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IDB

support to biofuels

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Presentation Outline

- Available instruments at IDB to support the development of biofuels projects
- Examples of supported biofuels projects, including for aviation purposes

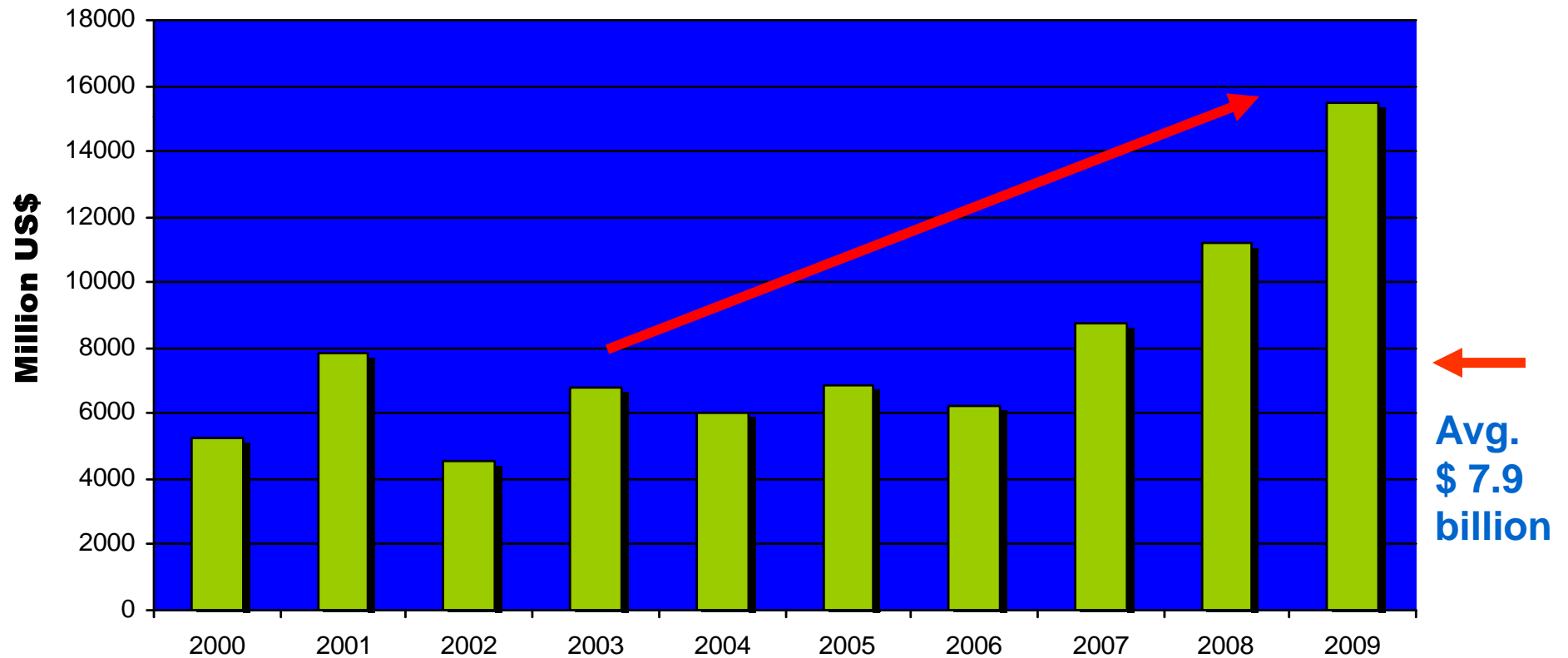


Inter-American Development Bank - IDB

- Oldest regional development bank (1959): 48 member countries - 26 borrowers (with >50% votes in the Board); offices in all borrowing countries; finances both private and public sector projects, with or without sovereign guarantees. The IDB Group encompasses 3 institutions: the Inter-American Development Bank, the Inter-American Investment Corporation – IIC and the Multilateral Investment Fund - MIF.
- Main source for LAC* regional financing
 - ✓ Approved loans/guarantees since its creation: US\$ 178 billion (1961-2009)
 - ✓ Overall leveraged investments (project costs): US\$ 400 billion
 - ✓ Non-reimbursable technical cooperation (grants): US\$ 3.6 billion
- Loans/guarantees to Energy Sector (public & private): US\$ 26 billion (1961-2009)
 - ✓ Main item in Bank's pipeline with 14% of total Bank loans/guarantees

