



ICAO WORKSHOP



AVIATION AND ALTERNATIVE FUELS

# Setting the Scene

## ICAO's Role and Activities in Aviation Alternative Fuels

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Jane Hupe, C/ENV, ICAO

Montréal, Canada

February 10, 2009

**30 January 2009**

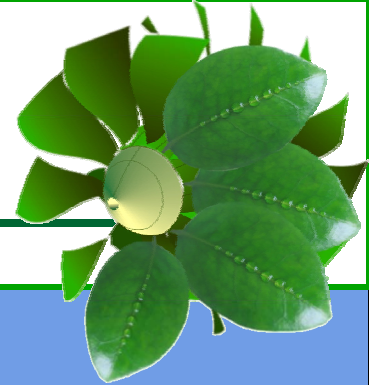
**UN Secretary-General in Davos: Climate Change is  
“only one truly existential threat”**



29 January 2009: In two events delivered at the World Economic Forum taking place in Davos, Switzerland, Secretary-General Ban Ki-moon underlined that within the current multiple crises, climate change is the “only one truly existential threat” and called on the world’s leaders to use the current economic crisis to launch a new Global Compact entailing a “Green New Deal.”

Ban Ki-moon called on businesses to invest in the green economy now in order to lay the foundations to tackle critical long-term issues and help create a future based on a low-carbon economy – green jobs, renewable energy and energy efficiency.

# Leading the News



DATE:26/01/09  
SOURCE:Flight International

## Great expectations for alternative fuels in 2009

By Aimée Turner

Aviation's search for alternative fuels finds itself well positioned moving into 2009 with active programmes, a singular focus on liquid fuels with roadmap commitments, solvent end customers and, most importantly, a resolute incoming US government.



### USAF Launches Major Biofuel Initiative

Jan 30, 2009

By Joe Anselmo



MIAMI – U.S. Air Force officials are planning to acquire more than 300,000 gallons of biofuels under an effort to certify two types of the plant-derived fuels for use in a 50-50 mix with jet kerosene by 2013.

The Air Force wants half of its domestic aviation fuel to contain a 50 percent blend of alternative fuel – either bio or synthetic – by 2016. “We’re looking to replace a portion of our total fuel,” Braun said.

“Biofuels are going to require a significant investment in infrastructure to certify them for use in aircraft tanks in the next five years,” says the director of the Commercial Aviation Safety Team, which promotes development of alternative fuels.

“But the effort is a big step forward in the right direction,” says the director of the Commercial Aviation Safety Team, which promotes development of alternative fuels.

DATE:26/01/09

SOURCE:Flight International

### Top 10 alternative fuel breakthroughs in 2008

By Jeffrey Decker

Flightglobal.com asked leading researchers and policymakers what discoveries and hyperbole about alternative aviation fuels, were the most significant breakthroughs in 2008 on the road to commercial viability?



DATE:26/01/09

SOURCE:Flight International

### Fuelling change

By Jeffrey Decker

Advances in alternative fuels are essential regulatory changes.

#### AIA dailyLead

**World's militaries focused on alternative fuels**  
The world's 20 biggest military spenders saw fuel bills rise \$6 billion last year, adding urgency to the search for alternative fuels. “The burden placed on militaries by fuel demands is significant,” says Guy Anderson, editor of Jane’s Industry Quarterly, adding that military planners also worry about the issue of foreign dependence. In the U.S., the Pentagon is investing in hybrid electric drive as the best near-term solution, hoping to cut fuel use by 40% compared to diesel engines. Biofuels are another option, though their lower density makes them problematic for military jets.

*Financial Times (2/2)*



DATE:27/01/09

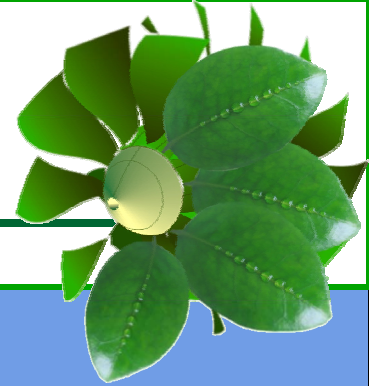
### Chicken parts as jet fuel? Possible

By Dan Reed, USA TODAY

Chickens can't fly very far. But chickens — or the fatty parts of their bodies — could be powering jet flights across the country and around the world.

