



**ICAO AVIATION AND SUSTAINABLE
ALTERNATIVE FUELS
WORKSHOP**

ICAO Headquarters, Montréal, Canada

18 to 20 October 2011

Accounting, Life-Cycle Analysis & Sustainability

The Role They Play in Deployment of
Aviation Alternative Fuels

Nancy N. Young

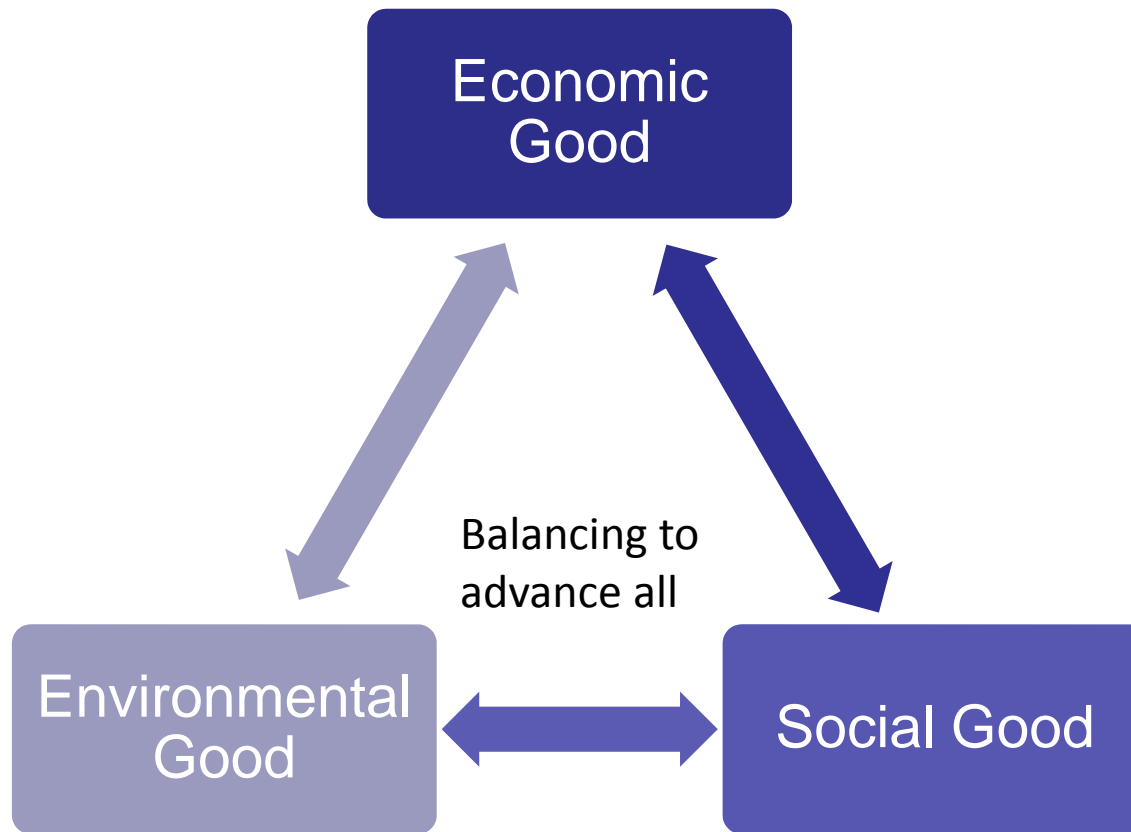
Air Transport Association of America



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Fundamentally, What is Sustainability?



