ICAO’s Aviation Sustainability Efforts

Tan Kah Han
Senior Director (Unmanned Systems Group)
CAEP Member of Singapore

AviAsian Conference 2021
Presentation overview

• Aspirational goals

• Basket of measures
  • Technology and operational improvements
  • CORSIA
  • Sustainable Aviation Fuels

• Other developments
ICAO oversees sustainability efforts for international aviation

- Environmental role of ICAO enshrined in UN Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol
  - Article 2.2 ‘Parties included in Annex I shall pursue limitation or reduction of emissions of greenhouse gases … working through the International Civil Aviation Organization and the International Maritime Organization, respectively’

- ICAO’s Assembly Resolution on Climate Change (A40-18) sets out ICAO’s role, policies and practices

- Technical work on environment is done by Committee on Aviation Environmental Protection (CAEP)
  - Comprises technical experts from States and the industry
  - Reports directly to the Council
  - Covers CO2, Noise, NvPM Standards and many other areas associated with environment protection.
Committee on Aviation Environment Protection (CAEP)

**1970**
- CAN (Noise)

**1977**
- CAEE (Emissions)

**1983**
- CAEP

- Established by the ICAO Council in 1983, supersedes CAN and CAEE
- A long history of assisting the ICAO Council in formulating new policies and adopting new SARPs for aircraft noise and aircraft engine emissions
- It is a technical committee and reports to the ICAO Council
CAEP structure and working groups

CAEP Structure (Leading up to CAEP/12)

ICAQ Council

CAEP Chairperson

CAEP Vice-Chairpersons

CAEP Membership

CAEP Secretary

WG1 Noise

WG2 Airports and Operations

WG3 Emissions

WG4 CORSIA

FTG Fuels Task Group

LTAGTG Long Term Aspirational Goal Task Group

MDG Modeling and Databases Group

FESG Forecast and Economic Analysis Support Group

ACCS Aviation Carbon Calculator Support Group

ISG Impacts and Science Group

SCSEG Sustainability Certification Schemes Evaluation Group
ICAO’s global aspirational goals

**Existing**

- Established at 37th ICAO Assembly in 2010:
  1) 2% annual fuel efficiency improvement through 2050
  2) Carbon neutral growth from 2020 (CNG2020)

**Under development**

- A long-term aspirational goal (LTAG) is being developed, and its progress will be presented at the 41st Assembly in 2022
  - Bottom-up approach driven by CAEP
  - Engagement of States through Global Aviation Dialogues

---

*Source: ICAO*
A ‘Basket of Measures’ approach has been developed by ICAO to achieve its environmental goals.

- Aircraft technology
- Operational improvements
- Market-based measures
- Sustainable aviation fuels

Source: ICAO

Source: ICAO
Basket of Measures: Technology and Operational improvements

**Technology**

- Improvements to aircraft technologies increase fuel efficiencies and reduce fuel burn and CO2 emissions
- The ICAO Aeroplane CO2 Emissions Standard, adopted in 2017, ensures that the latest fuel efficiency technologies are implemented into new aircraft

**Operations**

- Efficient and optimised air traffic management (ATM) procedures reduce fuel burn and CO2 emissions
- ICAO’s Global Air Navigation Plan (GANP) and Aviation System Block Upgrades (ASBUs) are major initiatives developed by ICAO to improve operational efficiencies
Basket of Measures: Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

- First global MBM scheme for any industry sector
- Scheme works by having airlines **offset annual increases in total carbon emissions from international aviation above 2019* levels**, via reduction through **carbon offsets** and/or **sustainable aviation fuels**
  - CORSIA a key enabler of ICAO’s CNG2020 target
- Adopted in 2016. Came into effect this year, taking on a phased implementation approach.
  - 88 voluntary States in 2021, to increase to 106 in 2022

**Pilot Phase (voluntary)**
2021-2023

**First Phase (voluntary)**
2024-2026

**Second Phase**
(2027-2035)
At least 90% coverage of international aviation activity

*For further review in 2022
Basket of Measures: Sustainable Aviation Fuels (SAF)

- SAF offers significantly lower lifecycle CO2 emissions and reduced non-CO2 emissions compared to conventional fossil jet fuel
  - Up to 80% depending on conversion technology and supply chain setup.
- SAF certified to same ASTM standards as conventional fossil jet fuel
  - No need for additional infrastructure, suitable for all aircraft with no change in turnaround times
- Rapid developments in past decade
  - Growing commercial scale production
  - Diversified feedstock/technology options
  - Increase in SAF demand from airlines
  - SAF prices have reduced – but price parity not expected in foreseeable future
Basket of Measures: Sustainable Aviation Fuels (SAF)

- ICAO has established sustainability criteria for SAF use under CORSIA
  - To ensure life cycle emissions reductions and for feedstock not to be obtained from land with high carbon stock
  - Additional criteria being developed to address other aspects of sustainability (e.g. impacts to water, soil, and air)
- ICAO’s Second Conference on Aviation and Alternative Fuels (2017) endorsed the 2050 ICAO Vision for SAF, calling for a significant proportion of SAF use by 2050
- ICAO tracks developments on SAF and publishes facts and figures on its website
Other developments at ICAO

• ICAO Global Coalition for Sustainable Aviation
  • Comprises industry and research partners working towards innovative climate solutions for aviation

• ICAO Stocktaking Seminar on Aviation CO2 Emissions
  • A platform for industry, States, technology providers and researchers to discuss and share plans for decarbonising international aviation
  • Upcoming seminar to be held on 31 Aug – 3 Sep

• ICAO State Action Plan initiative
  • Encourages ICAO Member States to establish long-term strategies for climate change, updated every three years
  • Guidance documents, tools, and capacity building support provided