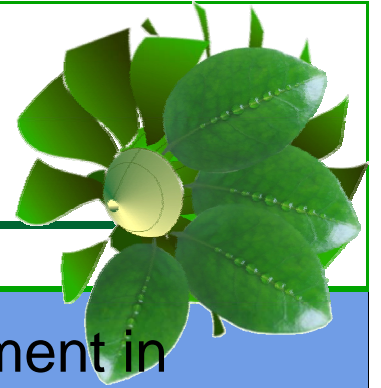
**Trio of biofuel tests to move certification forward**  
Results from test flights are encouraging airlines to believe fuels from renewable sources could be in aircraft tanks in the next five years

# ICAO Environmental Goals



- Limit or reduce the number of people affected by significant aircraft noise;
- Limit or reduce the impact of aviation emissions on local air quality; and
- Limit or reduce the impact of aviation greenhouse gas emissions on the global climate.

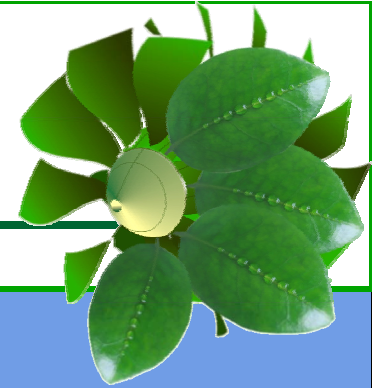
# ICAO Assembly Resolution A36-22



- recognized the importance of research and development in fuel efficiency and alternative fuels for aviation that will enable international air transport operations with a lower environmental impact
  - encouraged the Council to promote improved understanding of the potential use, and the related emissions impacts, of alternative aviation fuels
- 
- CAEP/8 Work Programme item E.09.2 is to promote improved understanding of the potential use and emission effects of alternative fuels
  - ICAO Council and GIACC have requested information on technological advances including alternative fuels



# ICAO's Guide-Posts



## Goals

- ❑ Coordinated
- ❑ Realistic
- ❑ Achievable within a stable, predictable international framework

## Standards

- ❑ Environmentally Beneficial
- ❑ Economically Reasonable
- ❑ Technologically Feasible
- ❑ Mutually Supportive

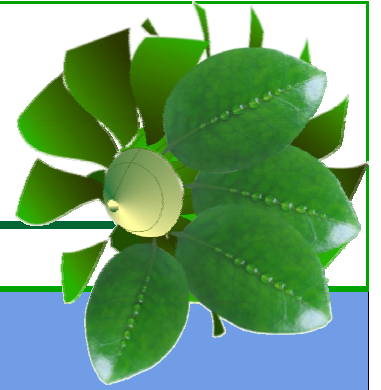
# Proposed Framework to Channel Efforts on Aviation Alternative Fuels



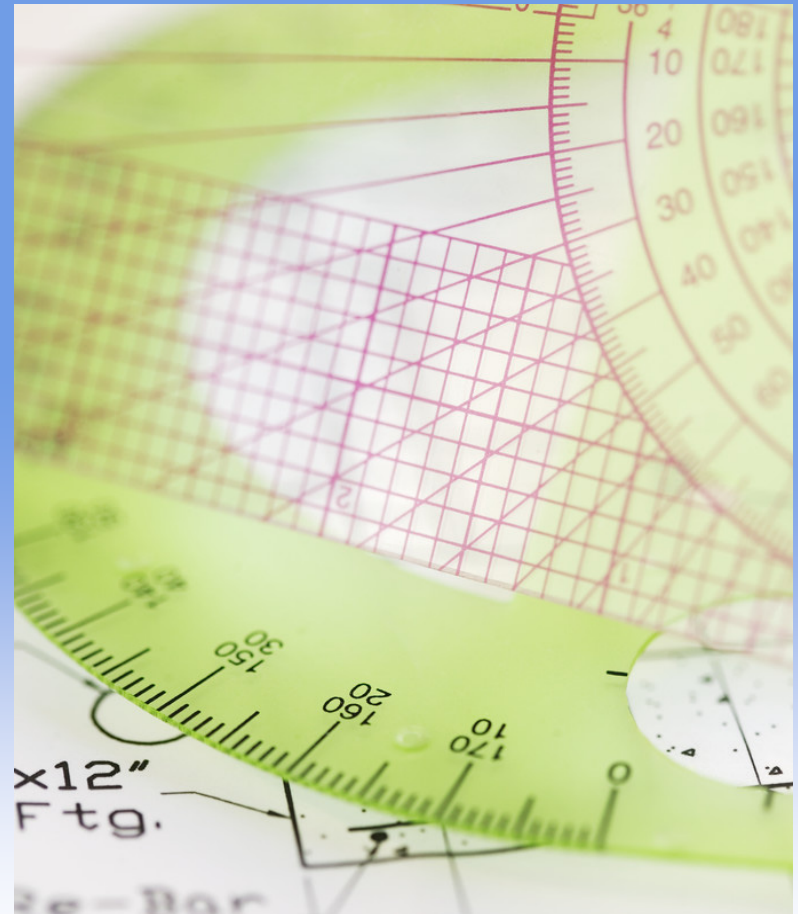
Environmentally Beneficial  
Economically Reasonable  
Technologically Feasible  
Mutually Supportive