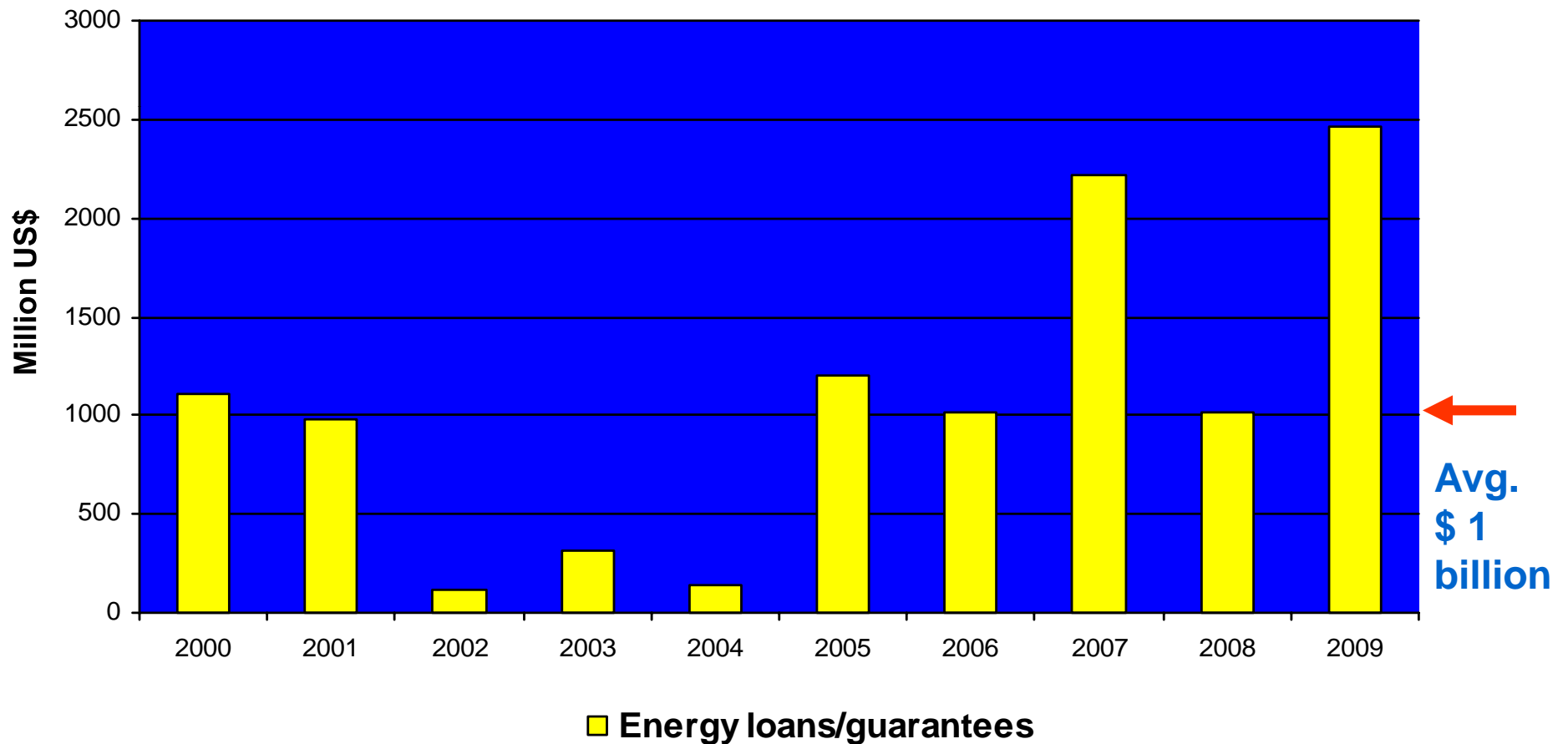


IDB financing, 2000-2009





IDB financing for energy sector, 2000-2009





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IDB financing

- Public-Private comprehensive coverage -

Full spectrum of Public-Private Structures to meet Member Countries expectations and needs



Attractive conditions according to project needs

(interest rate, longer grace periods, longer maturity – some cases 40 y)



Available support instruments at IDB

- Loans and guarantees:
(US\$ 15.5 billion in 2009, for all sectors)
- Non-reimbursable technical cooperation (TCs):
(US\$ 532 million in 2009, for all sectors)
 - **Trust funds established by donors and managed by the Bank (HSET/DOE, JSF/JPO Japan, EC, Spain, UK, Netherlands, France, Austria, Switzerland, etc), including operations from the Multi-lateral Investment Fund (MIF), Infrafund and from the Global Environment Facility – GEF**
- More than a Bank: seeking sustainable economical development of LAC countries



A key IDB mechanism to support technical cooperation on biofuels

- The SECCI:
 - Launched in November 2006 in Washington DC to help prepare and implement new operations in the area of renewable energy/energy efficiency: expected to support most of the projects from now on, incorporating SPA and other initiatives, employing a multi-donor fund approved on August 08, 2007 with US\$40 million, now reaching another US\$40 million, with more donors participation.
 - Four-pillar approach:
 - *Renewable energy and energy efficiency*
 - *Biofuels*
 - *Carbon finance*
 - *Adaptation to climate change*





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Inter-American Development Bank – IDB

Press Release

July 25, 2007

IDB approves US\$120 million for biofuel project in Brazil

First IDB's private sector financing for bioenergy

The Board of Directors of the Inter-American Development Bank today approved its first private sector financing for a bioenergy project in Brazil for a total of **US\$120 million** to **Usina Moema Açúcar e Alcohol Ltda.**, a major sugar, ethanol and bio-energy producer based in the State of São Paulo, that is operating in one of the fastest growing industries in Brazil and worldwide.

This operation is part of IDB's initiative to promote the structuring of senior debt financing for 3 Brazilian ethanol production projects that will have a total cost of US\$ 1 billion. These investments will contribute to Brazil's goal of tripling annual ethanol production by 2020.





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Inter-American Development Bank – IDB

Press Release

July 23, 2008

IDB lends US\$269 million for three Brazilian ethanol plants

The Inter-American Development Bank will lend \$269 million for three new ethanol plants in south-central Brazil, in the **largest biofuel investment ever made by a development bank**. The Board of the Bank unanimously approved the financing today. The three plants are being developed by Companhia Nacional de Açúcar e Álcool (CNAA), a joint venture formed by Brazilian sugar producer **Santelisa** Vale, U.S. private equity firms and **Global Foods**, a holding company registered in the Netherlands Antilles.

