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CONFERENCE ON AVIATION AND ALTERNATIVE FUELS

Rio de Janeiro, Brazil, 16 to 18 November 2009

Agenda Item 1: Environmental sustainability and interdependencies

ENSURING SUSTAINABILITY OF RENEWABLE AVIATION FUELS

(Presented by the International Coordinating Council
of Aerospace Industries Associations)

1. INTRODUCTION

1.1 The International Civil Aviation Organization (ICAO), a UN specialized agency containing 190 member states from around the world, is the global forum for civil aviation. ICAO works to achieve its mandate to ensure safe, secure and sustainable development of civil aviation through cooperation amongst its member states. ICAO has developed a range of standards, policies and guidance material for the application of integrated measures to address aircraft noise and engine emissions. In 2004, ICAO and its member states resolved to continue striving for reductions in aircraft noise and emissions, including GHG emissions. Accordingly ICAO has an interest in new avenues to reduce emissions from aviation and has organized this conference to develop opportunities for alternative fuels that may have lower lifecycle emissions than currently approved fuels.

2. SUPPORTING MATERIAL

2.1 ICCAIA encourages adoption of policies that improve the ability of manufacturers to invest in innovation and technology, consistent with international trade obligations, and ICAO CAEP to develop appropriate technical data and methodology for evaluating aircraft/engine fuel efficiency.

2.2 As presented by ACI, CANSO, IATA and ICCAIA at recent ICAO meetings, industry is committed to work with ICAO to forge a global framework to reduce aviation CO_2 emissions. The role for manufacturers is to develop and deliver more fuel-efficient equipment and products and to support development of alternative fuels in such a framework. One of the opportunities for reducing the emissions footprint of aviation is the development of renewable alternative or so-called “low carbon” fuels. Implementation of this opportunity, however, requires that many elements be successfully addressed. Ensuring appropriate sustainability practices are utilized in the sourcing of the feedstock is a foundational need.

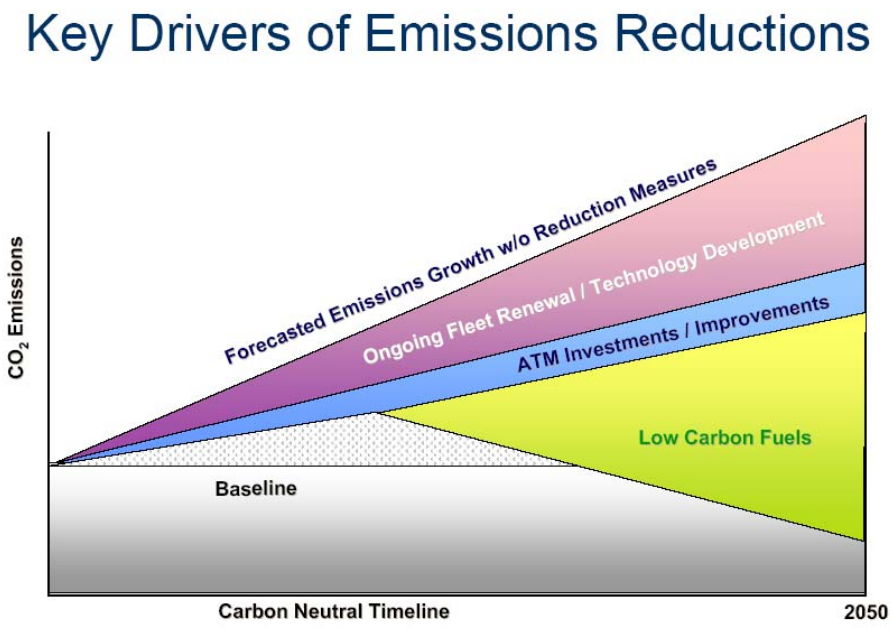


Figure 1—Conceptual Forecast of Industry CO2 emissions and reduction opportunities
(Source: ATAG – Air Transport Action Group)

2.3 The development of renewable alternative fuels for aviation is an attractive, important and achievable opportunity. It is attractive because alternative fuels that are fully compatible with existing aircraft, engine and distribution systems can be utilized as soon as supply is available. It is important because alternative fuels with reduced carbon lifecycle, and also reduced non-CO_2 emissions have very high potential to improve the environmental performance of aviation. Carbon lifecycle of more than 50% reduction, as compared to typical petroleum-based aviation fuel, can be demonstrated for some types of renewable alternative aviation-capable fuels. Large transport aircraft require very high energy sources, and unlike other transport modes, no technology exists to decouple such aircraft from liquid fuels. It is achievable because the quantity of alternative fuels required for aviation is considerably smaller than would be required for other transport modes. Taken together, these factors make a strong case for directing availability of renewable alternative fuels to aviation as a priority use.

