

## Fifth Stakeholder Plenary Meeting of EBTP

**“Session 5: Global approaches to support for advanced biofuels - how the need for a comprehensive policy framework is being addressed”**



**Géraldine Kutas**

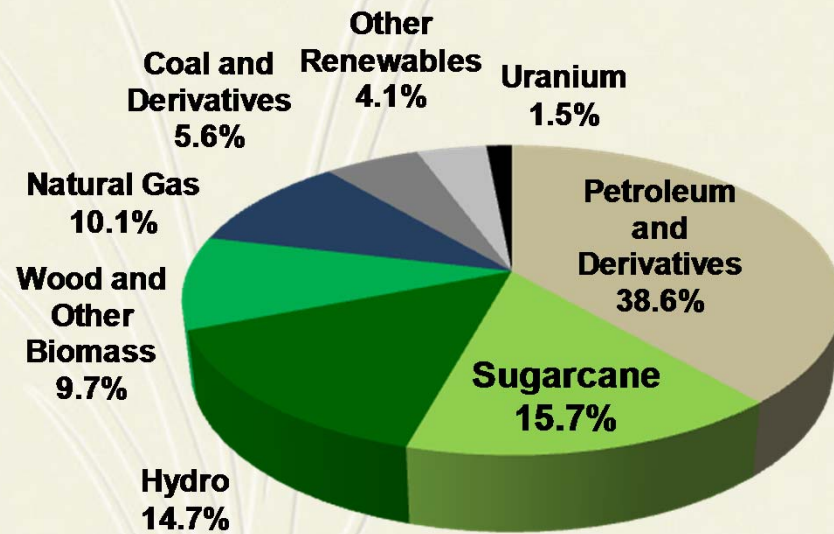
Senior Advisor to the President for International Affairs

Head of International Affairs

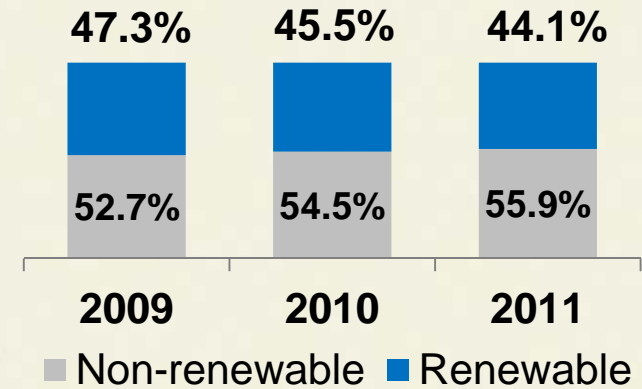
Brazilian Sugarcane Industry Association (UNICA)

Brussels, 7 February 2013

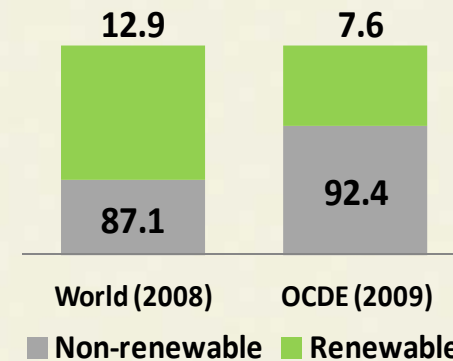
# BRAZILIAN ENERGY MATRIX INPUT



#1 Source of Renewable Energy in BR



## WORLD (%)



# DOES BRAZIL NEED TO INVEST IN NEW BIOFUELS TECHNOLOGIES?

- **Outstanding performances of 1G sugarcane ethanol:**
  - ✓ High GHG savings (90% on average)
  - ✓ Classified as Advanced Biofuels in the US
  - ✓ High productivity per ha, unmatched energy balance
  - ✓ Scalable and cost-competitive with gasoline
- **Strong penetration of ethanol in the Brazilian fuel market**
  - ✓ Between 36 and 42% of fuels used in light vehicles (energy content)
- **Sugarcane bagasse is used to produce bioelectricity**
- **Land and water availability for expansion**
  - ✓ 160 mn ha of pastures underutilized and degrading
  - ✓ Sugarcane production is rainfed in South Central Brazil (90% of production)
  - ✓ Legislation on land use planning to ensure the sustainable expansion of the sugarcane sector (Agro-ecological Zoning)

# KEY DRIVERS TO INVEST IN NEW BIOFUELS TECHNOLOGIES IN BRAZIL

- Use of all the sugarcane's energy. With mechanization, the straw (1/3 of the sugarcane's energy) is also available.
- Vertical expansion to supply a strong growing market, not limited to fuels.
- Export opportunities (US, EU)
- Drop-in fuels and bio-chemical components

