

# Aviation and Alternative Fuels in --- Brazil

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# Introduction

- Importance of the issue: climate change, energy security and food security are interlinked
- The Brazilian experience:
  - i) national projects
    - -- ethanol
    - -- biodiesel
  - ii) international cooperation



**Important Brazilian  
Institutions in R&D on  
Alternative Fuels for  
Aviation**

# Petrobras

- World's sixth largest oil company
- Worldwide leader in deep sea oil drilling
- Recent vast petroleum finds could make Brazil one of the largest producers in the world
- Advanced research in biofuels: ethanol, biodiesel, H-Bio
- Research centers with links to academia
- 1<sup>st</sup> / 2<sup>nd</sup> place in patent requests in Brazil



# Embraer

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- World's third largest aircraft manufacturer
- Privatized in 1994
- Over 4,100 aircraft in use in 69 countries
- Brazil's first/second largest exporter
- BUT: No registered patents in the U.S. (Bombardier: 700+)



# National Project: ETHANOL

- National Ethanol Program (ProAlcool) launched in 1975: conditions to reduce dependence on fossil fuels, reduce GHG emissions and create jobs
- Sugarcane production: low levels of pesticides, low level of soil erosion



# National Project: ETHANOL

- Sugarcane agriculture occupies only 0,6% of Brazil's land area; it creates about one million direct jobs
- Factor of social and economic development





# National Project: Biodiesel

- Brazil is home to several species of oilseeds: oil palm, sunflowers, babaçu coconut, soybeans and cotton
- Using biofuels brings environmental benefits and contributes to improve air quality in major urban centers





# National Project: Biodiesel

- Since the 70's many research projects have been developed and carried out in Brazil
- 2004: National Program for the Production and Use of Biodiesel (PNPB)
- From July 2008 on, diesel oil sold in Brazil must contain 3% biodiesel



# International Cooperation

- Biofuels as high priority topic to the cooperation agendas of many countries
- Growing international demand for cooperation with Brazil:
  - --cutting edge technology
  - --careful selection of partnerships
  - --balanced sharing of benefits



# International Cooperation

- Approaches:
- a) global
- b) regional
- c) bilateral



# International Cooperation

- Global approach
- --establishment of a global market
- --International Biofuels Forum created in March 2007, in New York



# International Cooperation

- Brazil's goal is to stimulate scientific studies and technological innovations that ensure both the long-term sustainability of biofuels production and ways of preventing from interfering with food production





# International Cooperation

- Global approach
- International Conference on Biofuels (São Paulo, November 2008):
  - a) biofuels as the only option for large-scale use, at affordable costs, of renewable energies in the short term



# International Cooperation

- International Conference on Biofuels (São Paulo, November 2008):
- <http://www.biofuels2008.com/en/index.php>
- b) biofuels could be produced by at least 100 countries and, therefore, can contribute to deconcentration and reduction of unequal access to energy
- c) a global market requires the dismantling of trade barriers





# International Cooperation

- Regional approach
- Integration of South America: MERCOSUR Memorandum of Understanding
- the region has an opportunity to produce wealth and development in a sustainable manner
- the aim is to promote a more effective use of South American countries' competitive advantages in the biofuels field





# International Cooperation

- Bilateral approach
- Technical cooperation initiatives: research on alternative sources and promoting scientific and academic exchanges
- Memoranda with: Chile, Ecuador, Paraguay, Uruguay, USA and IBSA (India-Brazil-South Africa Dialogue Forum)



# International civil aviation and climate change

- Resolutions on climate change and reduction of GHG emissions, both at ICAO and IMO, should be taken in close coordination with the Kyoto Protocol and the United Nations Framework Convention on Climate Change (UNFCCC)



# International civil aviation and climate change

- Article 2.2 of the Kyoto Protocol: "the Parties included in Annex I shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from aviation and marine bunker fuels, working through the International Civil Aviation Organization and the International Maritime Organization, respectively".



# International civil aviation and climate change

- Actions related to the reduction of GHG emissions - both at ICAO and IMO - must respect the principle of Common but Differentiated Responsibilities (CBDR)



# Conclusions

## main topics

- climate change, energy security and food security are interlinked
- global market on biofuels requires the dismantling of trade barriers
- cooperation initiatives (MoU): MERCOSUR, IBSA, USA etc



# Conclusions

## main topics

- Kyoto Protocol:
- -- Annex I countries are the ones with the responsibility to limit/reduce emissions at ICAO and IMO



**Thank you for your attention!**

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