**Coordinated,  
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Within a Stable,  
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International  
Framework**

# Environmental Benefit

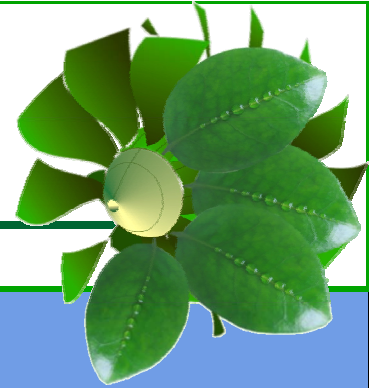


- Engine emissions or life-cycle (well-to-wake) benefit
- Drawing system boundaries (control-volume)
- Carbon Balance-Sheets or Impacts Balance-Sheets?



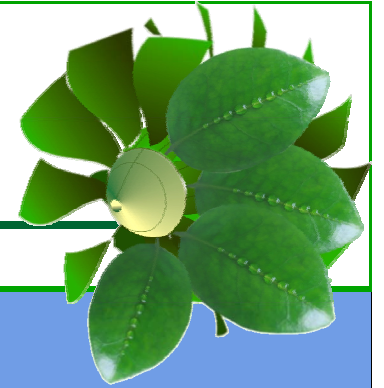


# Technological Feasibility



- Aircraft engine design considerations
- Airport infrastructure issues
- Fuel supply infrastructure
- Fuel manufacture in sufficient volume

# Economic Reasonableness



- Production costs including feedstock issues
- Recurring fuel cost for operators
- Design modification costs for manufacturers
- Infrastructure establishment/maintenance costs
- Differences in North/South