# AVAILABLE SUGARCANE BIOMASS

Straw: Leaves and Tops → 140-200 kg/t sugarcane



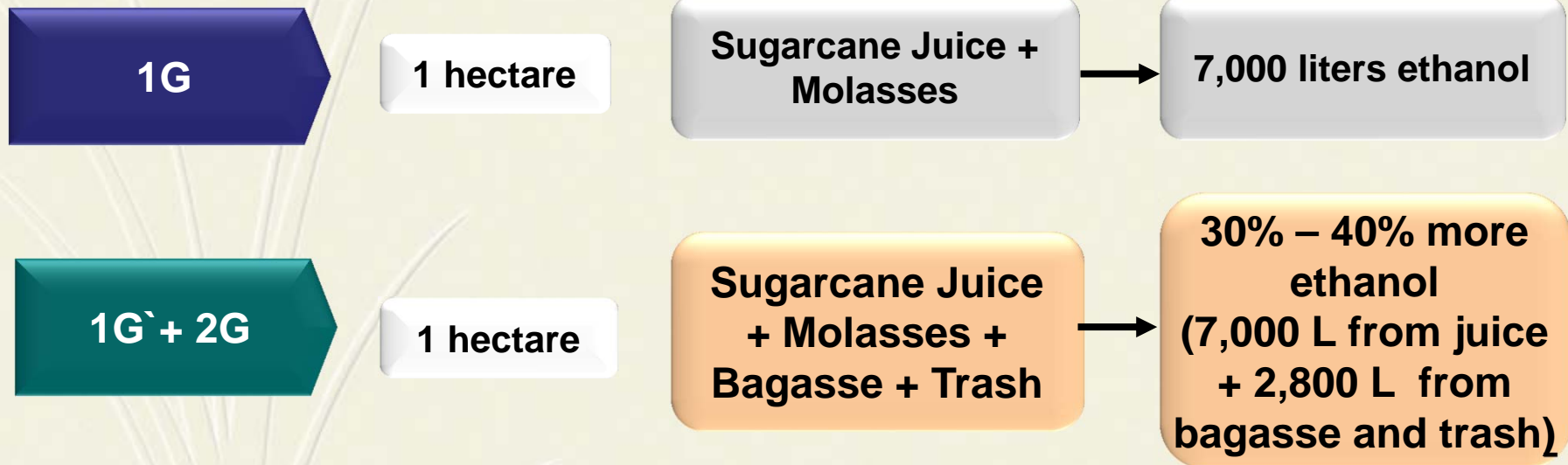
Source: CTC

# AVAILABLE SUGARCANE BIOMASS

Bagasse → 270 kg/t sugarcane

