



WORKING PAPER

CONFERENCE ON AVIATION AND ALTERNATIVE FUELS

Mexico City, Mexico, 11 to 13 October 2017

Agenda Item 1: Developments in research and certification of aviation alternative fuels

OUTCOMES OF THE ICAO SEMINAR ON ALTERNATIVE FUELS

(Presented by the ICAO Secretariat)

SUMMARY

In February 2017, ICAO hosted a Seminar on Alternative Fuels in Montreal, with the objective of providing a basis for the planning of CAAF/2. This paper provides a brief overview of the discussions that took place on this Seminar.

Action by the Conference is in paragraph 5.

1. INTRODUCTION

1.1 In preparation for the convening of the second ICAO Conference on Aviation and Alternative Fuels (CAAF/2), ICAO hosted the ICAO Alternative Fuels Seminar in Montreal, Canada from 8 – 9 February 2017. This Seminar reviewed the state of worldwide activities on the use of aviation alternative fuels (AAF), life-cycle analysis methodologies and sustainability criteria, financing and assistance programmes, and the legal and regulatory frameworks that support the development and deployment of these fuels in aviation.

1.2 Pursuant to the discussions conducted during the 39th Session of the ICAO Assembly, the Seminar provided a forum for the exchange of information and networking among States and industry stakeholders. Throughout the two days of the seminar, fifty speakers presented throughout six sessions of presentations and two Roundtables. The information presented throughout the Seminar served as a basis for CAAF/2. The presentations delivered as a part of this Seminar are available from the ICAO Events Webpage¹:

1.3 The ICAO Secretariat opened the Seminar with an overview of the current status of AAF industry. To date, there are five approved conversion processes for producing AAF and three airports distributing AAF on a regular basis. While these figures are promising, the Secretariat encouraged States and stakeholders not to lose momentum and urged States and stakeholders to use this Seminar as a starting point to strengthen ties and further discussions on the future of AAFs.

¹ <http://www.icao.int/Meetings/altfuels17/Pages/programme.aspx>

2. OPENING ROUNDTABLE – INDUSTRY VISIONS FOR SUSTAINABLE AVIATION FUELS

2.1 The Seminar opened with a Roundtable titled “What is Your Vision on Sustainable Aviation Fuels” in which main industry players unveiled their vision on SAFs and shared views on what is needed to turn their vision into a reality. This Roundtable had representatives from Carbon War Room, Sustainable Energy for All (SE4ALL), Airports Council International (ACI), Air Transport Action Group (ATAG), and the International Coordinating Council of Aerospace Industries Associations (ICCAIA). Every presenter started by highlighting the many successes of the AAF industry to date and provided specific examples most relevant to their own organization’s work.

2.2 Each presenter impressed the importance of further progressing various aspects of the AAF industry. Presenters emphasized the needs to advance technology, improve financial stability, ensure that all relevant industry stakeholders are involved in the discussion, cooperate further with other sectors, and adopt policies.

2.3 In order to ensure that AAFs are more widely deployed in the future, several presenters specifically indicated that there is a need to involve more airports in these discussions. Presenters gave examples of the successes at Oslo Gardermoen Airport, Los Angeles International Airport, and Stockholm Arlanda Airport. These examples were used to show the importance of cooperation among a wide variety of stakeholders. Especially in regard to Oslo and Stockholm, the presenters indicated the advantages of regional-scale projects.

2.4 In the discussion of policies, the presenters emphasized the need to include more than just governments in the process, but also the relevant industry stakeholders, i.e. airports, airlines, fuel producers, sustainability certification bodies, and international organizations. Presenters also expressed a need for collaboration with stakeholders beyond the aviation industry, i.e. financial institutions, agricultural stakeholders, and other transportation sectors.

3. OVERVIEW OF INFORMATION PRESENTED DURING THE SEMINAR SESSIONS

3.1 The Seminar consisted of six informational Sessions, which each included a brief closing Question & Answer session (Appendix A). The sessions focused on a range of AAF aspects, including sustainability, successful deployment, upcoming technologies, financial assistance, partnerships, and challenges related to policies. Presenters included International Organizations, State governments, certification bodies, airlines, airports, fuel producers, aircraft manufactures, universities, and multi-partner organizations.

3.2 The diverse backgrounds of the speakers allowed the Seminar participants to consider a range of perspectives on the development and deployment of alternative fuels. While these Speakers represent many different aspects of the industry, some themes appeared throughout the presentations, which can be summarized at the following topics: the broader benefits of AAFs, the importance of economic models, considering wider policy approaches, and the importance of certification and sustainability.