The **three new plants** are being built in the states of **Minas Gerais and Goiás**, far from the Amazon or any protected areas. Instead of purchasing land outright, CNAA will lease it from owners of medium to small-sized plots who decide they can earn a better return from sugar cane than they can from low-intensity pasture—the area's predominant land use at present.

The new plants will use **mechanized harvesting** for more than 90 percent of their acreage, and they will provide some 4500 high-quality permanent jobs. The plants will produce up to **420 million liters of ethanol** for the domestic market each year, and will generate their own electricity by burning bagasse (**56 MW each**).

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Inter-American Development Bank – IDB

News Releases

December 15, 2009

Peru Biofuel project to receive US\$25 million from the IDB

Combined ethanol refinery, sugar plantation and electricity plant will generate 500 permanent jobs for local communities in the Department of Piura, Peru.

An initiative of Maple Energy Plc, an energy company that has focused solely on [Peru](#) since 1994, listed on the London Stock Exchange's Alternative Investment Market and on the Lima Stock Exchange. The project is known as Maple Etanol, requires a **total investment of \$245.5 million** and will receive assistance from Netherlands development agency SNV, with extensive experience in developing inclusive businesses.

The project includes construction of a **130 million liters per year** sugarcane ethanol destillery. It includes 7,800 hectares of sugarcane on a 14,000-hectare property that Maple Energy purchased from the government of Piura and private individuals. The land comprises desert and/or arid areas that Maple Etanol will convert into highly productive land,

Mechanization, along with the use of efficient drip irrigation, will enable Maple Etanol to achieve yields of up to 153 tons of sugarcane per hectare. The project will also include a **37MW cogeneration plant** selling excess electricity to Peru's interconnected power system. In addition to the \$25 million from the IDB, Maple Etanol will receive cofinancing from other multilateral agencies and a private commercial bank. The Andean Development Corporation (CAF) will finance \$65 million, the Entrepreneurial Development Bank of the Netherlands (FMO) will finance \$25 million and Interbank \$25 million. The IDB loan will **have a term of 12.5 years with a 2.5-year grace period.**





Some TCs approved by SECCI funds

1. **Haiti, Guatemala and Honduras**: National Biofuels Programs Feasibility Studies (BR-US MOU; \$750k; BR-T1086; Mar 2007)
2. **Guatemala**: Action Plan (MEM; \$400k; GU-T1095; Dec 2007)
3. **El Salvador**: Action Plan (MINEC/CENTA; \$750k; ES-T1096; Mar 2008)
4. **Brazil**: **MG** Sustainable Energy Development (BDMG; \$160k; BR-T1103; Jun 2008); Sugarcane workers requalification (UNICA; \$500k; Jul 2009)
5. **Honduras**: Action Plan (SP; \$600k; HO-T1101; Oct 2008)
6. **Chile**: 2nd Generation Biofuels (ForEnergy; \$1.000k; CH-T1096; Sept 2009)
7. **Colombia**: Innovation in Science and Technology applied to Biofuels (Colciencias; \$830 k KPK/SECCI; CO-T1059; \$1.5M CO-T1052 MME-DNP-MADR; Feb 2008)
8. **Guyana**: Expanding opportunities on Bioenergy (MAG; \$925 k; JSF/SECCI; GY-T1041; Mar 2008)
9. **Peru**: Strategic Plan for Sustainable Energy & Bioenergy (MEM; \$1M SECCI; PE-T1146; Apr 2008)



The Mesoamerican Biofuels Group

- Objective: the group was formed to join efforts, exchange experience inside/outside the region, facilitate decision-making and promote regional biofuels initiatives in Mesoamerica.
- Participants: 10 countries (Mexico, Guatemala, Belize, El Salvador, Honduras, Nicaragua, Costa Rica, Panama, Dominican Republic and Colombia) with initially 3 governmental representatives each from the energy, agriculture and finance sector, and regional institutions (SG-SICA, SIECA, CCHAC, CEAC, CEPAL, INCAE, CABEI, AID, IDB) coordinated by SG-SICA.
- Results so far: 5 working meetings held (August 25, 2006 in San Jose, Costa Rica; November 30, 2006 in Washington DC; March 12, 2007 in DF, Mexico; November 15, 2007 and November 4, 2008 in Guatemala). Action Plans prepared for regional initiatives on ethanol and biodiesel.