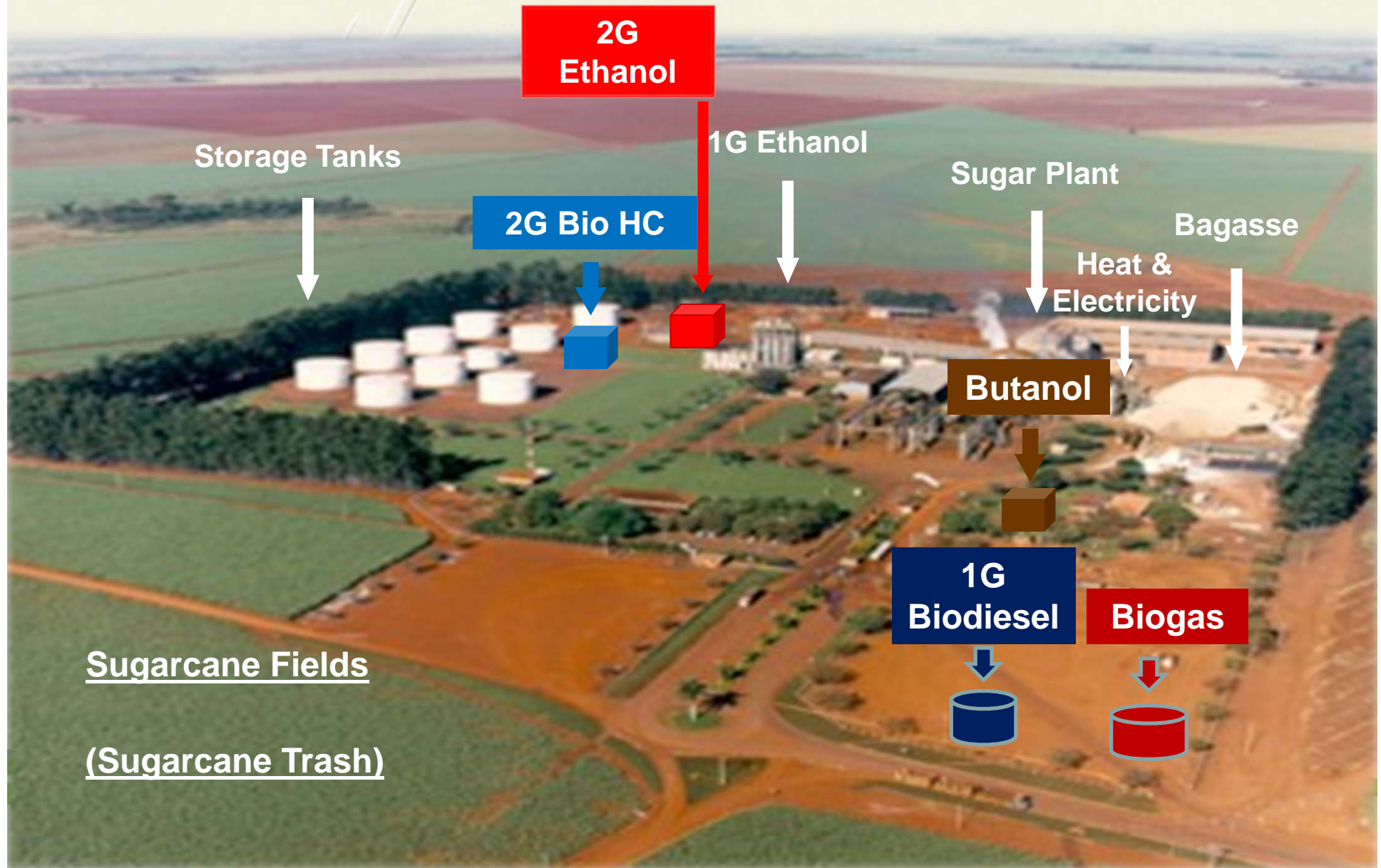


# 1G ETHANOL VERSUS 1G + 2G ETHANOL



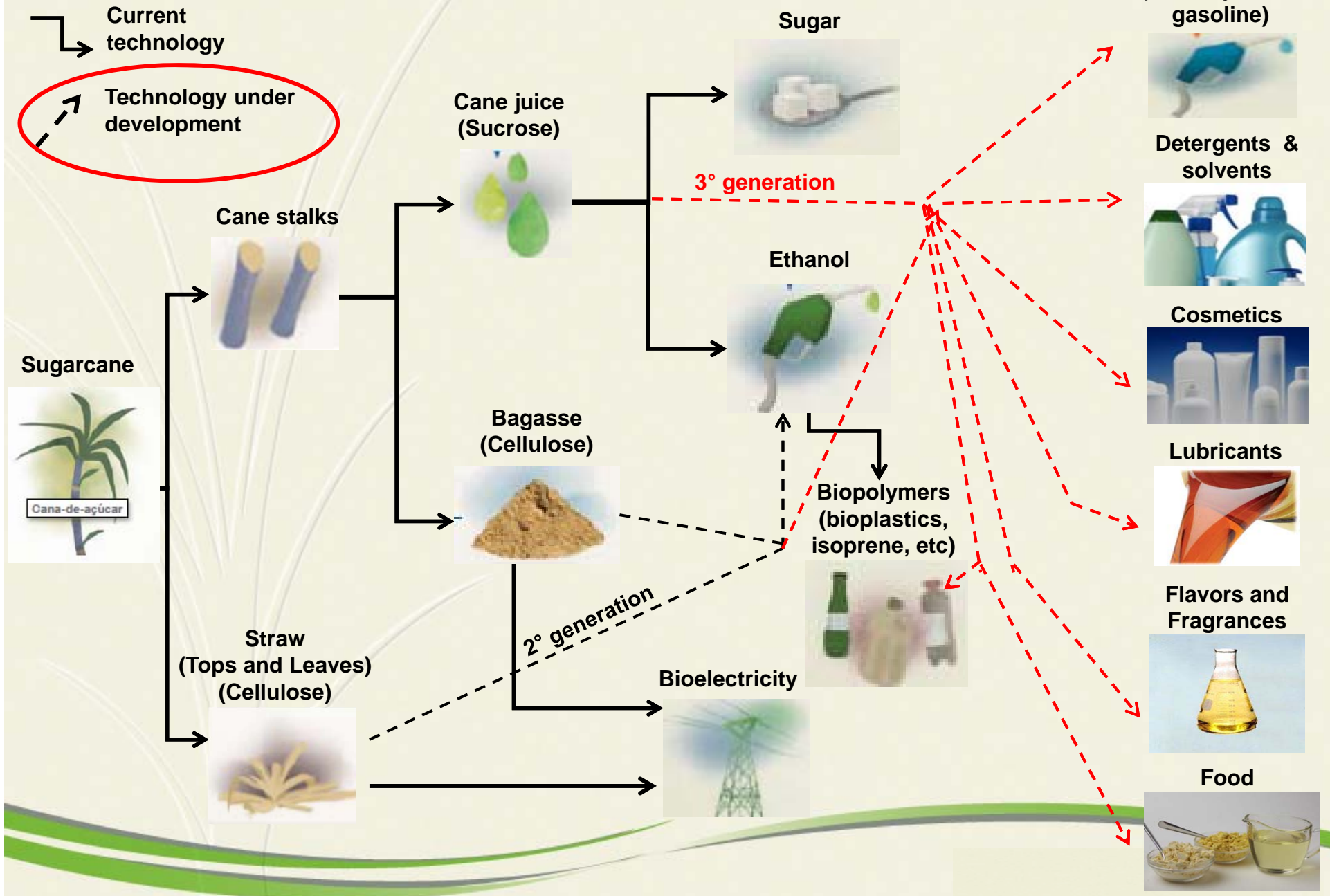
Potential to double 1G production depending on the availability of biomass and process efficiency.