3.2.1 Beyond recognizing the potential emissions reductions attributable to the use of AAFs, several speakers invited Seminar participants to consider these benefits from a broader perspective. They

highlighted that the production of aviation alternative fuels can potentially promote rural development through the creation of jobs and new economic opportunities along the value chain. The development of AAF industry can cause a reutilization of unproductive farmland or closed fuel production facilities. These speakers encouraged interested stakeholders to follow the examples of successful deployment initiatives.

3.2.2 Many Speakers highlighted the need to reduce the financial risks associated with the development of AAFs. Several experts suggested economic models to respond to these challenges. One example is the establishment of economic incentives to promote the use of AAFs and follow-up measures to ensure a stable demand. Another example was to stimulate demand for AAF by promoting environmental matters within government policies.

3.2.3 Building upon point 3.2.2, speakers also suggested that States take a wider policy approach when developing policies surrounding AAFs. Many speakers promoted the integration of aviation into existing policies on alternative fuels, in order to ensure that best-practices are followed. Since aviation does not have a practical alternative to liquid fuel for the near to mid-future, several speakers asked States to consider providing a priority to AAF development over alternative fuels developed for other sectors which can be more easily electrified, such as ground transportation. Speakers also suggested that research and development of AAFs could be promoted by government-offered grants, subsidies, or low-risk credit schemes. Some speakers even suggested the possibility of implementing mandates requiring that airlines uptake a given amount of AAF every year.

3.2.4 Finally, there was an overarching trend among the Speakers that certification and sustainability are key for the future of AAFs. Speakers highlighted the importance of reliability in the testing of fuels for technical certification. For specific sustainability certification, there were many requests to ensure that the barriers are not too stringent, as this could obstruct new AAF pathways and producers from entering the market. Additionally, there were many requests that any new sustainability standards should, to the extent possible, draw upon existing certification standards and frameworks. The general theme of sustainability throughout the presentations indicated that Speakers are interested in ensuring the sustainability of AAFs, as production is scaled up in the future.

3.3 The information provided throughout these sessions suggested that, while there have been many successes related to the deployment of AAFs to date, there are still many areas in which more work can be done. Speakers presented potential new pathways, and overall, highlighted the importance of working cooperatively not only within stakeholders from the aviation industry, but also with other industries.

4. MAPPING THE FUTURE AND FLIGHTPATH TO MEXICO

4.1 The ICAO Secretariat presented a Session titled “Mapping the Future” in which the CAEP/10 alternative fuels scenario and future developments were mapped together as a vision for SAFs. Throughout the Seminar, each presenter provided their top three “recommendations to facilitate the development and deployment of alternative fuels.” A summary of those recommendations was developed by the Secretariat and presented to the Seminar attendees, who were polled to determine which of the summarized recommendations they thought were most important.

4.2 All these responses were consolidated and in a graphical form during this session, as shown in Appendix B. Based on the analysis by the Secretariat, the top three recommendations by the presenters were to 1) reduce financial risks, 2) develop supporting policies, and 3) provide a level playing field for SAFs. These requests were then compared with the poll responses received from the Seminar participants. Similarly, these top three recommendations by the Presenters also appeared within the most common responses from the Seminar participants.

4.3 Following the Mapping the Future presentation, the Seminar concluded with a high-level roundtable titled, “Flightpath to Mexico” in which State Representatives discussed essential building blocks for CAAF/2. These Representatives highlighted three main areas that should be considered when developing alternative fuels policies for aviation. Those are, 1) ensuring cooperation between States, stakeholders, and other industries, 2) economic considerations including carbon pricing, and 3) allowing the vision for SAFs to be flexible enough to follow the aviation industry into the future.

5. ACTION BY THE CAAF/2

5.1 The CAAF/2 is invited to:

- a) acknowledge the value of the ICAO Seminar on Alternative Fuels to serve as the basis for this Conference; and
- b) consider the views provided by the Seminar presenters to facilitate the development and deployment of sustainable aviation fuels when discussing the ICAO Vision on Aviation Alternative Fuels.

