Progress of Alternative Fuels Deployment in Aviation

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To represent, lead and serve the airline industry
Airlines supporting sustainable jet fuel commercialisation

- R&D/Proof of Concept
  - 1st technical certifications
  - Test/demo flights
  - virgin atlantic
  - etc.

- Operational Feasibility
  - Over 2000 commercial flights (single or small series):
    - Lufthansa: 1,100+ flights
    - GOL: 360+ flights
    - KLM: 260+ flights
    - and 20 other airlines

- Commercial-Scale Deals
  - Airline/Supplier offtake agreements, e.g.
    - United
    - AltAir Fuels

- Bioports
  - in preparation:
    - OSL: Oslo Airport
    - LAX: Los Angeles World Airports
    - BioPort Holland
    - Aéroports de Montréal
    - etc.
Reaching Commercial Scale

Airline/supplier offtake agreements

- First bioport with regular operations: Oslo Airport started 22 Jan 2016
- United/AltAir operations started 11 March 2016
- Largest agreement (United/Fulcrum) over 270’000 t/year
- In addition, strong investments by US government (incl. military)
Requirements for sustainable aviation fuels (SAF)

- **Drop-in**
  - Can be blended with existing jet fuel
  - No need for adaptation of aircraft / engines nor parallel infrastructure
  - Technically certified as equivalent to conventional jet fuel

- **Sustainability**
  - Essential requirement for majority of airline customers
  - Globally harmonized acceptance criteria needed

- **Economic viability**
  - Bridge the cost gap with Jet A-1 fuel
  - Ensure a level policy play field between road and air
  - Effective political support needed for sustainable jet fuel deployment

- **Cooperation**
  - Engagement of producers, suppliers, aviation industry and governments, EC and ICAO is essential
Incentives and regulations for SAF

**EU situation**
- RED II draft provides specific incentives for advanced biofuels for aviation
- Biofuel meeting RED is exempted from EU ETS
- So far only the Netherlands recognize SAF as eligible
  - New opportunities with RED II

**US situation**
- Quite effective combination of production and use incentives
  - **Largest deployment projects are in US**
  - Offtake agreements at competitive prices

**International (ICAO)**
- Global market-based mechanism (CORSIA) planned to recognize emissions reduction from SAF use → reduces operators’ obligations
- Harmonized sustainability framework under development
Aviation climate action

(schematic only)

- **2005**: Known technology, operations and infrastructure measures
- **2010**: Economic measures
- **2020**: Biofuels and additional new-generation technologies
- **2030**: CORSIA
- **2040** and **2050**: Net emissions trajectory

1. Improve fleet fuel efficient by 1.5% per year from now until 2020
2. Cap net emissions from 2020 through carbon neutral growth
3. By 2050, net aviation carbon emissions will be half what they were in 2005.

**NO ACTION**

**CARBON-NEUTRAL GROWTH**

-50% BY 2050
How does CORSIA work?

VOLUNTARY
65 States have volunteered to be part of the scheme from 2021 (more States are encouraged to volunteer).

Operators in the States included will offset emissions based on the average CO₂ growth of the aviation sector.

MANDATORY
Exemptions for: Small Islands, Least Developed Countries, Land-locked Developing Countries and States which have less than 0.5% of air traffic (although they can still volunteer).

Operators will offset based on average CO₂ growth of the sector.

Offset obligations shift to include over 20% of individual operator growth.

Offset obligations shift to be over 70% based on individual operator growth.

OVER 80% OF THE GROWTH IN AIR TRAFFIC CO₂ AFTER 2020 WILL BE OFFSET
States included in the first (voluntary) phases

As of 12 October 2016, 66 states have volunteered to be part of CORSIA from the start.
Route-based approach means market distortion is limited
Alternative Fuels in the CORSIA Context

- ICAO is developing recommendations for the recognition of SAF CO$_2$ emissions reduction under CORSIA
- Global nature of the ICAO CORSIA → requires a globally harmonized view of sustainability criteria
- Excellent opportunity for international aviation to define a globally recognized framework for sustainability of alternative fuels
- Build as much as possible upon existing sustainability standards and frameworks
  - Sustainability criteria (environmental, social, economic)
  - Compliance mechanism
Sustainable jet fuels – Airline perspective

- Airlines support sustainable jet fuels as a major instrument to meeting aviation’s long-term emissions reduction goals
- Since early 2016, continuous supply starting:
  - Airline/supplier offtake agreements (mostly US)
  - Bioports (e.g. OSL, LAX)
- Today’s barriers are economic rather than technical
- Sustainability is key requirement for most aviation customers
- Positive political and legislative framework needed
  - Offtake agreements can be at competitive price with right support
  - De-risk investments, encourage production
  - Effective in US
  - ICAO Global Market-based Measure CORSIA
  - New opportunity with RED II
Thank you!

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