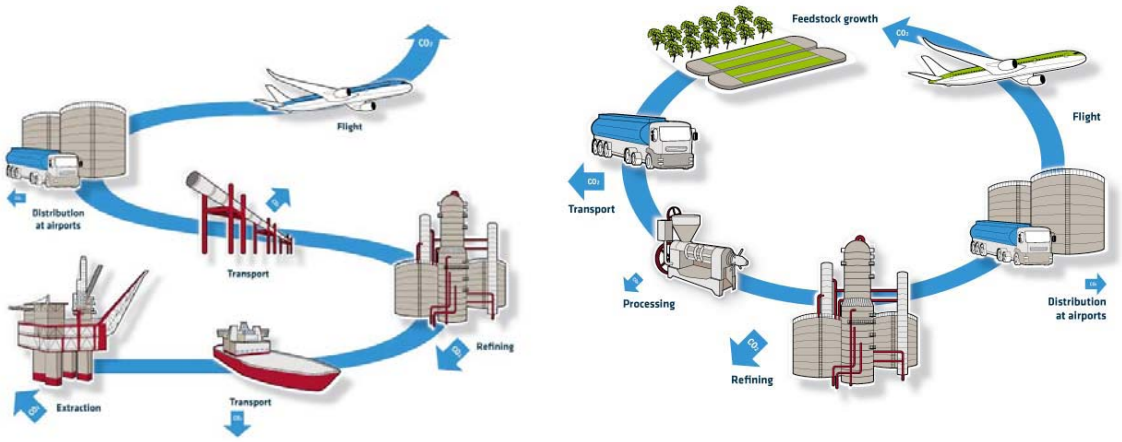
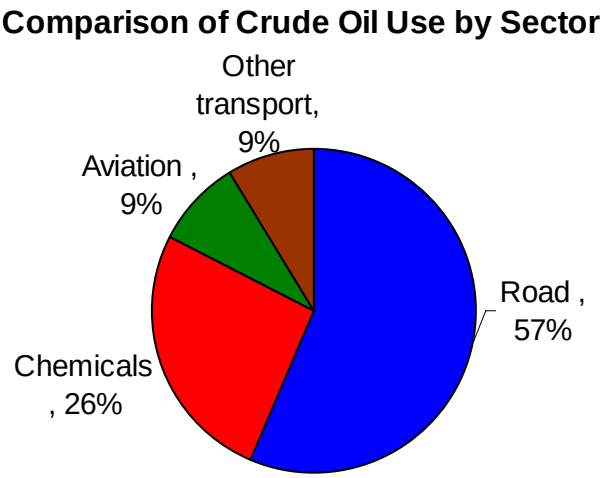


Figure 2—Comparison of carbon lifecycle between fossil and renewable fuels

Sector	Percent of total Greenhouse Gas Emissions
Land use change and forestry	25%
Building light and heat	20%
Road	13%
Other electricity and heat	12%
Other energy	10%
Chemicals	6%
Cement	5%
Industrial processes	3%
Other industry	2%
Aviation	2%
Other transport	2%

Source: World Resources Institute 2002

Table 1—Comparison of relative greenhouse gas emissions of various sectors.



Source: Extrapolated from World Resources Institute 2002 Data

Figure 3— Smaller quantities of renewable alternative fuel will have larger impact for aviation as a sector. Transitioning only 4.5% of transport fuel to renewable fuel for aviation would translate into meeting 50% of all aviation fuel needs.

2.4 To capture this emerging opportunity, considerable work must be done to develop a supply chain able to deliver fuel that is technically capable, economically reasonable, and environmentally beneficial. This paper is focused on addressing actions that will help to assure the latter item.