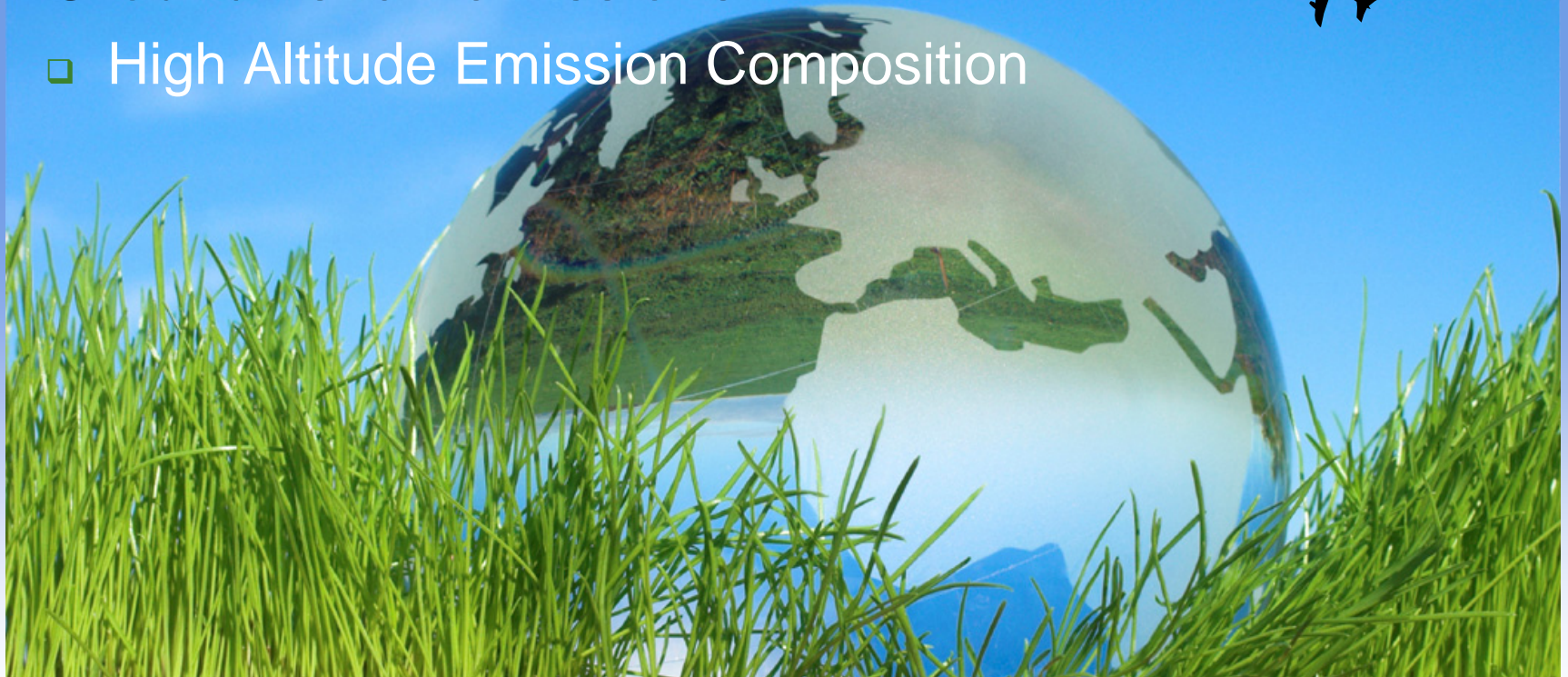
Developing/Developed economies



# Environmental Interdependencies



- Food vs. Fuel
- CO2 vs. other emittants
- Ground vs. air emissions
  - High Altitude Emission Composition





# DON'T FORGET SAFETY



# Aviation Alternative Fuel Stakeholders



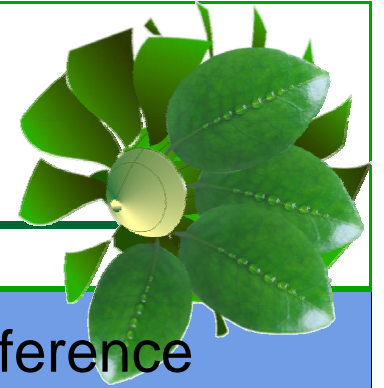


# Galvanizing Action on Aviation Alternative Fuels

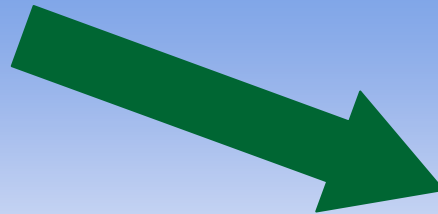


- International cooperation is essential to foster the consistent and standardized use of alternative fuels
- Regional and national consortia have done an excellent job of bringing together the expertise to consider technical issues
- ICAO remains the appropriate international forum on the subject that concern aviation
- ICAO is committed to effectively coordinate actions between aviation alternative fuel stakeholders by tapping the resources, the experience and the expertise they can bring to the table

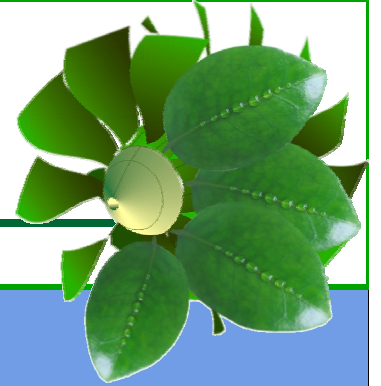
# Toward a Globally Harmonized Roadmap



- This Workshop paves the way for the Nov 2009 Conference by assembling experts and expertise from diverse sources
- The Nov 2009 Conference aims to develop a globally harmonized roadmap involving all stakeholders

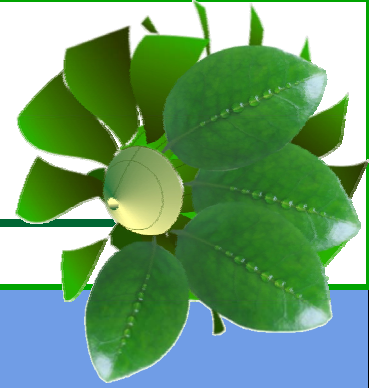


# Workshop Programme



- Organized in 4 Sessions:
  - Setting the scene
  - Overview of potential options for alternative fuels
  - Challenges to development and deployment of alternative fuels
  - Initiatives to promote cooperation

# Workshop on Aviation Alternative Fuels



THANK YOU