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Aviation Biofuels Initiatives in LAC

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IDB Philosophy

- Biofuels are an important driver of sustainable socioeconomic development in LAC.



IDB Biofuel Lending Experience

- 3 ethanol plants in Brazil (U.S. \$ 269 million - IDB, 2008):
Largest biofuel investment in LAC
 - Located in the states of Minas Gerais and Goiás, far from the Amazon or any other protected area
 - 4,500 high quality permanent jobs
 - 420 million liters of ethanol per year for the domestic market
- Maple Ethanol Plant in Peru (U.S. \$ 245.5 million, IDB, CAF, FMO, Interbank, 2009)
 - Combined with efficient irrigation mechanization 153 ton / Ha
 - Includes 37MW cogeneration plant that sells electricity to the grid
 - 130 million liters per year using 7,800 hectares of sugar cane in a desert area in the Department of Piura, Peru



IDB Biofuel Technical Assistance

- Haiti, Guatemala and Honduras: Feasibility National Biofuels Program (BR-US Agreement, U.S. \$ 750k +, BR-T1086, December 2007)
- Guatemala: Plan of Action (MEM; U.S. \$ 400k, GU-T1095, December 2007)
- El Salvador: same (MINEC / CENTA, U.S. \$ 750k, ES-T1096, Mar 2008)
- Honduras: same (SP; U.S. \$ 600k, HO-T1101, Oct 2008)
- Brazil: Project Identification Sustainable Energy Development of Minas Gerais (BDMG; U.S. \$ 160k, BR-T1103, June 2008), and retraining of workers hand harvesting cane (UNICA, U.S. \$ 500k, BR-T1149; September 2009)
- Chile: Second Generation Biofuels (ForEnergy; U.S. \$ 1.000k, CH-T1096, September 2009)
- Colombia: C & T Innovation Biofuels (Colciencias; U.S. \$ 830k KPK / SECCI, CO-T1059; U.S. \$ 1.5M; CO-T1052 MME-other; February 2008)
- Guyana: Expanding Bioenergy Opportunities (MAG; U.S. \$ 925K; JSF / SECCI; GY-T1041, Mar 2008)
- Peru: Strategic Plan for Sustainable Energy and Bioenergy (MEM; U.S. \$ 1M SECCI, PE-T1146, Apr 2008)
- Dominican Republic: Bioenergy Program Support (CNE; U.S. \$ 750k SECCI, DR-T1036, September 2011).



Aviation Biofuels Milestones in LAC

➤ Brazil:

- Brazilian Alliance for Aviation Biofuels (ABRABA): Embraer, the Brazilian Aerospace Assoc, TAM, GOL, Azul, Trip, Unica, Algae Biotechnology, Amyris, Brazilian Association of Producers Jatropha (ABPPM) - Established in May 2010.
- Test flights – TAM (Nov 2010 & June 2012), Embraer (Sep 2011), GOL (Jun 2012).
- SABB: Roadmap for Brazilian aviation biofuel – current.
- Expanded BR/US Biofuel & Aviation Protocols.

➤ Chile:

- LAN test flight Mar 2012.

➤ Mexico:

- Flight Plan for establishing a sustainable biofuels industry for Aviation developed between 2010 and 2011.
- Test flights – Interjet (Apr 2011), Aeromexico (Aug/Sep 2011).



IDB Initiatives for Sustainable Aviation Biofuels

Aviation biofuels will be an important driver of sustainable socioeconomic development in LAC

- Life cycle assessment of the production of biofuel from sugar cane, co-financed with Boeing and Embraer, results presented at Rio +20 (> 82% carbon reduction)
- Collaboration with Brazilian & U.S. governments on bilateral protocols.



Press Release 7/27/11

➤ **Boeing, Embraer and IDB finance analysis of sustainable aviation biofuel produced from sugarcane Amyris technology**

Brazilian research group ICONE coordinated the study and the World Wildlife Fund will act as an independent consultant

SAO JOSE DOS CAMPOS, Brazil - Boeing (NYSE: BA), Embraer (NYSE: ERJ; BM & FBOVESPA: EMBR3) and the Inter-American Development Bank (IDB) announced that they will finance a sustainability analysis for production of biofuel developed by Amyris from sugar cane. The study will evaluate environmental aspects associated with the use of this renewable fuel produced by Amyris (NASDAQ: AMRS).