Other regional activities

- On June 7-8, 2007 the Ministers of Energy and Agriculture from the Mesoamerica Project – PM (former Puebla-Panamá Plan - PPP) and private sector representatives participated on a series of technical visits to Bogota, Cali, Medellín and Cesar region financed by the IDB and Colombia to learn the Colombian experience on biofuels, as an invitation from the President Uribe.
- Under the PM initiative, Mexico promoted the Mesoamerican Biofuels R&D Network and Colombia promoted the installation of 6 biodiesel plants in:

- El Salvador, Honduras, Guatemala (CORPOICA)
- Mexico (Chiapas and Federal governments)
- Panama and Dominican Republic (IDB-SECCI)





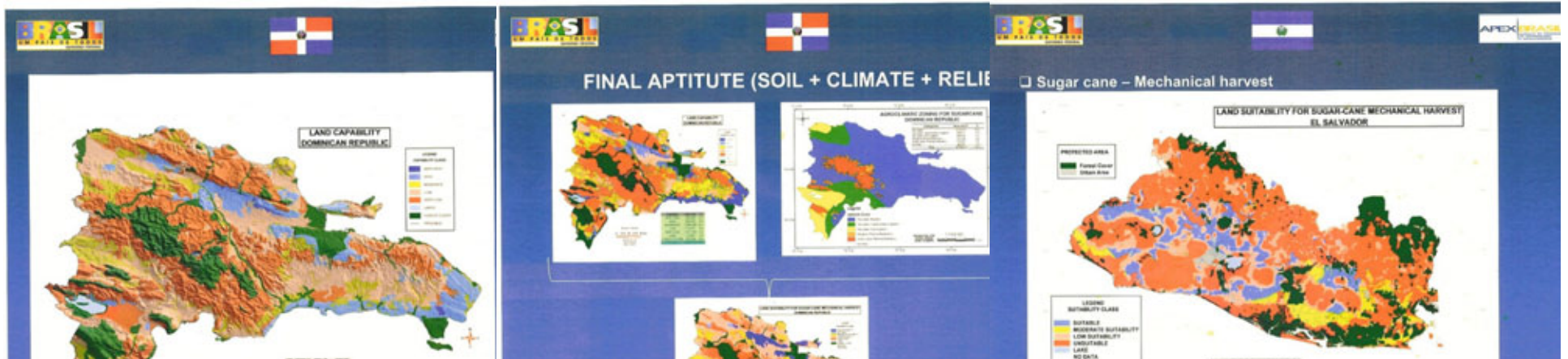
Activities on biofuels at national level

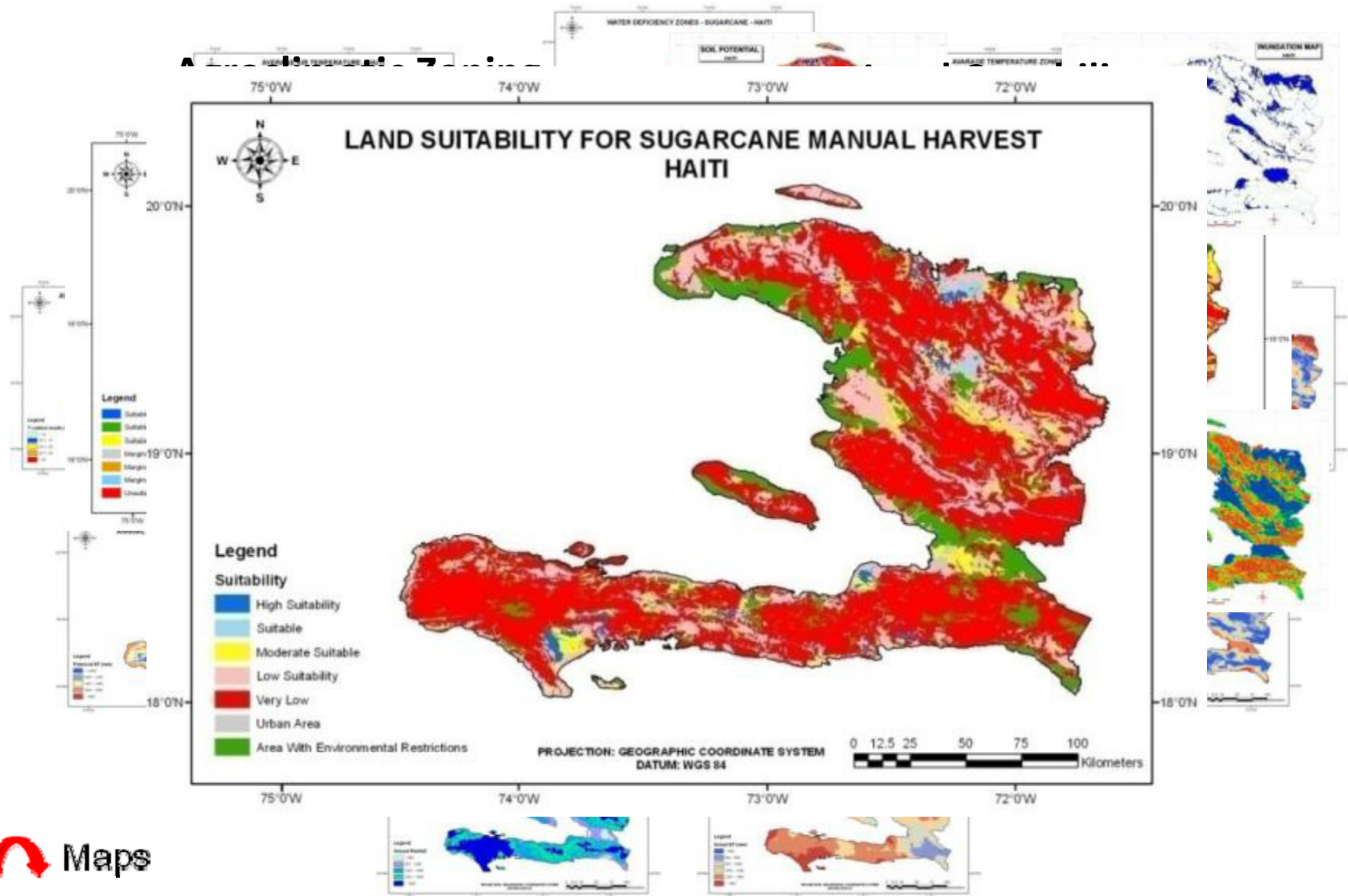
- Preference is given to regional activities (more than one country can benefit from a single operation), however sometimes specific activities are needed at national level for a particular country, such as regulatory issues and legislation, fiscal impacts analysis and feasibility studies
- In this context national Action Plans are being developed for the evaluation of biofuels in individual countries (El Salvador, Honduras, Guatemala, Haiti and Dominican Republic)
- More urgent studies are being conducted in a more expeditious way with support from SECCI to help countries make informed decisions towards their Action Plans and in launching National Biofuels Programs
- Also relevant efforts have been necessary to coordinate with other initiatives such as the BR-US cooperation agreement on biofuels