APPENDIX A
ICAO SEMINAR ON ALTERNATIVE FUELS – AGENDA
(presentations are available at <http://www.icao.int/Meetings/altfuels17/Pages/programme.aspx>)



Wednesday, 8 February 2017

- 0800 **Registration Open**
- 0900 **Welcome and Introduction**
Olumuyiwa Benard Aliu, President of the ICAO Council
Rachel Kyte, CEO of Sustainable Energy for All (SE4ALL) and Special Representative of the UN Secretary-General
Jane Hupe, Deputy Director Environment, ICAO
- 0930 **Roundtable – What is Your Vision on Sustainable Alternative Fuels ?**
Moderated by: Shinji Matsui, Japan
Main industry players will unveil their vision on aviation alternative fuels and share views on what is needed to turn the vision into a reality.
Adam Klauber, Carbon War Room
Gerard Ostheimer, SE4ALL
Michael Rossell, Airports Council International (ACI)
Michael Gill, Air Transport Aviation Group (ATAG)
Michel Wachenheim, International Coordinating Council of Aerospace Industries Associations (ICCAIA)
- 1045 **Coffee Break – Sponsored by **BOMBARDIER****
the evolution of mobility
- 1115 **Session 1 – Stamped: Certification and Sustainability of Aviation Alternative Fuels**
Moderated by: Mitzi Gurgel Valente da Costa, Brazil
Speakers are invited to share existing alternative fuels certification processes and discuss fuels sustainability criteria.
Discussion will include a Question and Answer (Q&A) session.
Mark Rumizen, U.S. Federal Aviation Administration (FAA)
Thomas Roetger and Pedro Piris Cabezas, Committee on Aviation Environment Protection (CAEP) Alternative Fuels Task Force (AFTF) Sustainability Task Group Co-Leads
Norbert Schmitz, International Sustainability & Carbon Certification (ISCC)
Daniel Strechay, Roundtable on Sustainable Palm Oil (RSPO)
Elena Schmidt, Roundtable on Sustainable Biomaterials (RSB)
Matthew Rudolf, SCS Global Services
- 1230 **Lunch Break**
- 1400 **Session 2 – In the Tank Now: Successful Deployment of Aviation Alternative Fuels**
Moderated by: Wendy Drukier, Canada
Fuel producers, airlines and alternative fuels coalitions are invited to share their experience in deploying aviation alternative fuels and to identify which factors have been instrumental in achieving those outcomes.
Discussion will include a Q&A session.
Jim Hileman, U.S. FAA
Henrik Erametsa, Neste
Angela Foster Rice, United Airlines
Fokko Kroesen, KLM
Olav Mosvold Larsen, Avinor/Oslo Airport
- 1515 **Coffee Break – Sponsored by **NESTE****
The only way is forward
- 1545 **Session 3 – Next in the Production Line: What to Expect for Future Development and Production of Aviation Alternative Fuels**
Moderated by: Mohammad Salem, United Arab Emirates
Speakers will provide insight on short and long term plans for the development and deployment of alternative fuels and will highlight the importance of innovation for the deployment of new concepts.
Discussion will include a Q&A session.
Arne Roth, Bauhaus Luftfahrt e.V.
Simon Blakey, University of Sheffield
Glenn Johnston, Gevo Inc.
Laurel Harmon, LanzaTech
Bruno Miller, Fulcrum BioEnergy
Michael B Lakeman, Boeing
Robert Wood, Virgin Australia
Leigh Hudson, International Airlines Group





**ICAO SEMINAR ON
ALTERNATIVE FUELS 2017**
ICAO Headquarters, Montréal, 8-9 February 2017



Thursday, 9 February 2017

0900 Session 4 – Catalysing Energies: Initiatives & Partnerships for Aviation Alternative Fuels

Moderated by: Dionisio Méndez Mayora, Mexico
Speakers will showcase innovative approaches and successful joint-initiatives to catalyse the efforts from governments, researchers, and fuel producers including new business models for the sector.

Discussion will include a Q&A session.

Nate Brown, Commercial Aviation Alternative Fuels Initiative (CAAFI)
María de la Rica Jiménez, Bioqueroseno / Initiative Towards sustainable Kerosene for Aviation (ITAKA)
Mike Lu, Brazilian Biojetfuel Platform
Saptandri Widiyanto, Indonesian Aviation Biofuels and Renewable Energy Task Force (ABRETF)
Jorge Nevarez Jacobo, Aeropuertos y Servicios Auxiliares
Alejandro Rios G, Masdar's Sustainable Bioenergy Consortium
Frederic Eychenne, Airbus

1030 Coffee Break – Sponsored by **BOMBARDIER**
the evolution of mobility

1100 Session 5 – Game Changers: Financing and Assistance

Moderated by: Mercy Beatrice Awori, Kenya
Representatives from various financing and assistance projects will highlight how investment can unlock the potential for aviation alternative fuels deployment.

Discussion will include a Q&A session.

Eduardo Caldera Petit, ICAO/EU Assistance Project
Melissa Hernandez, UNDP
Mena Salib, Air Canada
Charlotte Hardenbol, SkyNRG
Theye Veen, Fly Green Fund

1200 Lunch Break

1330 Session 6 – Policy Challenges and New Mechanisms

Moderated by: Mark Rodmell, United Kingdom
States and International Organizations will identify the main components of their policy frameworks for aviation alternative fuels in light of new clean energy regulations. The discussion will also include the role of alternative fuels in the recently adopted Carbon Offsetting and Reduction Scheme for International Aviation (CORSA).