2.5 Establishing appropriate, reliable and credible sustainability oversight or renewable fuels for aviation is one of the key components to ensure the result is clearly environmentally beneficial. In the broader energy sector, sustainability practices are under development. The leading institution in that regard is the Roundtable on Sustainable Biofuels (RSB). The RSB is an international multi-stakeholder initiative to develop standards for the sustainability of biofuels. It is an international initiative bringing together farmers, companies, non-governmental organizations, experts, governments, and inter-governmental agencies concerned with ensuring the sustainability of biofuels production and processing. The Roundtable is hosting a series of meetings, teleconferences, and online discussions with the aim of achieving global, multi-stakeholder consensus around the principles and criteria of sustainable biofuels production. The Roundtable is an initiative of the Swiss EPFL (École Polytechnique Fédérale de Lausanne) Energy Center.

2.6 The RSB has activities aimed at developing appropriate practice for application to renewable aviation fuels, however, no implementation mechanism for aviation has yet been established. The ICAO recommended practice process could be utilized to implement sustainability standards, such as those under development by RSB, specifically customized to the needs of aviation. Several exhibits are included here to illustrate the methods under development by RSB.

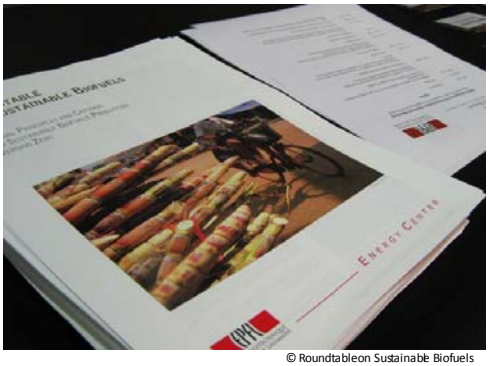
The Roundtable on Sustainable Biofuels?

The RSB is an international multi-stakeholder initiative developing a sustainability certification program for biofuels production. The RSB standard is …

- **generic** to all crops,
- **adaptable** to new information,
- **truly multi-stakeholder;**

… and includes …

- **environmental criteria**
- **social criteria**



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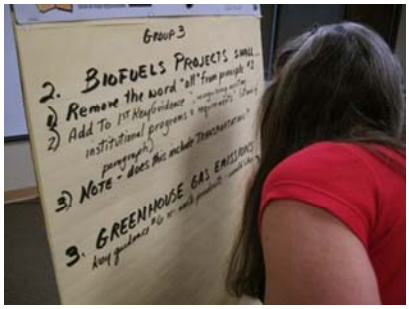
Multi-Stakeholder Approach

- **Working group tele-conferences to develop Version Zero** (published August 2008).
- **15 in-person stakeholder meetings held between Sept 2008 and March 2009 throughout the world to discuss Version Zero:** Brazil (3), Mali, Mozambique, Belgium, Kenya, Dominican Republic, United States (4), Colombia, Argentina, Malaysia
- **Nearly 900 participants discussed Version Zero.** Reports from all meetings and all comments received are available on our website.



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Version 0.X (temp) - RSB Standard

	Direct
1 – Legality (especially land, labor, water rights)	✓
2 – Planning, monitoring, and continuous improvement (through transparent and consultative ESIA, economic viability)	✓
3 – GHG significantly better over lifecycle than fossil fuel	✓
4 – Human and Labor rights (protect workers' rights)	✓
5 – Rural and Social Development (focus regions of poverty)	✓
6 – Local Food Security (only direct impacts)	✓
7 – Conservation (conserve and protect high conservation values)	✓
Conserve and protect **Soil (P 8**), **Water (P 9**), **Air (P 10)**	✓
11 – Management of Technology, Inputs and Waste – (esp. biotech) should be used responsibly and transparently,.	✓
12 – Land Rights (respect land rights and land use rights)	✓

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE — Energy Center

Roundtable on Sustainable Biofuels

Figure 4—Roundtable on Sustainable Biofuels offers multi-stakeholder pathway to sustainability consensus

2.7 ICAO is invited to consider this information.

— END —