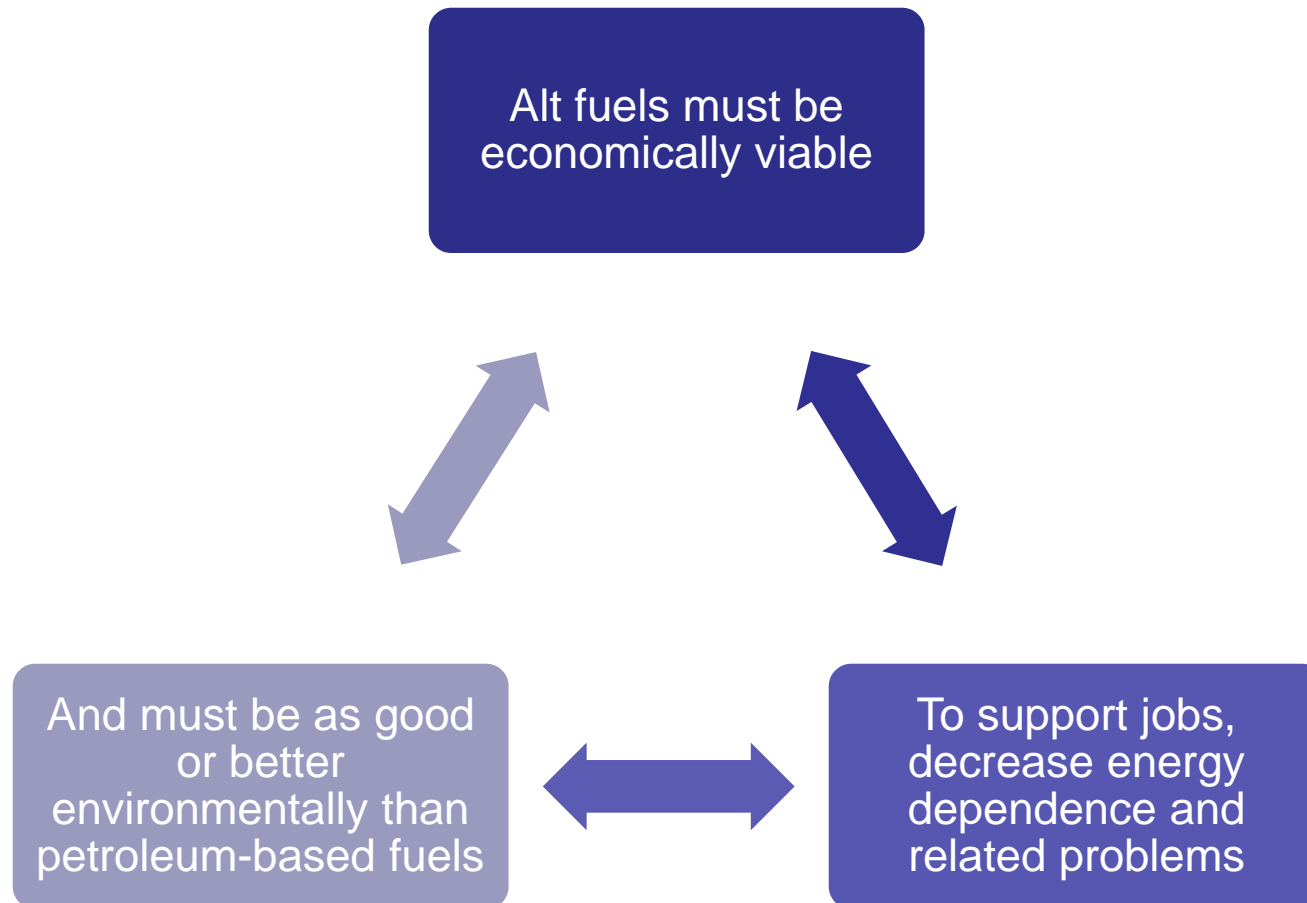
Sources: Brundlandt Commission, 1987;
Rio Earth Summit, 1992
(essentially, the “fountains” of modern sustainability principles)



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Sustainability for Alternative Aviation Fuels





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Environmental Contribution to “Sustainability”



- Lifecycle Greenhouse Gas Improvements
 - Carbon emission controls
- Potential to Reduce Emissions with Local Air Quality Impact
- Do Not Induce Other Environmental Problems
 - Water use, land use, food-basket competition, etc.