Discussion will include a Q&A session.

Robert Boyd and Wendy Aritenang, CAEP AFTF Policy Task Group Co-Leads
Carlos Calvo Ambel, ICASA
Jane Hupe, Deputy Director Environment, ICAO
Wendy Aritenang, Indonesia Biofuels & Renewable Energy
Lourdes Maurice, U.S. FAA
Peter Vis, European Commission, DG MOVE
Pedro Scorza, GOL
Michael Gill, ATAG

1515 Coffee Break – Sponsored by **Centre for International Governance Innovation**

1545 Mapping the Future

The CAEP/10 alternative fuels scenario and future developments will be mapped together as a vision for sustainable alternative fuels.

Jane Hupe, Deputy Director Environment, ICAO

1600 High-level Roundtable – Flightpath to Mexico

Moderated by: Jane Hupe, ICAO
State Representatives will discuss essential building blocks for the ICAO High-Level Conference on Aviation Alternative Fuels in October 2017.

Mitzi Gurgel Valente da Costa, Brazil, ICAO Council
Wendy Drukier, Canada, ICAO Council
Mohammad Salem, United Arab Emirates, ICAO Council
Dionisio Méndez Mayora, Mexico, ICAO Council
Mercy Beatrice Awori, Kenya, ICAO Council
Mark Rodmell, United Kingdom, ICAO Council

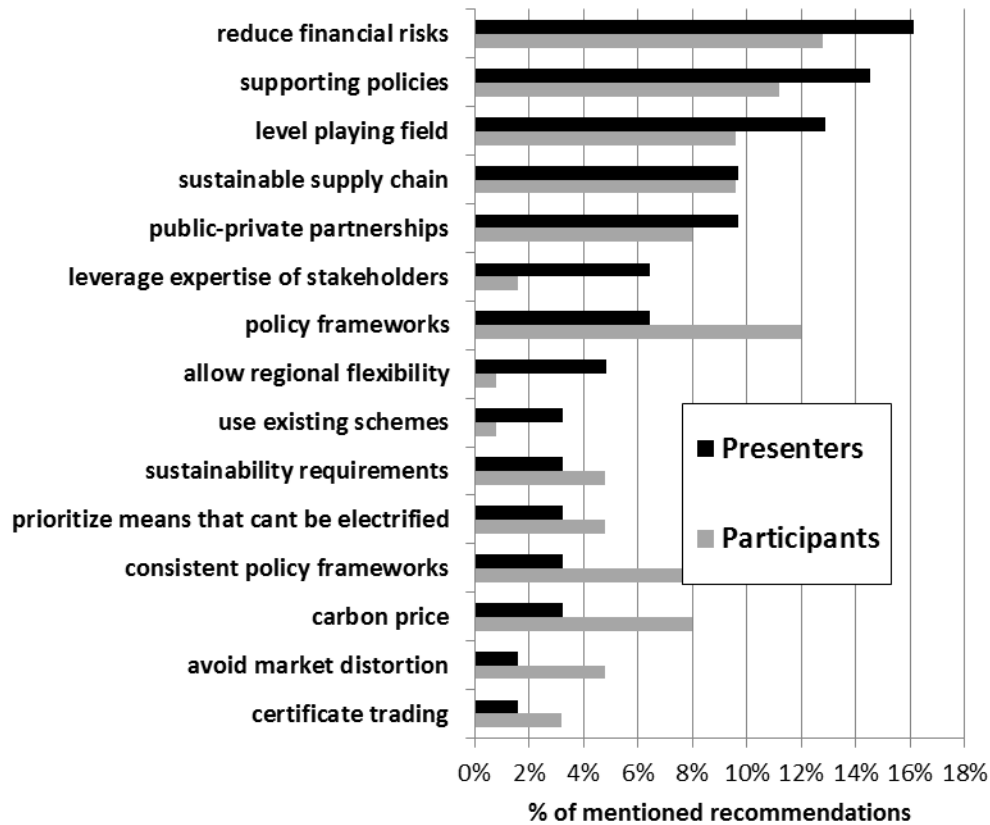
1700 Wrap-up and Closing Session

Boubacar Djibo, Director of the Air Transport Bureau, ICAO



APPENDIX B

RECOMMENDATIONS TO FACILITATE THE DEVELOPMENT AND DEPLOYMENT OF ALTERNATIVE FUELS (“MAPPING THE FUTURE” SESSION)



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