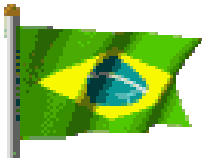




**MINISTRY OF AGRICULTURE, LIVESTOCK AND FOOD SUPPLY**

**Secretary of Production and Agroenergy**

# **BIOENERGY IN BRAZIL: OPPORTUNITY FOR INVESTMENTS**



**LINNEU CARLOS DA COSTA LIMA**

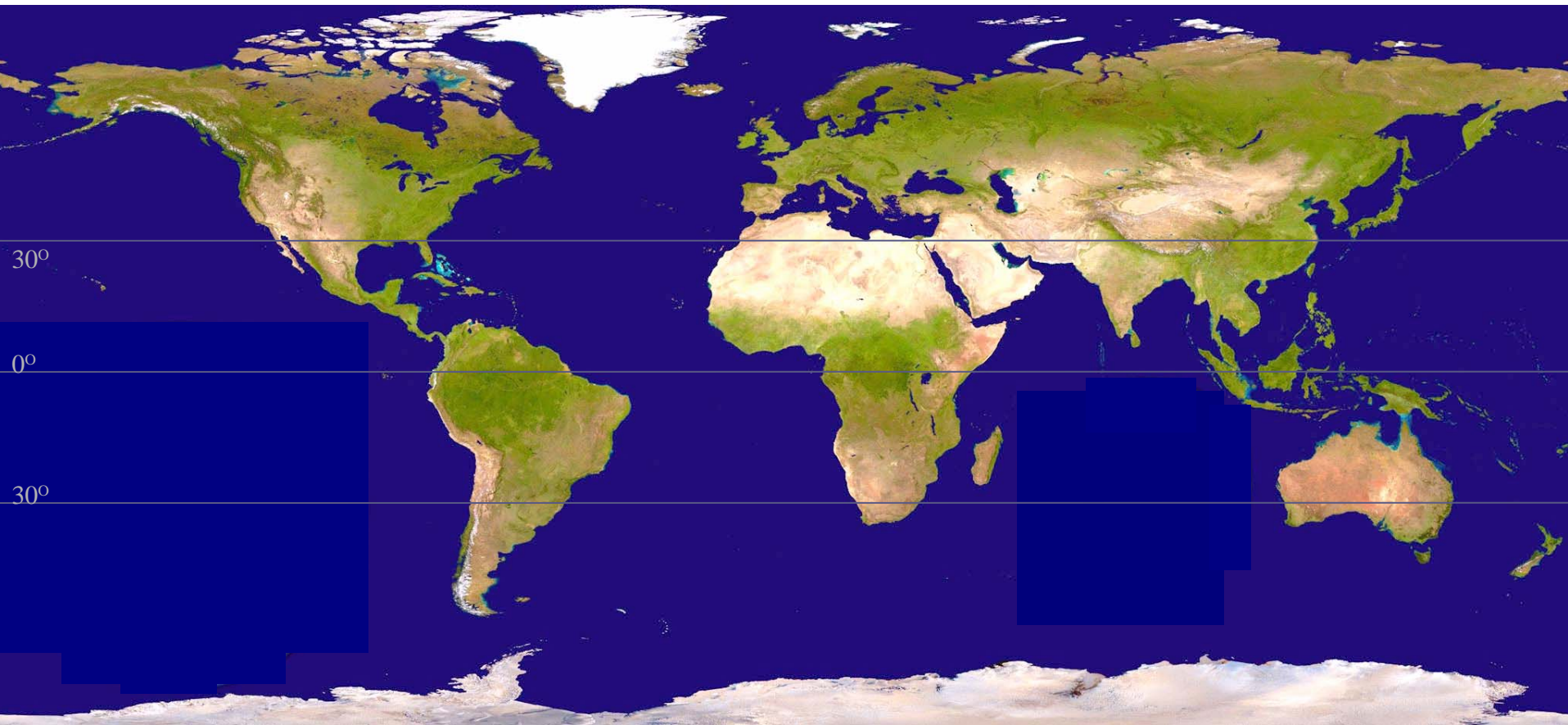
Secretary of Production and Agroenergy

---

***FOODEX - JAPAN***

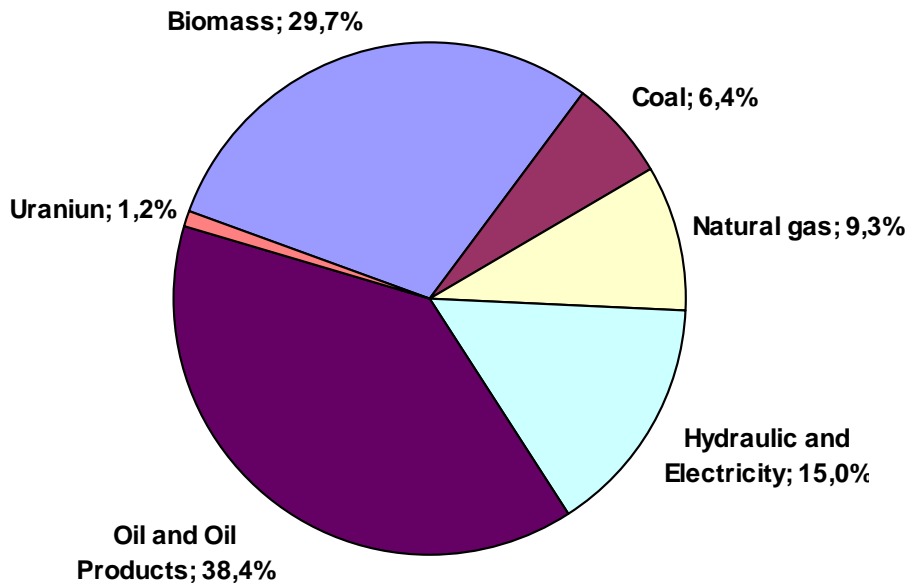
***JAPAN / March, 2007***

# **BRAZIL HAS A GREAT POTENTIAL FOR BIOFUELS PRODUCTION...**



# ...LEADING TO A RENEWABLE ENERGY MIX

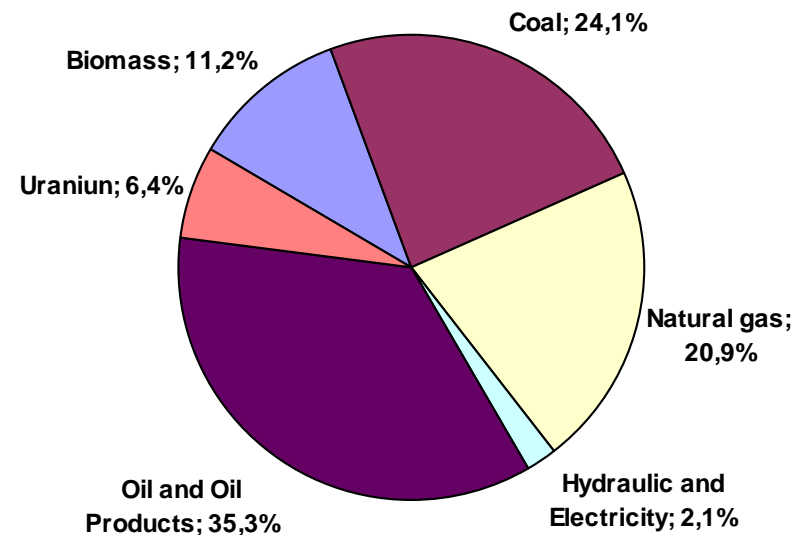
## BRAZILIAN ENERGY MIX



Share of renewable energy in the total primary energy: 45%

Share of renewable energy in the power generation: 85%

## WORLD ENERGY MIX



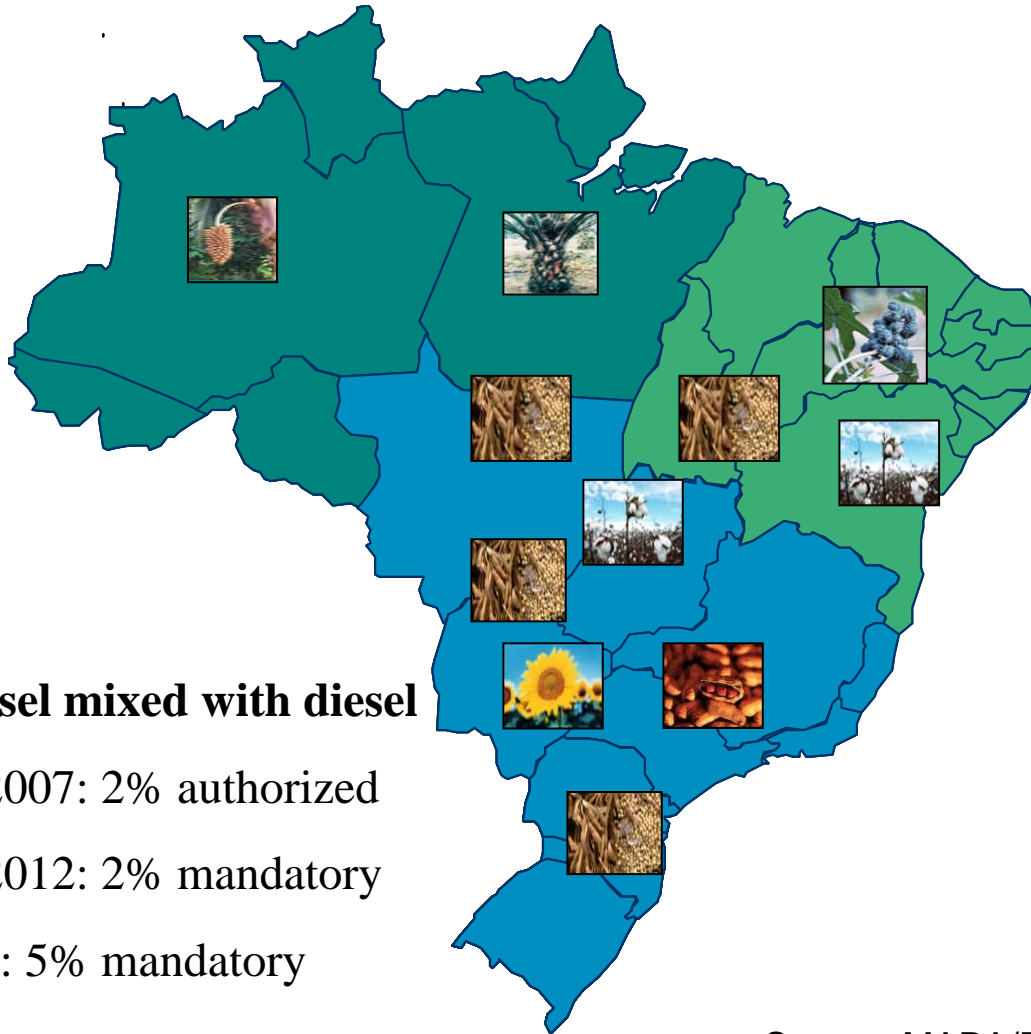
# THE NATIONAL AGROENERGY PLAN



- ***ETHANOL***
- ***BIODIESEL***
- ***AGRICULTURE WASTES***
