (AI), adopting biofuels, using sustainable products on board and working with its customers to offset fuel emissions from 2020 onwards through certified carbon credits.



Offsetting fuel emissions

VistaJet is driving further responsibility for the emissions generated by the global fuel consumption of flying around 70,000 passengers per year. From January 2020 onwards all VistaJet's passengers can compensate for fuel use-related carbon emissions from VistaJet aircraft by investing in certified carbon credits.

#### The VistaJet approach to fuel carbon neutrality

#### Including customers

Ensuring that customers are also taking responsibility for the environmental impact of flying, VistaJet contracts include a carbon compensation option for all new Program membership contracts and On Demand global live and ferry flights as of January 1st, 2020.

#### No additional fees

Passengers will contribute to covering the cost of certified carbon credits and can decide to opt-out from the program but are not recommended to do so. VistaJet does not charge any fees for administering the carbon compensation scheme, 100% of contributions by passengers are spent on certified carbon credits.

#### Certified programs

VistaJet has selected emission reduction projects of exceptional quality that adhere to the highest environmental standards (Gold Standard, VCS) and hold additional certifications (CCBS and Social Carbon).

2

# The VistaJet business model and age of aircraft

3

#### A strong investment in Al and technology to minimize CO2 emissions

4

#### Investment in biofuels

## Reducing the number of aircraft

Having a shared fleet means less demand for aircraft manufacturing and enables higher utilization of each existing aircraft. Also, it allows for the choice of the most suitable aircraft for each flight range.

#### A global fleet

VistaJet's global infrastructure, without a need to return an aircraft to its home base, allows for a reduction in repositioning flights around the globe, making flying as efficient as possible.

#### A young fleet

VistaJet's young fleet also means benefitting from the latest aviation technology, for the most efficient flying and a better fuel burn than older aircraft.

VistaJet, alongside its group company Vista Global, has launched a comprehensive program to automate flight optimization and global fleet management, which will promote more efficient aircraft capacities and optimum aircraft loading procedures. Through investment in Artificial Intelligence and machine learning technology, the Group is working on predictive route algorithms in an effort to minimize ferry flights and reduce fuel consumption and CO2 emissions across its entire operations and companies. The program, launched in 2019, will proceed onto testing phases throughout 2020. VistaJet expects major improvements in business efficiency and a reduction of environmental impact per flight.

Using sustainable alternative jet fuels where available. For Sustainable Aviation Fuels to make a tangible contribution to reducing emissions from global air travel, they need to be produced in sufficient quantities and made available across multiple locations worldwide. To further push producers of Sustainable Aviation Fuels, VistaJet commits to creating a lobbying group alongside leading manufacturers and other operators.

Early booking program

VistaJet has launched a discount incentive for all customers who book early, which in turn allows for better fleet optimization, more efficient aircraft capacities, and, ultimately, further reductions in CO2 emissions.

6

On board products

VistaJet has already

removed over 90% of

single-use items from

its cabin and replaced

them with sustainable

alternatives, including

its amenity kits. It has

also switched to more

sustainable materials,

bottles instead of plastic

and packaging products

biodegrades in one year.

More on board products

using starch that fully

are being substituted

for ones made from

such as bamboo or

vegetable sources.

sustainable materials.

such as using glass

7

Working with sustainable partners

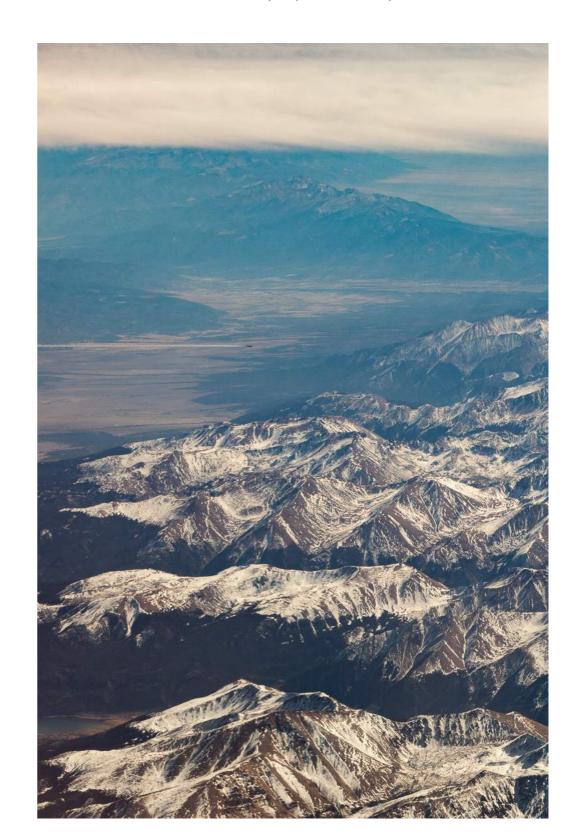
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Future developments

VistaJet partners with carbon neutral companies whenever possible and has set in place more stringent procurement criteria and requirements for all purchasing partners, increasing sustainability across all departments in the business.

