



# Environment

Progress, action, impact

May 2023

**BOMBARDIER**

## INTRODUCTION



**“Reducing our environmental footprint and being a leader in sustainable aviation are of the utmost importance at Bombardier. How we deliver results is just as important as what we achieve.”**

ÉRIC MARTEL  
President and Chief Executive Officer

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### **Our vision**

Bombardier supports a respectful approach to environmental challenges; we undertake initiatives to promote greater environmental responsibility; and we invest in the development and diffusion of environmentally friendly technologies. Continual innovation is helping us develop effective solutions to minimize the environmental impacts of our products, services, and operations.

We are constantly improving the environmental performance of our manufacturing, servicing activities, and products across our value chain; and set ambitious goals to reduce carbon emissions, energy consumption and waste generation.

Through our preventive and continuous improvement mindset, we continue to maintain our eligible sites' ISO 14001 environmental management system certifications, making sure environmental risks and impacts are identified, effectively managed, and reduced.

**Bombardier is actively forging a path towards a cohesive sustainable future.**

**We are promoting the use of Sustainable Aviation Fuel (SAF).** We are purchasing SAF through Book-and-Claim for all our flight operations, at a 30% blend. This generates a reduction of approximately 25% in the annual greenhouse gas emissions from fuel use in flight operations.

**Bombardier aircraft lead the way with Environmental Product Declarations (EPDs).** The results of these analyses enable Bombardier to define robust environmental requirements and performance parameters for future products.

**We are working towards the aviation industry goal of net-zero carbon emissions by 2050,** aligned with the Business Aviation Commitment on Climate Change (BACCC) and the International Civil Aviation Organization (ICAO) commitment.

**We are continually investing in new facilities and equipment to improve energy efficiency.** The new *Global* aircraft manufacturing centre at Toronto Pearson International Airport, and upgraded MRO service centres at Singapore Seletar (XSP, WSSL), and London Biggin Hill (BGH, EGKB), are all designed to support the reduction of GHG emissions.

**GHG EMISSIONS**

(scope 1 and 2)  
were 10% lower  
in 2022<sup>1</sup>

**EPDs  
PUBLISHED**

for the *Global 5500*,  
*Global 6500*,  
*Global 7500* and  
*Challenger 3500*

**ENERGY  
CONSUMPTION**

was 7% lower  
in 2022<sup>1</sup>

**WATER  
USE**

was 49% lower  
in 2022<sup>1</sup>

**>40K**

parts assessed for  
*Challenger 3500*  
EPD

**WASTE  
GENERATED**

was 20% lower  
in 2022<sup>1</sup>

1. Compared to 2019

## INCREASING SAF UPLIFT

### Bombardier aircraft can use up to 50% SAF.

The gradual replacement of regular jet fuel with SAF will be a driving force toward reaching net-zero carbon emissions by 2050. Bombardier aircraft are authorized to use all seven types of SAF specifications listed in the applicable American Society for Testing and Materials (ASTM) standard. All Bombardier Aircraft Flight Manuals (AFM) provide this guidance to operators. Today, the maximum blend certified to fly is 50% SAF and 50% traditional jet fuel, according to ASTM standards. The blend of 30% SAF and 70% traditional jet fuel corresponds to what is currently available in North America. SAF is fully fungible with conventional jet fuel, and therefore once a blended batch is created, it may be used at any fixed-base operator or other fuel provider in airport systems and aircraft tanks, fuel systems and engines that contain either 100% conventional fuel, or any previously processed SAF blend.

#### **What is Sustainable Aviation Fuel (SAF)?**

SAF is a blend of conventional fuel and fuel derived from approved sustainable sources. Approved sources to produce sustainable fuels are feedstocks such as used cooking oils, forestry residues and agricultural residues. These cannot come from lands with high biodiversity or carbon stocks, cannot compete with the food chain, and must provide a societal benefit through the development of this new activity. The reduction of greenhouse gas emissions associated with Sustainable Aviation Fuels is achieved throughout their life cycle.

#### **What is Book-and-Claim?**

The Book-and-Claim system allows an aircraft operator to order and pay for SAF without transporting SAF over long distances from where it is available. The paying operator can claim the GHG reductions associated with the use of SAF, and the operator that uses SAF pays for the cost of regular jet fuel and does not claim the reduction in greenhouse gas emissions. The system requires a rigorous accounting of SAF batches and related GHG reductions.



*Global 7500 uplifting SAF at Schiphol Airport, Amsterdam*

## Bombardier is raising sustainability standards by designing and manufacturing aircraft forever challenging existing processes and limitations.

Bombardier is the only civil aircraft manufacturer to have developed four business jets with internationally recognized Environmental Product Declarations. Each EPD is a transparent report which quantifies aircraft materials, and their environmental impact, from sourcing to recyclability.