- ***ENERGETIC FORESTS***



# BIODIESEL: A PRODUCT FOR THE FUTURE



## Biodiesel mixed with diesel

2005-2007: 2% authorized

2008-2012: 2% mandatory

2013...: 5% mandatory



Castor



Soybean



Palm Tree



Sunflower



Peanut



Cotton seed

Source: MAPA/Embrapa

# THE BRAZILIAN SUGAR CANE AND ETHANOL EXPERIENCES



**1532: Martim Afonso de Sousa introduces sugar cane in Brazil**

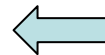


**1925: First ethanol powered vehicle tested in Brazil**



**1975 - Proálcool**

**1979: First commercial ethanol moved vehicle in Brazil**



**2003:**

**Flex fuel motors are launched**



# WHY ETHANOL?

- Clean, green and renewable energy;
- Safe and efficient;
- Easy to produce in large scale;
- Generate new jobs, specially in the rural area;
- Easy to introduce in the consumer market (pure or mixed with gasoline);
- Sugar cane has high productivity and low environmental impacts;
- Relatively low production costs (~ US\$ 0,30/L at the mill, without taxes);
- The sugar cane “wastes” are important products;
- Low consumption of external energy in the production process.



# THE MAIN SUGAR CANE BY-PRODUCTS



**BAGASSE**  
(solid industrial waste):

**BURNED IN BOILERS TO  
PRODUCE ENERGY**

**VINASSES or STILLAGE**

**(liquid industrial waste)**

**USED AS A FERTILIZER IN THE  
SUGAR CANE FIELDS**





# THE FLEX FUEL CAR – A NEW DOMESTIC ETHANOL DEMAND

- **Flex-Fuel Engine:** allows the use of ethanol or gasoline in any concentration of these fuels
- **Current Manufactures:** VW,GM, Ford, Fiat, Renault, Peugeot, Citroën and Honda
- **Sales of Flex-Fuel Vehicles in Brazil:**
  - 2003: 48.000 units
  - 2004: 330.000 units
  - 2005: 865.000 units
  - 2006: 1.447.000 units