During 2020, VistaJet will go through a full audit across the entire business to assess further possibilities and developments. VistaJet is adamant about extending its push to be a sustainable-first company and commits to:

- Estimating the carbon footprint of its operations and offices worldwide in accordance to the principles of the GHG Protocol Corporate Accounting and Reporting Standard<sup>35</sup>;
- Defining an emissions reduction strategy and identifying further opportunities to reduce its greenhouse gas emissions across the business.



35 https://ghgprotocol.org/corporate-standard



VistaJet has selected emission reduction projects of exceptional quality that adhere to the highest environmental standards and hold additional environmental and social certifications.

Passengers can contribute to projects that, not only reduce global greenhouse gas emissions, but also support the well-being of local communities in the countries they fly to.

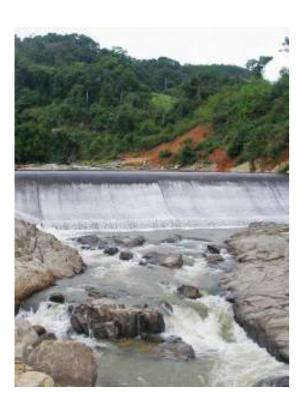
The current VistaJet portfolio includes the following projects:



Tropical Forest Conservation

BRAZIL





## Musi Renewable Hydropower in Sumatra

LOCATION

Sumatra, Indonesia

BENEFITS

Located in rural Sumatra, this run-of-river hydroelectricity project harnesses the flow of the Musi River to generate clean energy for the grid. The project supports local jobs, new income streams, and has funded infrastructure improvements as well as a reforestation program.

tCO2 REDUCED

568,898 reduced on average annually, by displacing fossil-fuel based electricity generation

STANDARD

Verified Carbon Standard, Social Carbon



# Efficient Cookstoves in China

LOCATION

Mamize Nature Reserve, China

BENEFITS

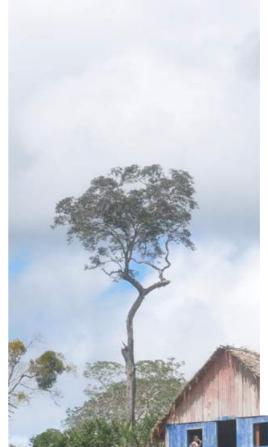
Located in an area renowned for its panda population and subtropical biodiversity, this project in Southwest China provides hundreds of clean, efficient cookstoves to people predominantly of the Yi ethnic minority.

tCO2 REDUCED

5,000 reduced on average annually by avoided deforestation and smoke emissions

STANDARD

Gold Standard



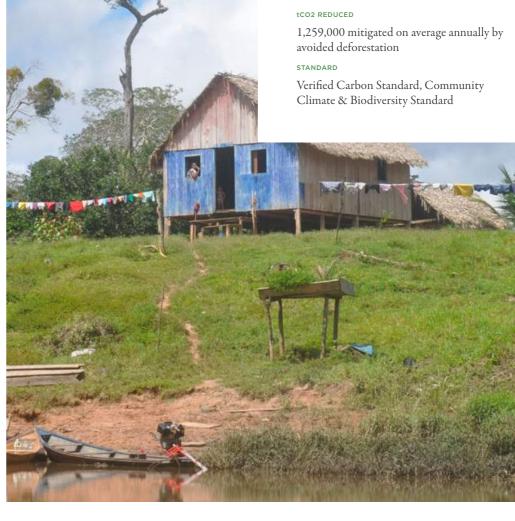
### Amazonia Tropical Forest Conservation, Brazil