Support to BR-US MOU on biofuels

Technical assistance (US\$750,000 SECCI funds) to implement studies and evaluations to support National Biofuels Programs in:

- El Salvador (APEX-funded)
- Dominican Republic (APEX-funded)
- Haiti, Guatemala, Honduras (IDB)

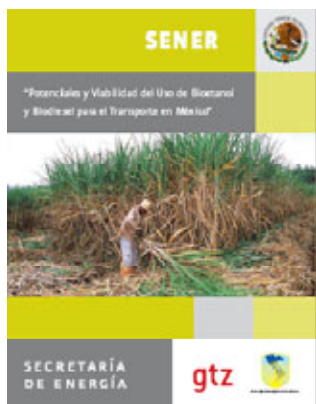




Case of Mexico

A technical assistance project* to SENER funded by HSET/USDOE and GTZ to evaluate the feasibility of the production, distribution and utilization of ethanol and biodiesel as fuel for transportation:

- Technical, economical, social and environmental issues were reviewed to calculate the impacts from the introduction of biofuels under alternative scenarios for market penetration & oil prices
- Several technologies were evaluated for the production from different raw material and the utilization of biofuels – fixed and variable blends, hydrated ethanol, flex fuel vehicles, ETBE; increased cogeneration



- Some of the results: US\$160 million would be required for replacing MTBE/TAME in major cities, without the need of expansion of sugarcane plantation; replacing 10% of gasoline nationwide requires add'l 800,000 ha (twice the current sugarcane area), US\$2 billion in 45 new distilleries and 400,000 new jobs; sugarcane most competitive solution

http://www.energia.gob.mx/webSener/res/169/Biocombustibles_en_Mexico_Estudio_Completo.pdf

Mexico

First phase of biofuels introduction

Pilot blending of ethanol to gasoline in the City of Guadalajara: 3 million ton of biomass (sugarcane, sweet sorghum, sugar beet or their combination), to produce 200 million liters yearly of ethanol.

Potential production

Source	Area ha
Sugarcane	25,300
Sweet sorghum	43,000
Sugar beet	52,000
Total	120,300

Mills	Area ha
Tamazula	2,583
Bellavista	5,674
Ameca	10,231
José María Morelos	7,990
Tala	20,172
Melchor Ocampo	8,312
Total	54,962





Case of Brazil (requalification of sugarcane cutters)

A SECCI US\$500k Technical Assistance Operation for UNICA (Sugar Cane Industry Association) the major sugar and ethanol organization in Brazil with 118 sugar mills, responsible for aprox. 60% of the ethanol and sugar produced in Brazil:

- Full harvesting mechanization is expected by 2014 for all major sugar cane areas with <12% slope, and by 2017 in all other areas.
- During next 3 years about 26,500 sugar cane cutters will be displaced.
- Project target is qualify 3,500 workers: 1,500 through professional training for the sector and 2,000 for other sectors.



Case of Chile

A US\$ 1 million SECCI Technical Assistance for a **2nd generation biofuel** feasibility study, employing wood residues:

- Executed by ForEnergy S.A., a public-private partnership of ENAP Refinerías S.A. and Consorcio Maderero S.A. that with support from a local R&D institution put together the Biocomsa Consortium.
- The SECCI grant together with funds from the Government of Chile will help ForEnergy build a pilot plant to produce hydrogen and steam from wood and other biomass sources through a gasification process.
- In a second phase, hydrogen will be converted to biofuels through a Fischer-Tropsch process and ForEnergy will analyze investments and O&M costs to determine the scale-up of the pilot plant.



ENVIRONMENTAL

IDB Scorecard for Sustainable Biofuels

General

Yield (liters oil/ ethanol per hectare)
above 6000
above 4500
between 1500 and 4500
below 1500

Yield (GJ per hectare per year)
above 100
between 50 and 100
below 50

Cultivation

Former land use
No land area (algae and waste)
Degraded land
Under-utilized land or husbandry
Marginal land
Displaced cultivation or husbandry
Rainforest, primary forest
Peat land
Wetland
Ecological sensitive/protected area - Biological corridors

Crop Lifecycle
Replant greater than 3 years
Replant every year, no-till
Replant every year, low till
Replant, 1-3 years
Replant every year

Crop rotation/Crop mix
Nitrogen fixing crops used in rotation
Inter-cropping
No crop rotation



