Decarbonisation: why and how
AFRAA 54\textsuperscript{th} AGA and Summit
Dakar, 12 December 2022

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Worldwide

87.7 million
Jobs supported by aviation worldwide.

$3.5 trillion
Aviation’s global economic impact including direct, indirect, induced and tourism catalytic.

4.1%
Global GDP supported by aviation.

35%
Air transport carries around 35% of world trade by value and less than 1% by volume.

Africa

7.7 million

$63 billion
Our purpose

We pioneer sustainable aerospace for a safe and united world
IATA – ATAG – ICAO Net zero commitment

October 2021

Airline commitment to Net Zero 2050

Target aligned with the objectives of the Paris agreement to limit global warming to 1.5°C.

October 2022
Sustainability is required across the entire lifecycle

- **Design**
- **Supply chain**
- **Manufacturing**
- **Operations**
- **End-of-life**
Our carbon footprint ~ your carbon footprint

Engaging the whole value chain

Scope 3
~475mt CO2eq
Airbus value chain footprint

~0.8 mt
Industrial Operations (Scope 1&2)

~11 mt
Upstream (Scope 3)
Purchased goods and services

~464 mt
Downstream (Scope 3)
Use of sold products

Aligning our approach to recognised standards

TCFD
Supporter of Task Force on Climate-related Financial Disclosures

A- rating in 2021
(stable year-on-year)

Submitted for all Scopes in 2022 - pending validation
24 airlines or groups setting emissions reduction target through SBTi, including 12 with net-zero target in 2050 or before.

American Airlines, Air New Zealand, Lufthansa Group, Easyjet, jetBlue and Delta have their near term target approved by SBTi.
There is no single solution to decarbonise aviation

Airbus supports the ATAG most ambitious technology scenario
Latest generation aircraft

- Fleet replacement yields 20-40% CO2 savings
- 80% of the current fleet is not to the latest standards
Operations & Infrastructures

- Increased efficiency of the current fleet, by up to 10%, with a range of solutions
  - Upgraded aircraft systems
  - Optimized flight trajectories
  - Decarbonised on-ground operations
  - Air Traffic Management
Sustainable Aviation Fuels

- Flying with 100% SAF reduces lifecycle CO2 emissions by up to 85%
- Moving from 50% blends to 100% for all Airbus aircraft by the end of decade
- Industrial uptake needed to increase SAF’s availability
- Coalitions and partnerships to foster scale-up of SAF production
The Sustainable Aviation Fuel
carbon lifecycle

CO₂ emissions are the same as those previously absorbed by feedstock

UP TO 85% reduction in carbon emissions across the lifecycle
Several SAF pathways will contribute to the aviation Net Zero on different timelines pending industrial maturity.
The road to zero: aviation’s energy roadmap

Multiple energy pathways must be accelerated simultaneously to achieve significant emissions reduction. Their success depends on their availability, affordability and scalability.

**Hydrogen**
- Hydrogen economy and infrastructure deployment
- Usage
- Synthetic eFuel (PtL)

**Direct Air Carbon Capture**
- Storage

**Low-carbon power**

**Biomass-based fuel**

- 2020: Deployment
- 2024: Ramp-up
- 2030+: Acceleration of cost-efficient energy transition
- 2050: Start of climate-neutral aviation

**A type of Sustainable Aviation Fuel (SAF) made of renewable feedstock (i.e. used cooking oil, waste, residue, etc.)**
Disruptive technologies

- Ambition to bring a zero emission aircraft to the market by 2035
- Hydrogen as a fuel for turbines and electric motors via fuel cells
- Hydrogen as an ingredient in synthetic SAF
- Developing advanced solutions for hydrogen or kerosene fuelled aircraft (aerodynamics / airframe / propulsion / hybridization)
Introducing Airbus ZEROe

Turboprop
- <100 Passengers
- Hydrogen
- Hybrid Turboprop Engines (x 2)
- 1,000+nm Range
- Liquid Hydrogen Storage & Distribution System

Blended-Wing Body
- <200 Passengers
- Hydrogen
- Hybrid Turboprop Engines (x 2)
- 2,000+nm Range
- Liquid Hydrogen Storage & Distribution System

Turbofan

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Zero Emission Development Centres
Secure a successful product and industrial system co-design to ensure the maturity at Entry Into Service

Filton: Hydrogen Test Bed
Filton: Flanged pipes
Stade & Spain: Cured thin ply coupon panel with "cryo-capable" material
Stade: CFRP* tank components DMU
Bremen: First LH2 tank Pipe Module
Filton: H2 Fuel system testing
Stade: Complementary CFRP* tank components
Bremen: Metallic LH2 Tank
Nantes: Metallic LH2 Tank
Toulouse

*NCFRP: Composite Fiber Reinforced Polymer
Open Fan Technology

Mature & accelerate the development of advanced propulsion technologies

A380 Propulsion Demonstrator
Market-based Measures

- Regulatory measures: European Union’s Emissions Trading System (EU ETS) and the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

- Voluntary measures: Airbus supports carbon removal credits from Direct Air Carbon Capture and Storage - and their future inclusion in regulatory frameworks.
Carbon Engineering (CE) is the developer of the Direct Air Capture (DAC) technology. 1PointFive (1P5) is a development company with a license to build CE’s DAC technology. CE works with 1PointFive to build the world’s largest DAC Plant in the Permian Region of Texas. Airbus invests in Carbon Engineering and offers CE/1P5 DACCS solution at a competitive price for aviation.

Ambition

To have DACCS recognised as a valid option for carbon accounting in connection with CORSIA and EU-ETS.
Sustainable

- Following bold commitments with clear strategy and action
- Using all levers at our disposal, now and into the future
- Working together to achieve a thriving and sustainable industry
Thank you

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