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Financing Alternative Fuels Opportunities and Challenges

Dr. Charles E. Schlumberger
Principal Air Transport Specialist
The World Bank

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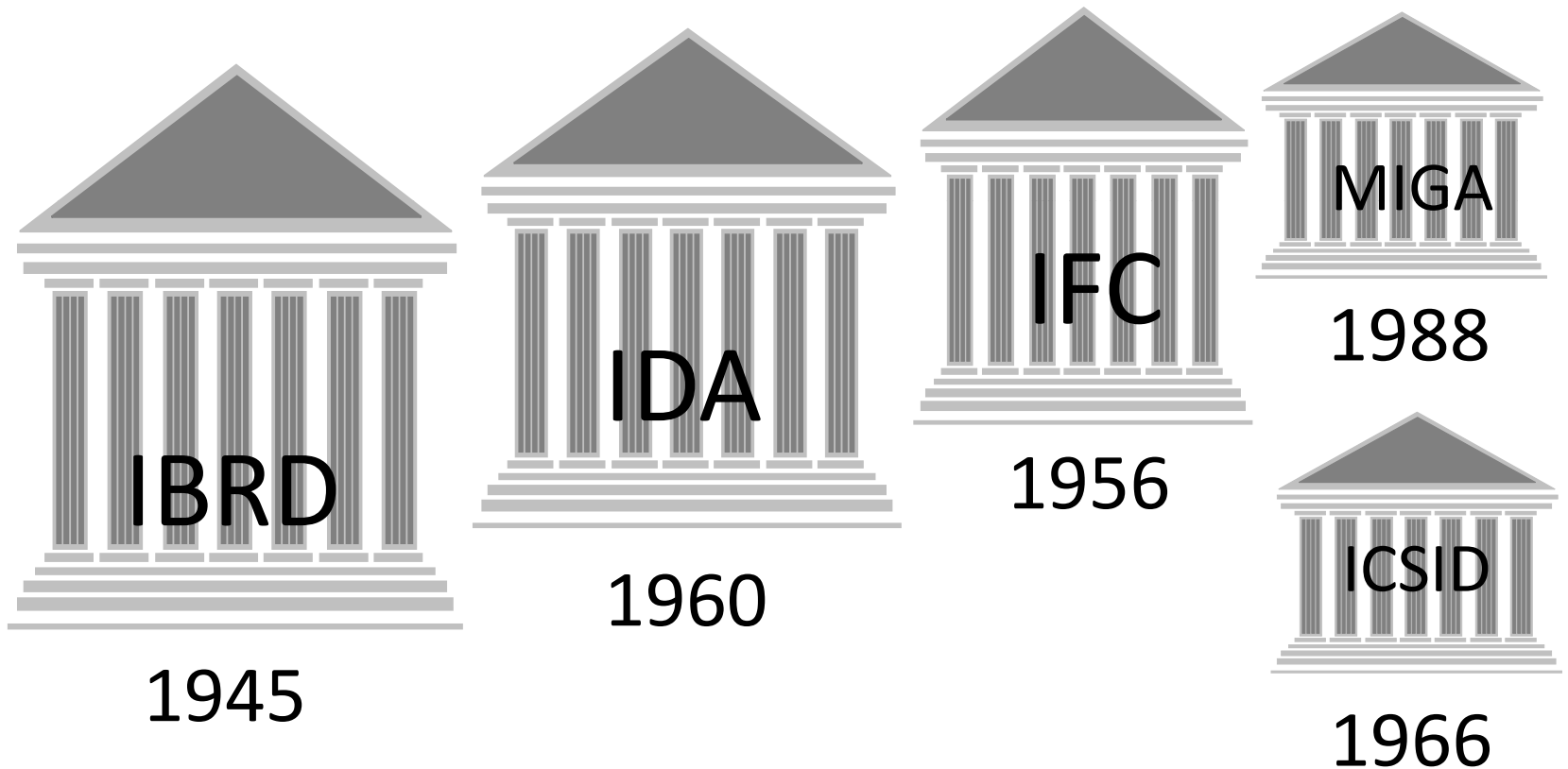
Outline

- The World Bank Group (WBG) and its Air Transport Portfolio
- The WBG and Alternative Fuels
- Challenges and Opportunities of Alternative Fuels
- Examples of IFC Financing of Alternative Fuels Projects
- Conclusions





The World Bank Group (WBG)