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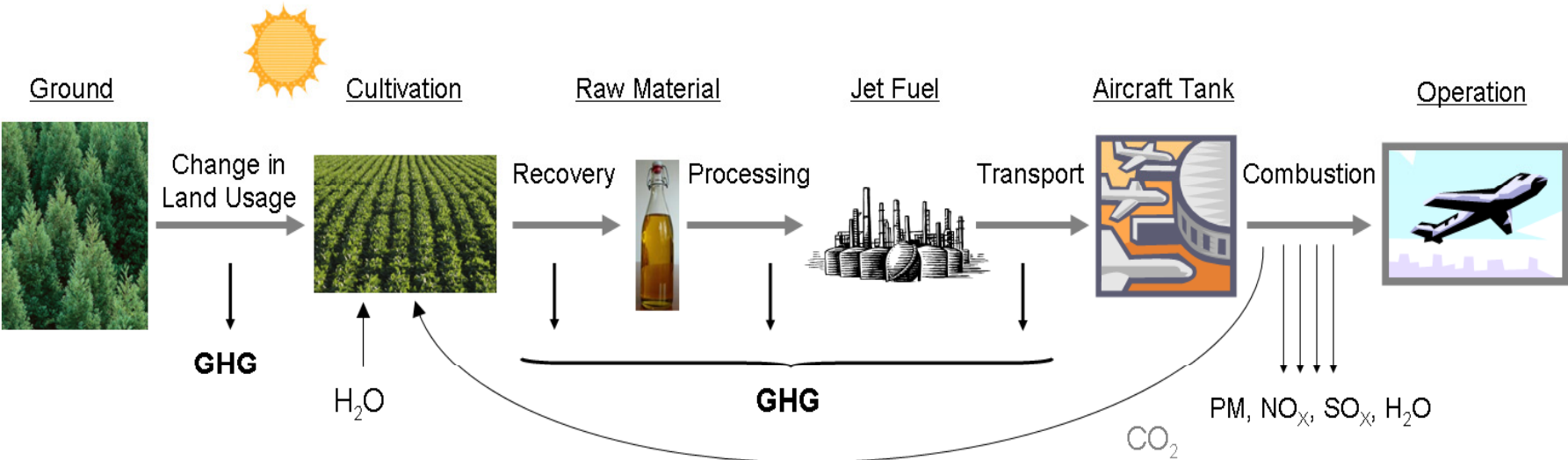
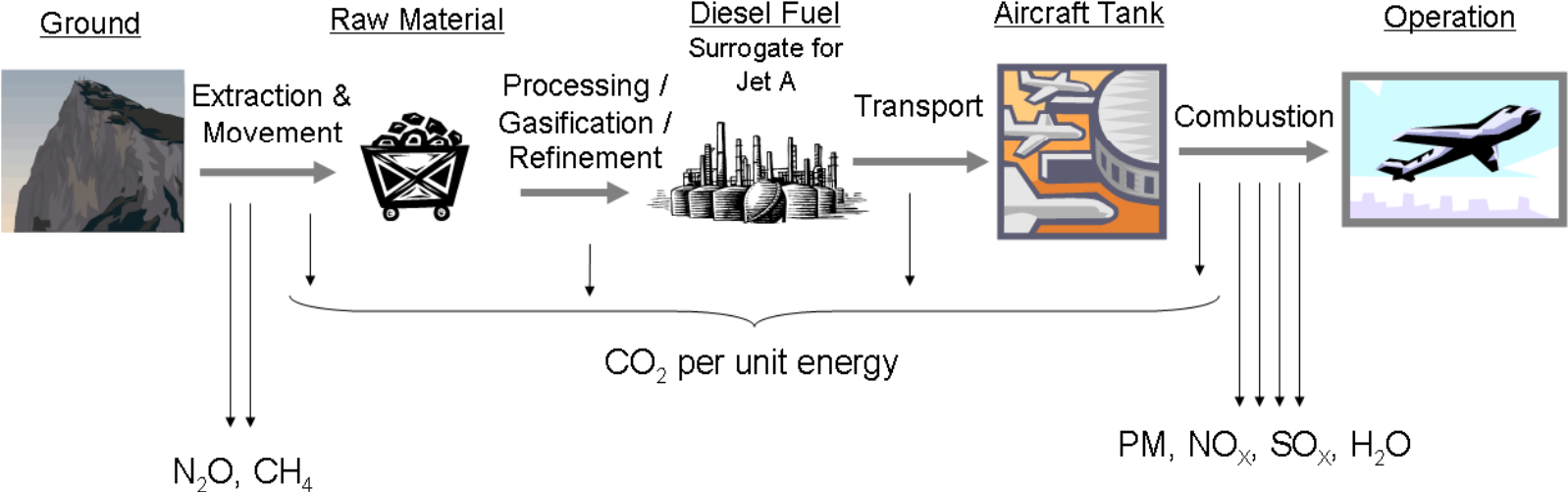
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Motivators for Verifiable Environmental Benefit



