Fact Sheet

Alternative Fuels

- Contrary to the ground transport sector, which can use electric energy, aviation has no near-term alternative to liquid hydrocarbon fuels (electric commercial aircraft are unlikely before 2040)
- Therefore, Sustainable Aviation Fuels (SAF) will be the only energy solution to mitigate the emissions growth of the industry in the medium term
- IATA supports research, development and deployment of alternative fuels that meet environmental, societal and economic sustainability criteria. IATA is a member of the Roundtable on Sustainable Biomaterials (RSB), which has developed the most comprehensive sustainability standards for biofuels.
- At the 73rd IATA AGM in Cancun, 2017, IATA members unanimously agreed a resolution on the deployment of SAF, including calling for constructive government policies, and committing to only use fuels which conserve ecological balance and avoid depletion of natural resources.
- Sustainable Aviation Fuels allow airlines to reduce their carbon footprint, ease their dependence on fossil fuels and enjoy benefits from increased energy supply diversification
- Lifecycle greenhouse gas emissions from alternative fuels can be up to 80% lower than traditional jet fuel
- Main requirements for sustainable aviation fuels:
    - Can be safely mixed with conventional jet fuel, can use the same supply infrastructure and do not require adaptation of aircraft or engines
    - Meet the same technical specifications as conventional jet fuel, in particular resistance to cold and high energy content (automotive bioethanol and biodiesel are different and are not suitable)
    - Meet sustainability criteria such as lifecycle carbon reductions, limited fresh water requirements, no competition with food production and no deforestation

Sustainable Aviation Fuels in Practice

- All over the world, multi-stakeholder groups (airlines, airports, aircraft manufacturers, governments, biomass and biofuel producers and suppliers) are working together on initiatives for the deployment of sustainable aviation fuels
- These include CAAFI (US), Ubrabio (Brazil), aireg (Germany), Bioqueroseno (Spain), Bioport Holland (The Netherlands), Plan de Vuelo (Mexico), AISAF (Australia), NISA (Nordic countries), BioFuelNet Canada, and further projects are taking place in China, the UAE, Qatar, Israel and Japan
  Currently there are five production pathways technically certified, 16 more certifications are in preparation
- **Main milestones so far:**
    - **2008** – The first test flight with biojet fuel was performed by Virgin Atlantic
    - **Between 2011 and 2015** – 22 airlines have performed over 2,500 commercial passenger flights with blends of up to 50% biojet fuel from used cooking oil, jatropha, camelina, algae and sugarcane

- **Jan. 2016** – Regular sustainable fuel supply through the common hydrant system started at Oslo Airport. Alternative fuel producer Neste and supplier SkyNRG as well as Air BP are involved
- **Mar. 2016** – United commenced daily flights using sustainable alternative fuel from Los Angeles Airport (LAX), supplied by AltAir. United is the first airline in the world to have introduced alternative jet fuel into normal business operations.
- **Nov. 2017** – The milestone of 100,000 commercial flights using SAF was reached

- Several airlines have concluded long-term offtake agreements with biofuel suppliers, most of which are reported as commercially competitive. A number of airports have agreed to supply SAF through their hydrant system.

Airline/Airport	Supplier	Volume [t/yr]	Conversion technology	Duration	Start delivery	Contract date
United	Altair	17 000	HEFA	3 years	2016	2013
Cathay	Fulcrum	100 000	FT/Municipal waste	10 years	2019	2014
FedEx/Southwest	Red Rock	10 000	FT/Forest residues	8 years	2017	2014
United	Fulcrum	270 000+	FT Municipal waste	10 years	2019	2015
JetBlue	SG Preston	100 000	HEFA	10 years	2019	2016
Qantas	SG Preston	80 000	HEFA	10 years	2020	2017
Oslo Airport	Neste / Alt Air	250	HEFA	1 Year	2016	2016
Brisbane Airport	GEVO	80	AtJ	2 years	2018	2017
Toronto Airport	Alt Air	200	HEFA	1 year	2017	2016
Geneva Airport	TBD	1%	TBD	5 years	2018	2017

IATA's Strategic Action Plan

- **Industry actions**
  - Developed an industry roadmap (2015) highlighting best practice for technology adoption, policy and regulation, economics, sustainability and accounting standards
  - Provide industry leadership on best practice concerning: sustainability standards, accounting procedures, logistics, communication, effective policy and business case development
  - Influence policy negotiations towards a level incentive playing field with road transport

- **Role of governments**
  - Adopt globally-recognized sustainability standards and work to harmonize global standards
  - Allow sustainable aviation fuel to compete on an equal basis with ground transport through equivalent public incentives ("level the playing field")

- Encourage user-friendly sustainable aviation fuel accounting methods and work to harmonize global standards
- Support sustainable aviation fuel R&D and demonstration plants
- Implement effective policy to de-risk investments into sustainable aviation fuel production plants
- Engage in public-private partnerships for sustainable aviation fuel production and supply
- Commit to policy certainty or at a minimum policy timeframes that match investment timeframes

Challenges and opportunities – both political and commercial

- Currently, a number of alternative jet fuel production pathways are more expensive than fossil Jet A/A1.
- Risks for investment in production infrastructure can be mitigated by carefully designed policy to encourage the development of SAF production capacity.
- In the United States, a combination of incentives according to the Renewable Fuel Standard (RFS), support for building up new-technology production plants and incentives for agriculture, under the right conditions, can open the possibility of price-competitive sustainable aviation fuel being available.
- The Netherlands is the only EU Member State that recognizes the use of aviation biofuels as counting towards the EU renewable energy goals. The EU has recently announced plans to revise the Renewable Energy Directive, including proposals to increase incentives for sustainable aviation fuels.
- Indonesia has introduced an alternative jet fuel mandate of 2% commencing in 2018, rising to 5% by 2025
- The effectiveness of different policy mechanisms for commercially deploying meaningful quantities of sustainable alternative jet fuel is being studied by the ICAO Alternative Fuel Task Force during the CAEP/11 cycle (2016-2019)