The flagship *Global 7500* holds the first independently verified EPD in the business aviation sector, followed by the *Challenger 3500* in May 2022 and the *Global 5500* and *Global 6500* in May 2023. The goal is to have an EPD for all in-production aircraft by 2025.



**Bombardier product innovation life cycle** thinking is an integrated feature of the design process, highlighting the significance of different design options, and the subsequent true overall environmental impact these options offer.

## Design and technology

**Bombardier R&D is shaping future sustainable aircraft by combining leading edge aerodynamics, lightweight structures, and highly efficient systems, with advanced engine technologies.** In 2022, Bombardier introduced its EcoJet research platform that aims at delivering technologies to reduce aircraft CO<sub>2</sub> emissions by up to 50% through a combination of advanced aerodynamic shapes and features and emerging low emission propulsion and fuel systems. The project team is modelling, building, and testing prototype models with the blended wing-body concept. Hybrid propulsion concepts are being studied as well as digital and simulation capabilities to further optimize energy demand and accelerate the introduction of new technologies.

### Debate and discussion drive environmental initiatives, which is why Bombardier engages with leading industry groups.

Bombardier is an active member of two key industry coalitions, the SAF Coalition for Business Aviation, and the Air Transport Action Group (ATAG). Each is dedicated to reducing the global carbon footprint of civil aviation.

The SAF Coalition, initiated by Bombardier, is an independent alliance that uniquely brings the business aviation supply chain together to tackle the challenge of sourcing, delivering and uplifting SAF. Bombardier has also been actively engaged with ATAG since 2007, and contributes to many ATAG initiatives, and recommendations.

Bombardier participates in numerous international and Canadian organizations and committees, including IBAC, GAMA, IAEG, ICCAIA, NATA as well as Aéro Montreal, AIAC and C-SAF. Bombardier contributes to international aviation environmental policy and standards by participating in a number of technical working groups at the ICAO Committee on Aviation Environmental Protection (CAEP).

Bombardier is an integral part of the business aviation landscape, and our work with regulators like TCCA, FAA and EASA constructively contributes to the regulatory process.

*“It is a privilege to participate in ICAO CAEP discussions regarding the industry’s environmental objectives, supporting policy development and the adoption of new Standards and Recommended Practices. The opportunity to share information, opinions, and perspectives helps improve future regulations, as well as guide civil aviation towards global sustainability.”*

MARK HUISING, Vice-Chair ICCAIA Aircraft Noise and Emissions Committee;  
and Senior Technical Expert, Engineering at Bombardier



Bombardier EcoJet research platform



**The sustainability imperative is stimulating unprecedented efforts toward reducing GHG emissions, forming foundations for a future that is more respectful of the environment. Bombardier is steadfast in supporting these goals.**

In 2021, we established a plan featuring reduction targets by the end of 2025, by implementing specific initiatives across our company sites:

- 25% reduction in greenhouse gas emissions (scope 1 and 2) by 2025, relative to 2019
- 20% reduction in energy consumption by 2025, relative to 2019
- 20% reduction in hazardous waste by 2025, relative to 2019
- 5% reduction in total waste by 2025, relative to 2019

**We continue maximizing the use of SAF in all Bombardier flight operations** through the Book-and-Claim system.

**We will continue designing efficient products with sustainable materials,** and establish environmental requirements as EPDs for new and in-production aircraft.

**At Bombardier we accept our responsibility to steer towards net-zero carbon emissions by 2050.** Every day we ask ourselves, "What can we do better to ensure a sustainable future?"

BY 2025 WE ARE AIMING TO...

**REDUCE  
ENERGY  
CONSUMPTION**

by 20% compared  
to 2019

**COMMIT  
50% OF R&D  
INVESTMENTS**

toward greener  
aircraft

**REDUCE  
GHG EMISSIONS**

(scope 1 and 2)  
by 25% compared  
to 2019

**Bombardier focuses on manufacturing exceptional business jets and special mission aircraft and servicing them around the globe.**

Bombardier is a global leader in aviation, focused on designing, manufacturing, and servicing the world's most advanced business jets. There is a worldwide fleet of approximately 5,000 Bombardier aircraft in service with a wide variety of multinational corporations, charter and fractional ownership providers, governments, and private individuals.

Bombardier aircraft are also trusted around the world in government and military special mission roles leveraging Bombardier Defense's proven expertise. Headquartered in Greater Montreal, Quebec, Bombardier operates aerostructure, assembly and completion facilities in Canada, the United States and Mexico, and has an expansive and robust global service centre network.

[www.bombardier.com](http://www.bombardier.com)

**Use this QR code to access the 2022 Bombardier Environmental, social and governance report:**

<https://bombardier.com/en/Bombardier-ESG-report-2022.pdf>

Bombardier and Sustainability  
[www.bombardier.com/en/sustainability](http://www.bombardier.com/en/sustainability)

SAF Coalition  
[www.futureofsustainablefuel.com/guide](http://www.futureofsustainablefuel.com/guide)



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