Last month, the IDB announced a regional cooperation to help public and private institutions develop a sustainable biofuels industry. The Amyris study is the first to be funded by the initiative.



Press



AFP
 Les Boeing 747 voler avec du biodiesel à partir de canne à sucre?

Les constructeurs américains et brésiliens Boeing et Embraer ont annoncé mardi que la Banque Interaméricaine de Développement (BID), une étude sur la viabilité de produire un carburant à base de canne à sucre pour les avions.

Les nouvelles technologies pour produire des combustibles à partir de sources renouvelables peuvent réduire significativement les émissions de gaz à effet de serre comparativement à celles produites à partir de sucre au Brésil, a affirmé Arnaldo Vieira de Carvalho, responsable de la recherche et développement chez Boeing.



Embraer 175 adaptado para transportar Latam Airlines. Modelo vai realizar testes de sustentabilidade ambiental e de custo para avaliar o potencial de aplicação no próximo semestre de 2012. (Foto: Agência/Embraer)

Un carburant à base de canne à sucre réduira les émissions de CO2 de 80%.
 L'ensemble de l'étude sera financé par la BID, l'Institut Interaméricain de Développement.

Arnaldo Carvalho Du Globo Notícias, em São Paulo

Boeing, Embraer y BID

Los fabricantes aeronáuticos estadounidenses Interamericano de Desarrollo (BID), financian una de un combustible de caña de azúcar e sustentable.

Boeing, Embraer and BID fund sustainability analysis of producing Aviacão sustentable jet fuels from sugarcane

Boeing, Embraer and the Inter American Development Bank (BID) announced on Tuesday that they will jointly fund a sustainability analysis of producing renewable jet fuel sourced from Brazilian sugarcane.

The joint sustainability study will evaluate environmental and economic conditions associated with the use of renewable jet fuel produced by Boeing, Embraer and the Inter American Development Bank (BID) from sugarcane in Brazil. The study will also assess the overall economic viability of sugarcane-based jet fuel production in comparison to fossil-based fuels. The study is the first of its kind in the world.



Boeing to Fund Brazilian Sugarcane Study

Posted by [BioHub Staff](#) on 7/27/11 • Categorized as [Ag Biofuel Crops](#), [Markets Feedstocks Fuels Latin America World News](#)



Boeing, Brazilian plane manufacturer Embraer and the Inter-American Development Bank (IDB) announced Tuesday that they will jointly fund a sustainability analysis of producing aviation biofuel from sugarcane. The Brazilian think tank will conduct an independent review of the study, which is scheduled for completion in early 2012.

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Boeing e Embraer financiam pesquisa para desenvolver biocombustíveis para jatos

As fabricantes de aviões Boeing e Embraer vão financiar, em conjunto com a Organização Interamericana de Desenvolvimento (BID), um estudo de viabilidade de combustíveis a base de cana-de-açúcar para abastecimento de jatos. Com base em padrões internacionais de sustentabilidade, a pesquisa avaliará o impacto ambiental e econômico da produção de combustíveis a base de cana-de-açúcar em comparação com os combustíveis derivados de petróleo.

A pesquisa é a primeira a ser beneficiada por meio de acordo de cooperação entre as empresas públicas e privadas proposto pelo BID para ajudar no desenvolvimento de tecnologias sustentáveis. A produção de combustíveis a base de cana-de-açúcar pode reduzir significativamente as emissões de gases de efeito estufa, como



Boeing y Embraer estudian uso de biocombustibles en aviación



IDB Initiatives for Sustainable Aviation Biofuels

- Support demonstration flights with GOL and Azul.
- ICAO sponsored the GOL / Aeromexico / Air Canada/ Porter flights for Rio +20, each using different feed stocks.





IDB Initiatives for Sustainable Aviation Biofuels

- Feasibility study of the first pilot plant for production of biojet for ASA of Mexico





IDB Initiatives for Sustainable Aviation Biofuels

- Study on Camelina in Argentina: feasibility of cultivation in marginal areas in south of the country, includes analysis of economic, social and environmental issues.
- Brazil Action Plan for 2014 FIFA World Cup and Rio 2016 Olympics: to reduce/offset carbon footprint of international and domestic flights through use of biojet and operational improvements.



The Future

- IDB's and Risk Mitigation
 - Grants
 - Low cost long term loans
 - Engagement with shareholder governments
 - Engagement with development banks in LAC
- BR/US Biofuel and Aviation Protocols
 - Access to US and Brazilian funds and other support



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