The World Bank FY09 Air Transport Portfolio

ACTIVE PROJECTS COMMITMENTS												
Active Projects (in millions USD)	IBRD			IDA			IFC			TOTAL		
	FY09	FY08	change	FY09	FY08	change	FY09	FY08	change	FY09	FY08	change
WB Group Total Active Portfolio	75,752	57,148	32.6%	56,442	48,145	17.2%	34,346	32,366	6.1%	166,540	137,658	21.0%
WB Group Active Portfolio-Transport	18,226	15,409	18.3%	8,834	7,741	14.1%	1,680	1,690	-0.6%	28,741	24,839	15.7%
% of Total Active Portfolio	24.1%	27.0%	-2.9%	15.7%	16.1%	-0.4%	4.9%	5.2%	-0.3%	17.3%	18.0%	-0.8%
Air Transport Active Projects	406.8	372.1	9.3%	283.2	158.3	79.0%	649.7	717.2	-9.4%	1339.7	1247.6	7.4%
% of Total Active Portfolio	0.5%	0.7%		0.5%	0.3%		1.9%	2.2%		0.8%	0.9%	
% of Total Transport Portfolio	2.2%	2.4%		3.2%	2.0%		38.7%	42.4%		4.7%	5.0%	





The World Bank's role in alternative fuels

- Strategy: The development of a energy strategy that includes sustainable liquid alternative fuels.
- Policy: Development of a policy framework for developing countries for the production of sustainable alternative fuels. Sustainability must be based GHG emissions savings, and regulation of land use for growing biofuel feedstocks and define minimal social standards.
- Finance: Provide financing for the development of sustainable alternative fuel production.





Research on Alternative Fuels

Bank-internal Policy Research:

- “Liquid Biofuels:
Background Brief for the World Bank Group
Energy Strategy” – Draft 09 January 2010
- Based on prior research done by the Food and
Agriculture Organization (FAO), United Nations
Environment Programme (UNEP), and the
World Bank.



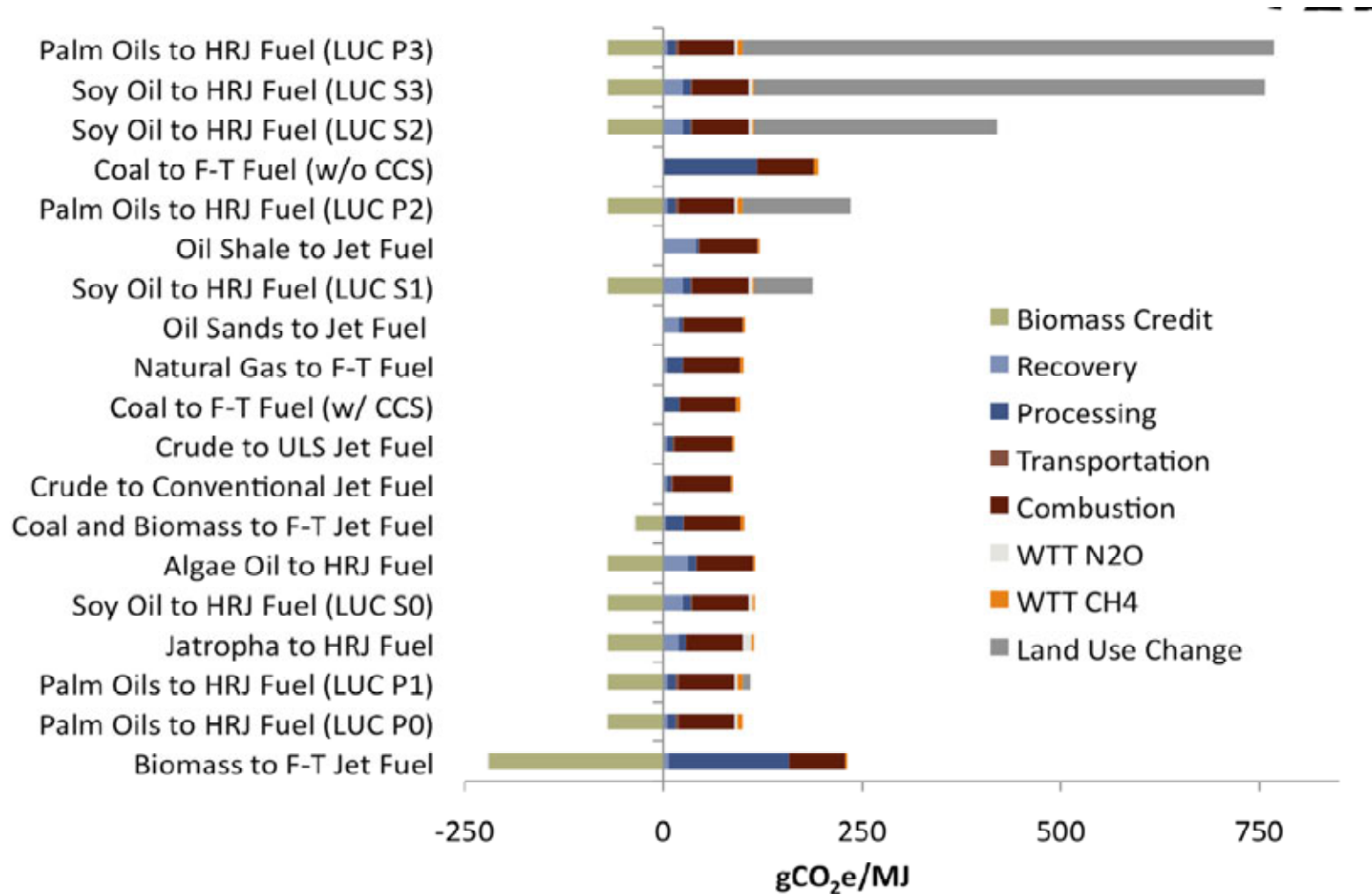


Challenge: Green House Gas Reduction and the Production of Biofuels

- GHG reduction depends on the entire cycle of biofuel production, from the cultivation of feedstocks and the biofuels production process to transport of biofuels to markets.
- Land use change is the main challenge when making the case for biofuels as an answer to address climate change.
- The WBG will be very limited to finance biofuel projects that result in no GHG reduction or in an increase of GHG.