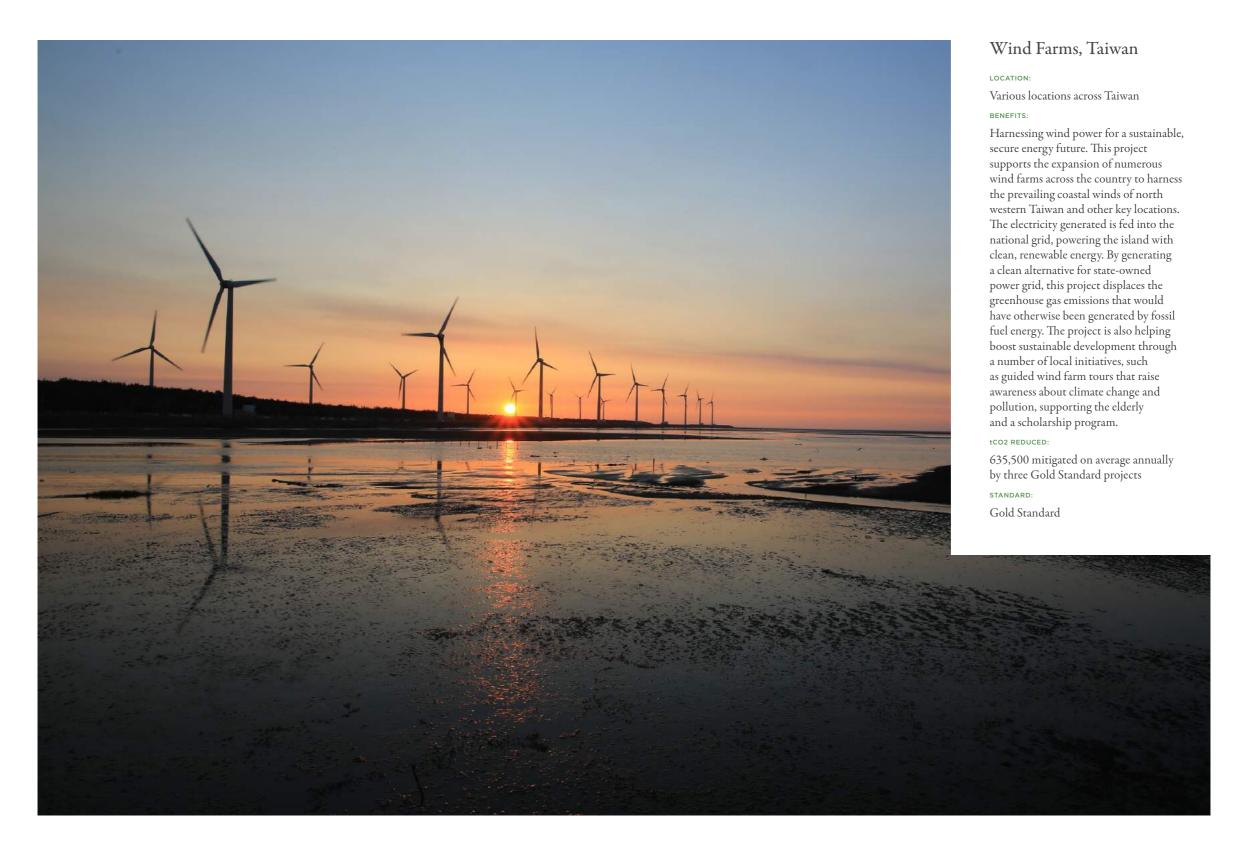
LOCATION

Feijó, State of Acre, Brazil

BENEFITS

Reducing emissions, protecting biodiversity and empowering communities. The Envira project in Brazil's Amazon basin protects 39,300 ha of tropical forest from logging and encroaching cattle ranches, preserving the area's rich biodiversity. The project also fosters economic opportunities for local communities through sustainable farming and the sale of açaí berries and medicinal plants, promotes environmental stewardship, and provides health services and educational courses.







VISTAJET | SUSTAINABILITY IN AVIATION 08 | The path ahead: A collective mission

Business can't wait. Neither can the world. It's time for action. VistaJet pledges to give the climate crisis the attention it deserves. For everyone.

Every sector of the global travel industry as a whole has a responsibility to address environmental impact and sustainability. VistaJet's priority is to reduce its carbon footprint meaningfully and fast, and to explore all routes to higher sustainability. However, only a multi-party contribution can help us reduce the impact at scale and affect a long-term transformation.

As a leader, VistaJet can have a powerful impact around the world, and we welcome our customers' support in more than 180 countries, alongside our colleagues from across the industry. With your help, we can introduce changes to reshape how the industry looks at itself – and take on a global responsibility.

The choice is between doing nothing or doing something.

Let's start change now.

This document has been developed with the assistance of South Pole, a leading provider of global climate solutions with over 300 experts in 18 global offices. The company's expertise covers project and technology finance, data and advisory on sustainability risks and opportunities, as well as the development of environmental commodities such as carbon and renewable energy credits. South Pole has mobilised climate-finance to over 700 projects in emission reduction, renewable energy, energy efficiency and sustainable land-use. The company also supports airlines and other organisations in the aviation space to comply with CORSIA – the international aviation scheme for reducing and offsetting carbon emissions. For more information, visit www.southpole.com.