Scorecard External Process

- Informal external expert opinion obtained: academics, environmental NGOs, financial institutions, investors, and biofuels project developers in the US, EU, and in LAC
- The Team reviewed all suggestions and incorporated specific changes into the new version of the Scorecard and User's Guide
- Scorecard posted in IDB's website the first week of September 2008
- Public launch on September 9th 2008 at the '4th Annual Western Hemisphere Energy Security and Cooperation Forum' hosted at IDB
- A broad public consultation period begun and various regional workshops are being held



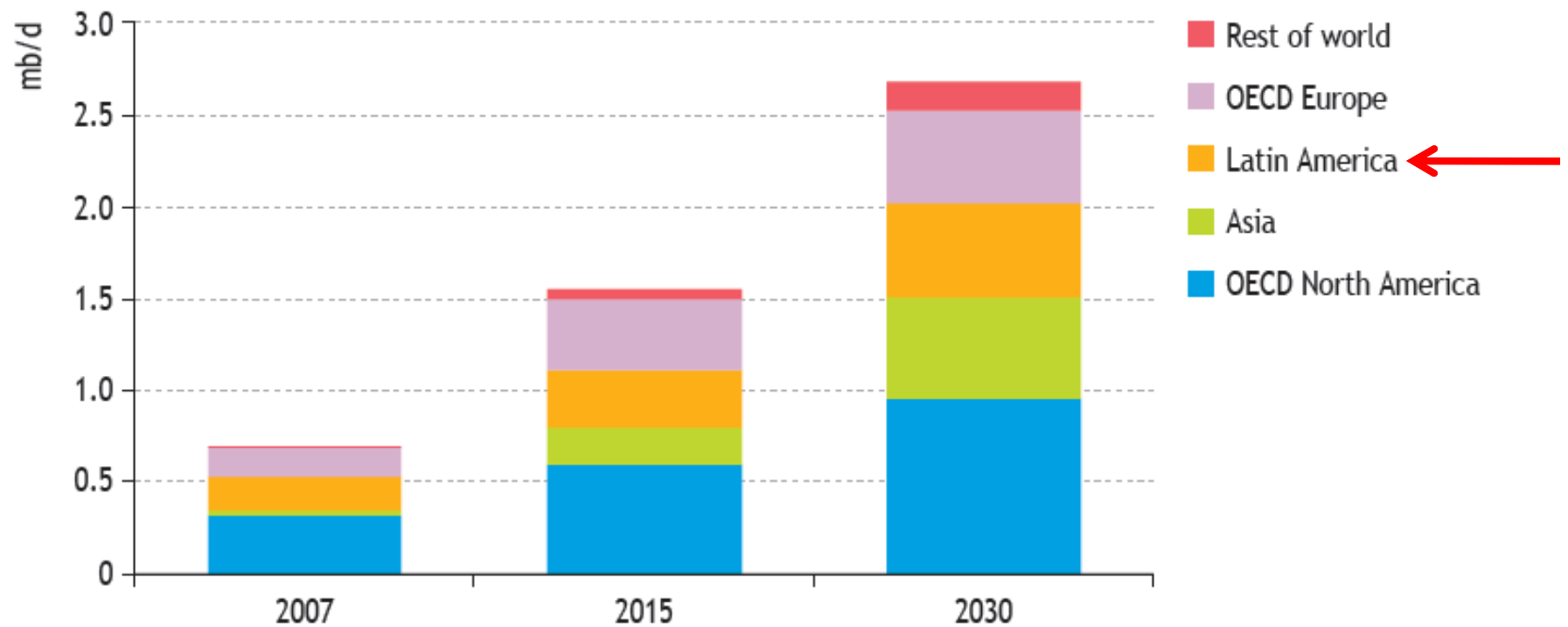
IDB Carbon Finance Strategy

- IDB does not act as buyer or seller – instead support its clients (private and public) in integrating Carbon Finance in their business
- Support includes technical capacity for specific projects to comply with carbon markets regulations (mainly focus on the Clean development Mechanism - CDM) to broader capacity of project developers to organize themselves legally and institutionally to benefit from the market
- Support is provided in form of grants and technical assistance

Future relevance of Biofuels at global level

Biofuels utilization increased 37% in 2007 globally, reaching 1.5 % of all energy use in transport. It will reach 5% in 2010 globally in the reference scenario of the IEA WEO 2009.