Life-cycle Analysis of various Types of Jet Fuel





Challenge: Food Production

- Wheat, palm oil, soy oil and other vegetable oils prices doubled in 2006-2007.
- Energy prices have tripled and this has increased the cost of fuel and fertilizers.
- Biofuels policies in Brazil, EU and U.S. have encouraged rapid expansion of biofuels production from food crops.





Challenge: Food Production

- The world population is projected to increase from six billion in 2000 to seven billion in 2030, but the World Bank estimates that cereal production will have to increase by nearly 50 percent and meat production by 85 percent during the same period. Yield increases are unlikely, new agricultural land development is necessary.
- Increased demand for agricultural feedstocks for biofuels will add to the growing competition for land.





Challenge: Water

- Agriculture uses 85 percent of fresh water withdrawals in developing countries, and irrigated agriculture accounts for about 40 percent of the value of agricultural production in the developing world.
- The large scale production of crop based biofuels may challenge water availability and distribution in developing countries.





Challenge: Scale-up of Production

The entire world production of jet fuel by biofuels would require large surfaces:

- Jatropha - 2,700,000 square kilometers (sq km) or the size of Argentina,
- Camelina - 2,000,000 sq km or the size of Mexico
- Algae - 68,000 sq km or about the size of Ireland.





Challenges: Certification of Alternative Fuels

- 2009: alternative fuels generated by FT method from a variety of feedstocks, including biomass to liquid and natural gas to liquid, can be used in a 50 percent blend with traditional jet fuel
- 2010: the certification of a blend of 50 percent hydrotreated renewable synthetic jet fuels blends (e.g. algae), and 100 percent usage of FT synthetic jet fuel coal, from biomass, and natural gas
- 2013 or sooner: the certification for 100 percent hydrotreated renewable synthetic jet fuel





Opportunities – Alternative Fuels

- Alternative Fuels, which are sustainable and which have a positive GHG reduction effect, could be financed by a variety of instruments (e.g. Global Environment Facility, Climate Investment Funds).
- Commercial production of alternative fuels in developing countries are already financed by IFC in several countries.



IFC Projects- Ethanol

Project Name	Country	Material	Product	IFC Investment	Time invested
Pantaleon Sugar	Guatemala	sugar	ethanol and power generation	\$20 million	2008
Monte Rosa Sugar	Nicaragua	sugar	ethanol and power generation	\$50 million	2008
Maple Energy	Peru	sugar cane	ethanol and power generation	\$40 million	2007
Balrampur II	India	sugar	ethanol and power generation	\$40 million	2007
BHSIL	India	sugar	ethanol and power generation	\$45 million	2007
Nicaragua Sugar Estates	Nicaragua	sugar	ethanol and power generation	\$25 million	2006





IFC Projects- Biomass

Project Name	Country	Material	Product	IFC Investment	Time invested
Auro Mira Energy	India	biomass	Electric Power	\$10.6 million	TBD
Auro Mira Bio Systems	India	biomass	Electric Power	TBD	TBD
Lanco Infratech	India	biomass	Electric Power	TBD	TBD
PT Holcim	Indonesia	biomass	Electric Power	TBD	TBD





IFC Projects- Alternative Fuels

Project Name	Country	Material	Product	IFC Investment	Time invested
Combustibles Ecologicos Mexicanos	Mexico	natural gas	Gas-to-liquid alternative fuel for vehicles	\$10 million	2001
OEA/Foz	Brazil	ETH, a biofuel company which produce ethanol and energy		\$50 million	2010 (signed)
Bioventures Fund	South Africa		development of biofuels	\$2.5 million	2002





IFC Projects- Jet Fuels

Project Name	Country	Material	Product	IFC Investment	Time invested
ERC Refinery	Egypt	residual oil	ultra low sulfur diesel, jet fuels, hydrogen plant	\$100 million	TBD
Alliance Refinery	Russian Federation	petroleum	diesel/kerosene, hydrogen	TBD	TBD





Conclusion

- Various instruments exist to finance alternative fuels that are sustainable, and which have a positive GHG reduction effect.
- The WBG is examining alternative fuels on sustainability, and define an appropriate strategy and policy framework for financing its deployment in developing countries.
- Commercial financing by IFC is already available on a limited basis.

