SUSTAINABLE
AEROSPACE
TOGETHER

THE SUSTAINABILITY TRANSITION AND ITS COSTS

Martin Gorricho| EU Sustainability Policy & Partnerships

Decarbonizing Aerospace

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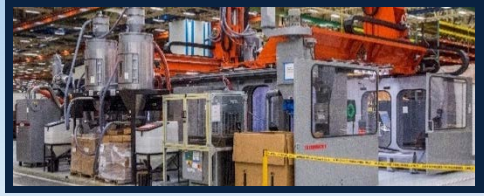
FLEET RENEWAL

OPERATIONAL EFFICIENCY

RENEWABLE ENERGY

ADVANCED TECHNOLOGY



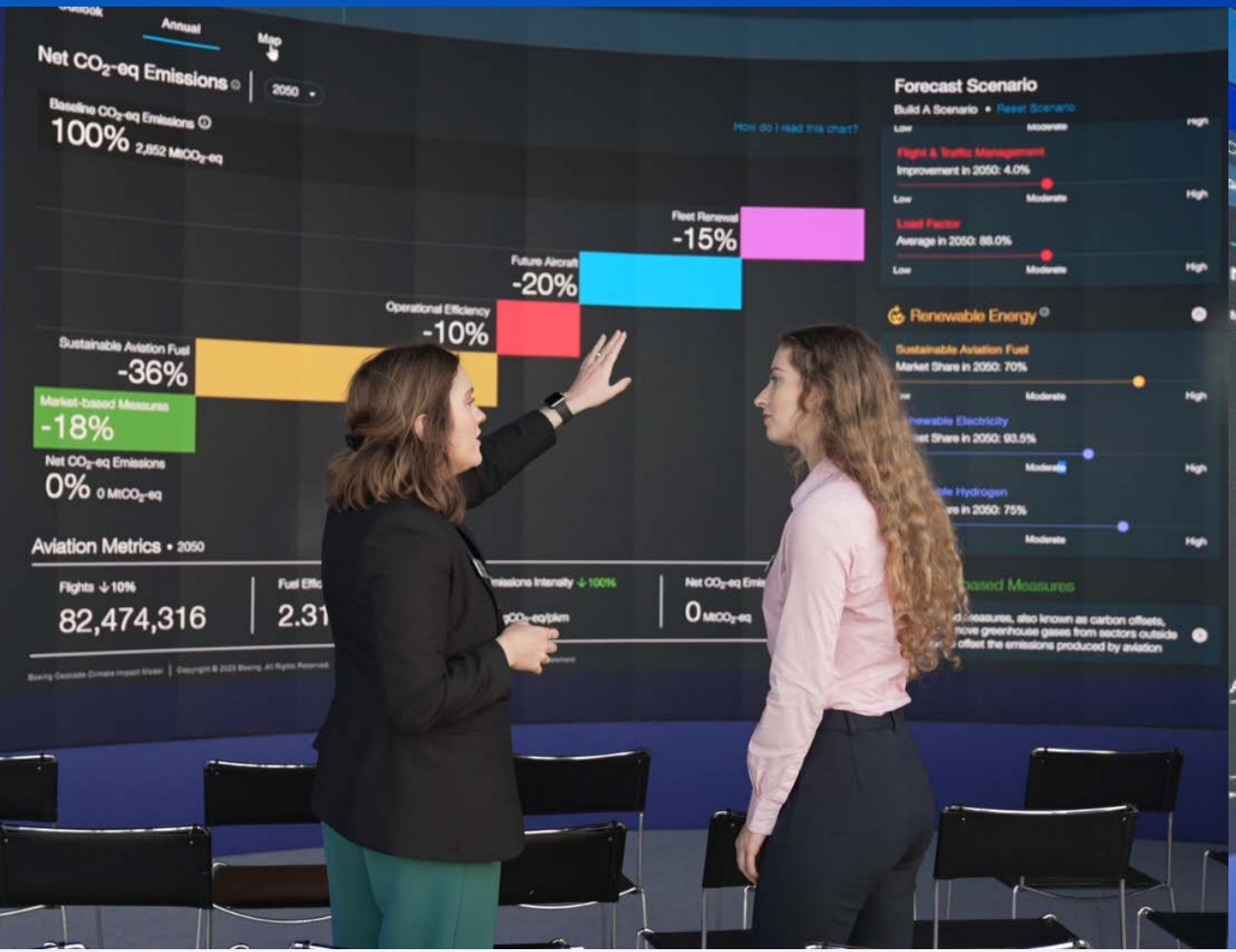
MARKET-BASED MEASURES

CORSIA

CASCADE

BOEING CASCADE CLIMATE IMPACT MODEL

Cascade.Boeing.com



MIT LABORATORY FOR AVIATION AND THE ENVIRONMENT

IATA

UNIVERSITY OF CAMBRIDGE

Aviation Impact Accelerator

NASA

Recent Progress Points

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- **Advancing carbon removal market**
- **Helping scale Sustainable Aviation Fuels (SAF)**
- **Continuing development of Cascade model**
- **100% SAF Compatibility**
- **Informing global and regional policies**

Partnership on SAF scaling and financing

FIREFLY
zero petroleum
Equatic
WAGNER SUSTAINABLE FUELS

New SAF & Carbon Removal partners

Cascade demonstrations at FAS

Contributing to ICAO working groups

SAF

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ClearSky

- Dedicated sustainable aviation investment company

Firefly

- Fuels Testing and Qualification of novel feedstock

Zero Petroleum

- SAF Testing @University of Sheffield

Wagner Sustainable Fuels

- New SAF facility aligned to Australian roadmap

United Airlines Ventures Sustainable Flight Fund (SFF)