# SUGARCANE BIOREFINERY – CO-LOCATION





# MULTIPLE SUGARCANE-DERIVED PRODUCTS



# 2G ETHANOL DEVELOPMENTS IN BRAZIL

**logen and Raizen:** logen will develop and engineer the front-end design of a 40 mn liters/year facility at one of the Raizen's mill in Sao Paulo State. The ethanol will be produced from sugarcane bagasse and straw.

**GraalBio:** In Dec 2013, first commercial 2G plant in Alagoas using mostly sugarcane trash. Nominal capacity is 82 min liters/year. Strategic partnerships with Mossi&Ghisolfi, Novozymes, DSM, UNICAMP, RIDESA and BNDES. Plant is similar to the one being built in Crescentino, Italy, planned to start operation in 2012/2013.

**Petrobras and Blue Sugars:** Petrobras has been developing 2G since 2004. In 2012, 80.000 liters of ethanol from bagasse were produced in partnership with Blue Sugars (demo). Commercial production expected in 2015/2016.

**Research Institutes and Universities** (CTC, Embrapa, CTBE, UFRJ, UNICAMP etc.) are also developing 2G technologies.



# DROP-IN FUELS AND BIOCHEMICAL DEVELOPMENTS IN BRAZIL

**Cobalt and Rhodia:** Demo plant announced for 2013 to produce n-butanol from bagasse.

**Amyris/Paraiso bioenergia/São Martinho:** Feb. 2013, first commercial shipment of renewable farnesene, to be used in a range of specialty chemical and fuel applications from Amyris new plant in Brazil. Renewable jet fuel used in first commercial flight during Conf Rio +20, in partnership with Embraer, GE and Azul Airlines. Sugarcane juice currently used, but bagasse and straw investigated.

**Solazyme and Bunge:** The joint venture will begin operations in S2 2013 to produce renewable oils from microalgae. This renewable oil serves as raw material for a wide range of products such as diesel and jet fuel as well as it is used in the food and cosmetics industries. Sugarcane juice currently used, but bagasse and straw investigated.

# BRAZILIAN POLICY FRAMEWORK

- No specific support measures for new biofuels technologies (no mandate, no specific tax exemption),
- But, stable policy framework for ethanol blend and relative market predictability (continuous increase of the FFV fleet)
- New products must be cost-competitive
- Joint Plan for Supporting Industrial Technological Innovation in the Sugar-based Energy and Chemical Sectors (PAISS)
  - A Brazilian government initiative: BNDES and FINEP
  - Funds available: approx. €380 million 2011-2014
  - 3 thematic lines: 2G ethanol, new sugarcane-derived products, gasification
  - The business plans of 25 companies have been approved: 13 for line 1, 17 for line 2 and 1 for line 3 (including for Brazilian branches of multinationals)
- Test of new products and homologation: key role of ANP and INMETRO

# VISIT SUGARCANE.ORG



**SugarCane.org**

*spreading the word about clean solutions from sugarcane*



About Sugarcane

Products

Sustainability

Benefits

Brazilian Experience

Global Policies

Resource Library

## Unlocking the Power of Sugarcane

This remarkable plant has the potential to lower carbon dioxide emissions, create jobs, reduce petroleum use and help create a healthier, cleaner planet. Watch our brief video to learn more.

solutions from  
**sugarcane**

**Inform**

News, Opinions & Events

**Understand**

Sugarcane Basics

**Enhance**

Sustainable Production

**Experience**

The Brazilian Model

**UNICA**

The logo for Unica, featuring the word "unica" in a stylized, lowercase, sans-serif font. The letters are white with a dark grey shadow effect. A small green sphere is positioned at the end of the 'a'.

Thank you!

[www.unica.com.br](http://www.unica.com.br)

[www.sugarcane.org](http://www.sugarcane.org)