- Voluntary Industry Commitments
 - e.g., Aviation industry Global Sectoral Approach targets
 - e.g., ATA “Alternative Fuels Commitment”
 - ...We seek alternative fuel sources having a reduced emissions profile relative to traditional fuels. We encourage all potential suppliers to work directly through CAAFI to ensure that their alternative jet fuel will meet accepted criteria to be more environmentally friendly than traditional jet fuel, in particular resulting in a reduced emissions profile on a lifecycle basis, without compromising critical uses of relevant feedstocks.
- Regulatory Requirements
 - e.g., U.S. Renewable Fuels Standards (RFS) Program
 - e.g., U.S. government by law can only procure alternative fuels with lifecycle emissions better than or equal to conventional fuels
 - e.g., European Union Emissions Trading Scheme

Well-to-Wake Lifecycle Analysis - Fossil & Bio-Feedstocks



Graphics: J. Hileman, MIT



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Where Are We on LCA?



- We Know How to Do It
 - e.g., Well-known steps (ISO 14040)
 - Know how to apply to aviation (“Framework & Guidance for Estimating Greenhouse Gas Footprints of Aviation Fuels”)
- Remaining Challenges
 - Need agreement on emissions factors in dispute (e.g., land use change)
 - Need workable & accepted means of “certifying” compliance
 - Some means available now (e.g., U.S. RFS program; third-party certification programs, e.g., Roundtable on Sustainable Biofuels)
 - Ease, availability, cost, “thresholds,” and other issues arise
 - Need international compatibility/acceptance



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Status of Remaining “Sustainability” Issues



- The Commitment: We Do Not Want to Induce Environmental Harm
- The Challenge – Differing Views Around the World and Within Various Jurisdictions Regarding:
 - Scope (what issues/resources must be addressed?)
 - Criteria/thresholds (what are the “right” ones?)
 - If environmental standards already apply, is adding another accounting for fuel product double-counting/over-regulation?
 - Who in the supply chain bears the responsibility?
 - If one country sets requirements, how can fuel produced in other countries comply?
 - Need international compatibility/acceptance



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Global Bioenergy Partnership (GBEP)



- Could Help Serve as Global Unifier
 - GBEP Partners: 23 Countries & 13 International Organizations
 - Observers: 22 Countries & 9 International Organizations
- 24 Sustainability “Indicators” under 3 Pillars
 - Environmental
 - Social
 - Economic
- Indicators Under Environmental Pillar
 - (1) Lifecycle GHGs; (2) Non-GHG Emissions; (3) Soil Quality; (4) Harvest Level of Wood Resources; (5) Water Use & Efficiency; (6) Water Quality; (7) Biological Diversity in the Landscape; (8) Land Use & Land Use Change-Related to Feedstock Production



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What CAAFI Is Doing to Address Open Issues



- CAAFI Environment Team Workstreams



- Lifecycle Analysis

- Build on existing work and products to firm up methods, models, modeling, data/analyses and guidance

- Sustainability

- Identify key sustainability issues and metrics working with existing initiatives, sources and experts
- Develop guidance on environmental progression
- Potentially develop or otherwise confirm mechanisms for “certification” or attestation to performance criteria



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