SAF projects worldwide

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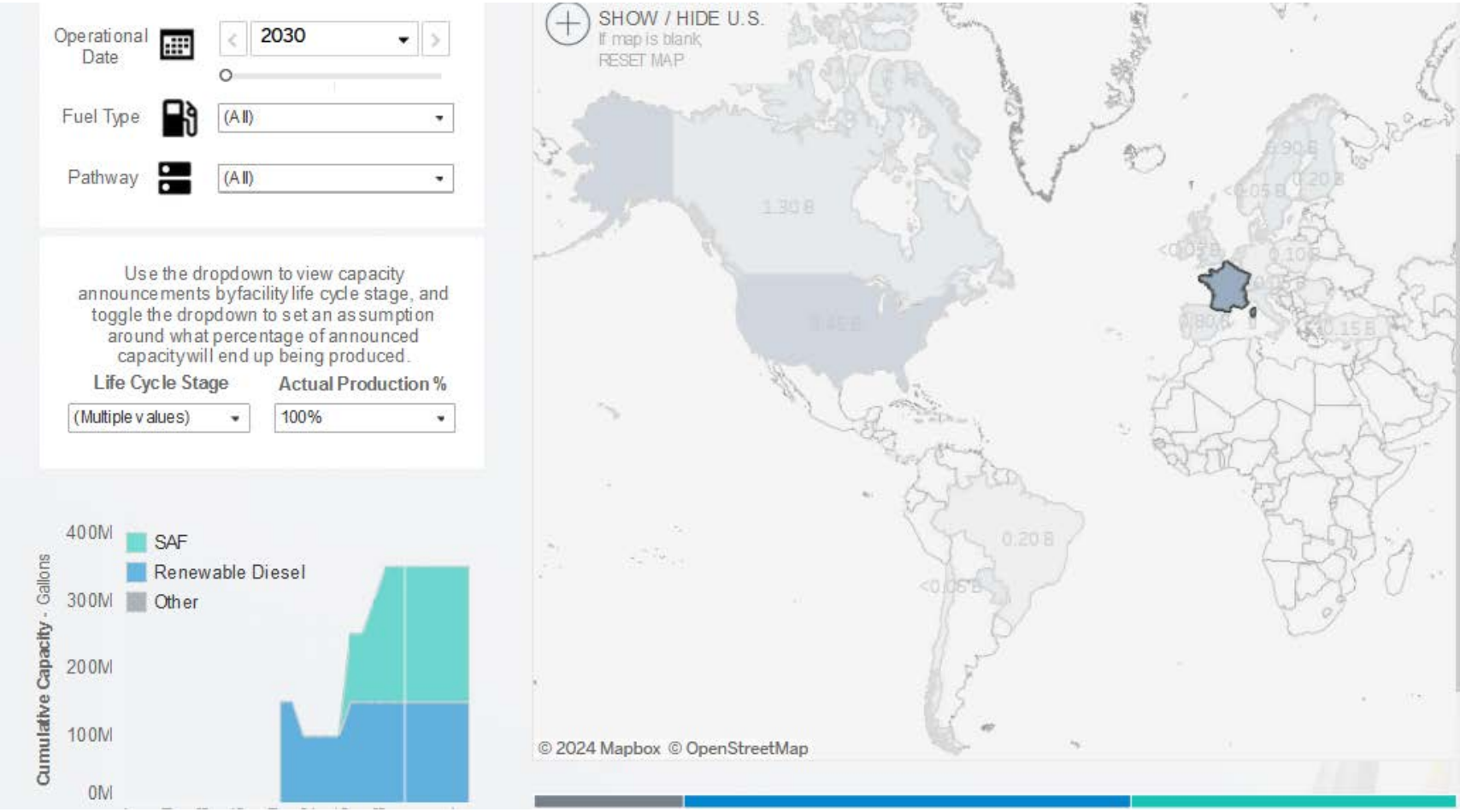
Boeing SAF Dashboard



2030 – 5% CO_2 reduction from SAF and LCAF

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What do the numbers mean?

Assume: ~360Mt jet fuel demand in 2030

24.0 Mt
SAF/LCAF delivered in 2030
(WAERF~75%)

~6.7%
of projected global jet fuel

ICAO forecast for production:
- **16.9 Mt in 2030 (high+)**

Additional 91 announcements since January 2023. Aggregate totaling 12Mt without a success probability applied.

Total facilities required *(using ICAO rule of thumb assumptions)*
- **36 @ ~800,000 tonne output per annum by 2030**

Demand for production from policy measures*:
- **~ 20 Mt in 2030**

**US Grand Challenge, ReFuel EU, UK, China, Turkey, etc Implementation risk exists with some policies.*

Demand from voluntary initiatives
- **4.0(?) Mt in 2030**

**FMC, Scope 3 initiatives and other?*

Estimated cost:
- **~$20 bn** capital for plant construction

SAF mix assumption:
- HEFA: 84%
- AtJ: 7%
- FT: 7%
- PtL: 2%

- **$276m / month**

Reasonableness / pathway to NZE 2050

- Some airlines and States have committed to 5%-10%, while several others are starting from 0%
- **Is it the right mix of realism and ambition?**

Observations on SAF financing

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- Many innovation funds and venture capital firms are **looking to invest**.
- Investors have the **financial capability** to kick-Start the SAF industry.
- Price certainty and duration of offtakes is a key factor. A stronger **signal from demand** is required (more regulation?)
- Larger uncertainty in the **feedstock cost and accessibility**.
- Financing institutions need better understanding of technology and **appetite for this type of risk**, specially if you compare with risks in other industries.
- We will need more predictable, replicable, and scalable **projects**.
- **Risk sharing** mechanisms among the value chain (i.e. United Fund).


BOEING