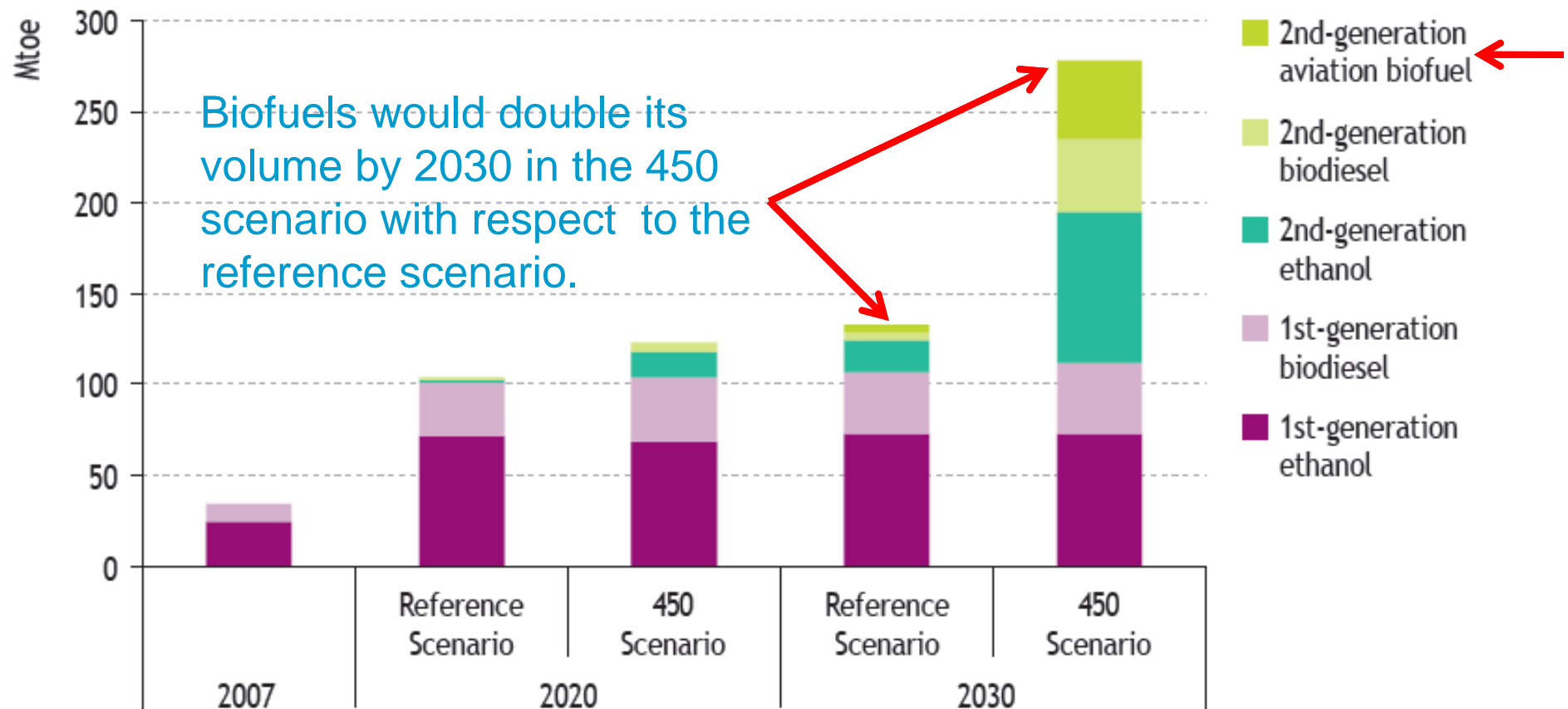
Figure 1.10 • Biofuels demand by region in the Reference Scenario



Note: On an energy-equivalent basis.

Global Biofuels demand (450 x ref. scenarios)

Figure 5.10 • Biofuels demand by type and scenario

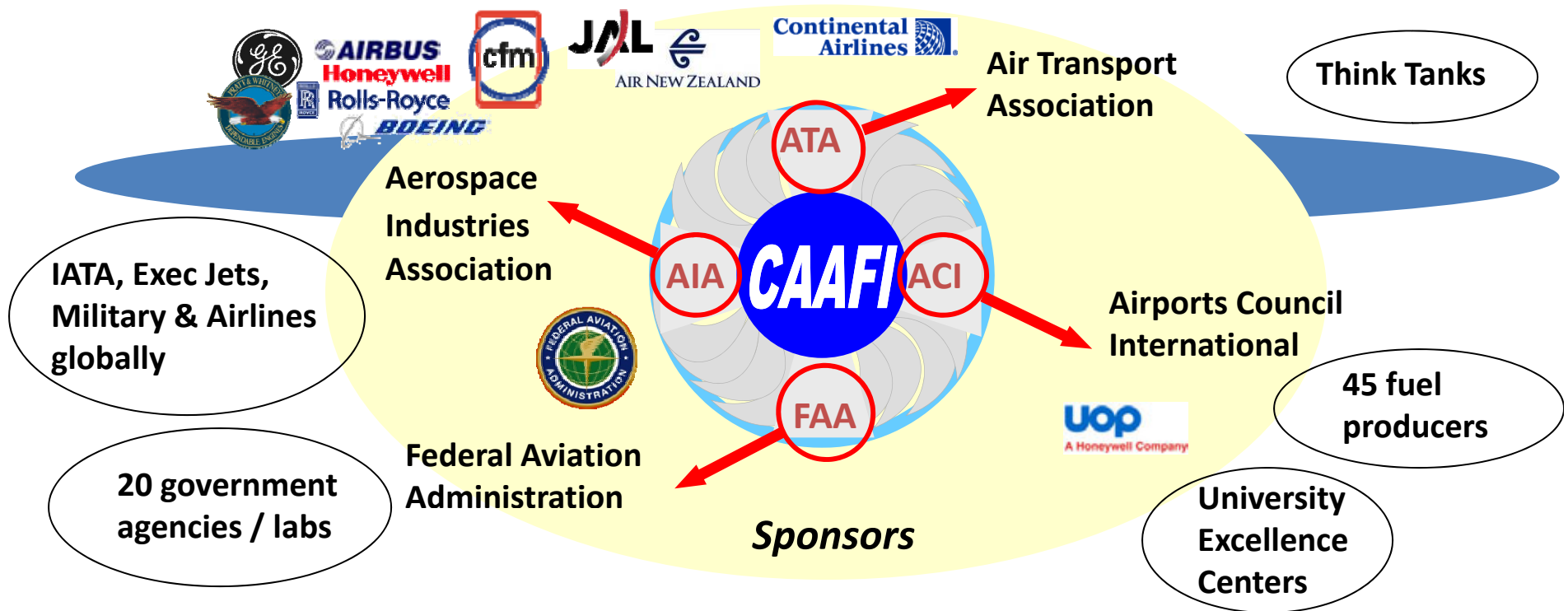


Source: WEO 2009; scenario ref.= 1.000 ppm CO₂ eq in atm; +6 C global temp.; +4m sea level; - 40% species; -100% glaciers
 450 scenario = 450 ppm CO₂ eq. ; +2 C global temp.; CO₂ emissions in 2050 = 50-85% of 2000



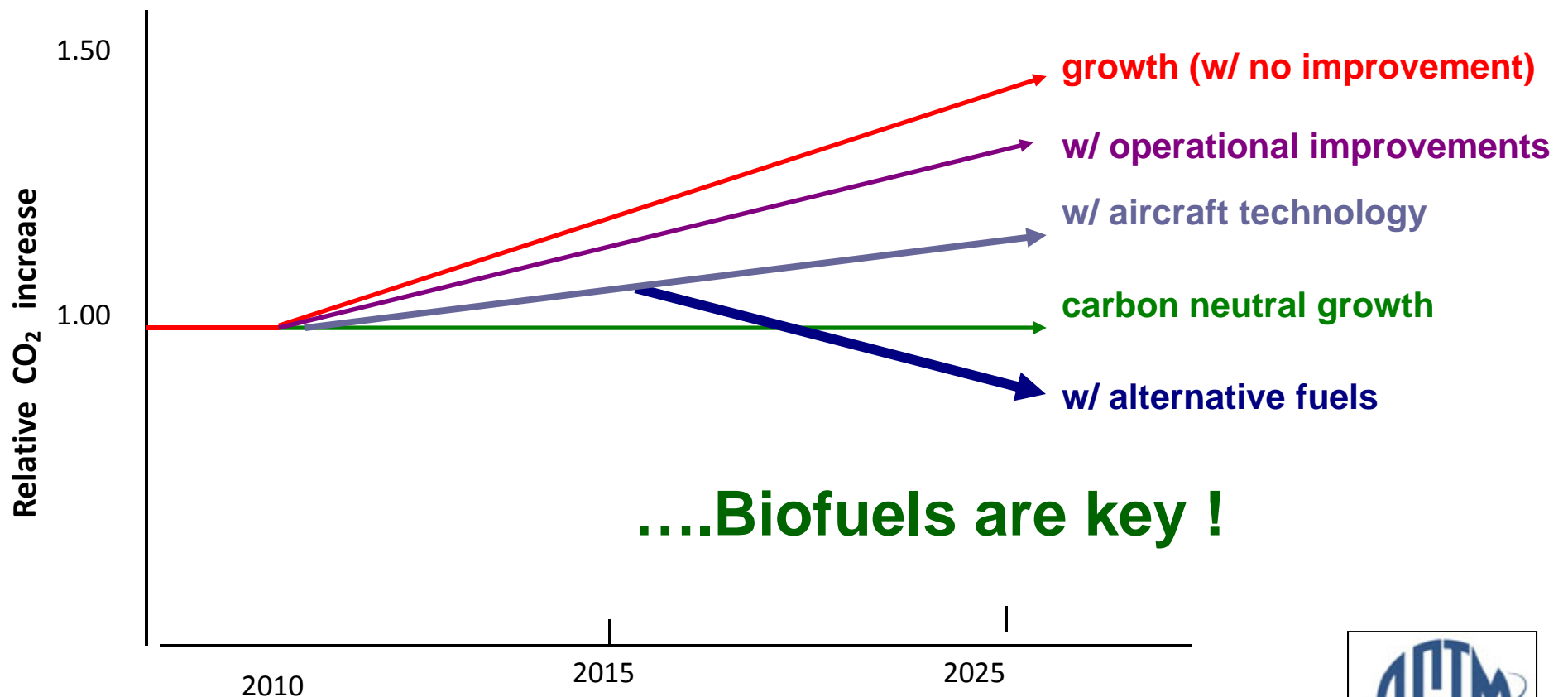
Niche market for 2nd generation biofuels: Aviation jet fuel as first clients?

CAAFI - Commercial Aviation Alternative Fuels Initiative, a consortium of government agencies, airlines, manufacturers, airports and current and prospective fuel suppliers that are coordinating work on the research and development of alternative jet fuels, including technical specifications, environmental aspects, production and distribution.





Aviation committed to carbon-neutral growth



....Biofuels are key !

ASTM D7566 approved in Sept 2009





Three Successful HRJ Biojet Flight Programs*

* Visuals Complement J. Holmgren, UOP



Feedstock: Jatropha oil

- Successful ANZ Flight Demo
- Date: December 30 2008



Feedstock: Jatropha and algal oil

- Successful CO Flight Demo
- Date: Jan. 7 2009



Feedstock: Camelina, Jatropha and algal oil

- Successful JAL Flight Demo
- Date: Jan. 30 2009



1st demo/test flight in LAC in 2010 ?



THANK YOU



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