***More than 80% of the new light-duty vehicle sales in Brazil are flex fuel.***



# THE ETHANOL INTERNATIONAL DEMAND IS INCREASING

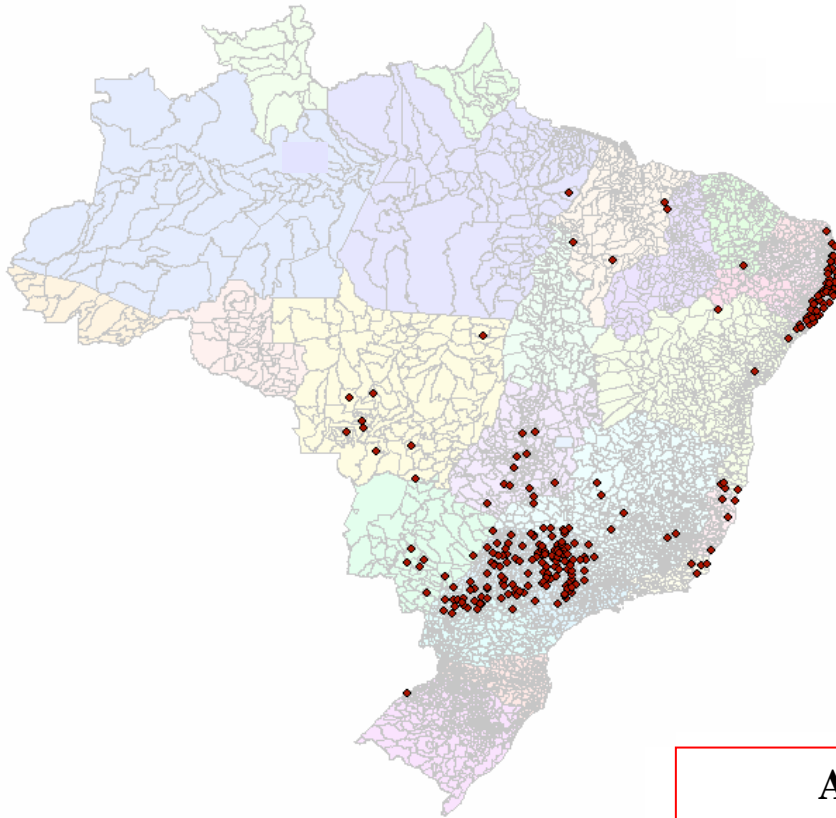
And so are the Brazilian exports...

YEARS	Million US\$ F.O.B.	Liters (Billion)	Average US\$/m <sup>3</sup>
1997	54	0,146	370,09
1998	36	0,118	301,21
1999	66	0,407	161,70
2000	35	0,227	153,07
2001	92	0,346	266,57
2002	169	0,759	222,86
2003	158	0,757	208,56
2004	498	2,408	206,68
2005	766	2,592	295,31
2006	1605	3,428	468,20

Source: Secex (Alice System)

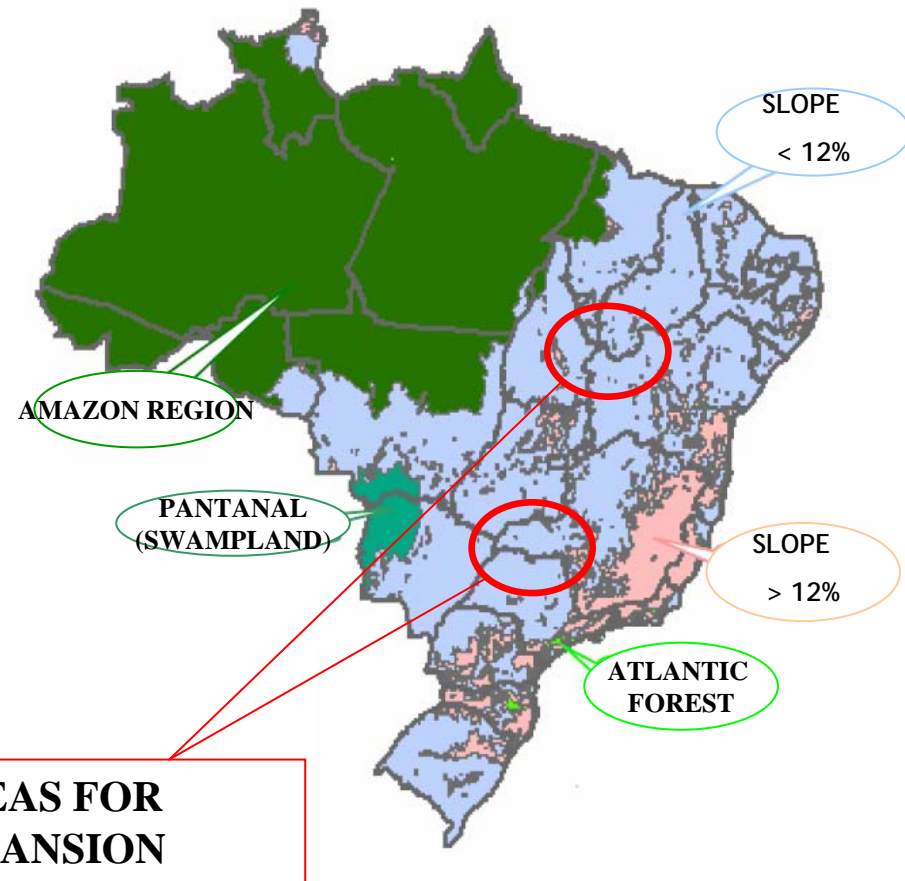
*The Brazilian aim is to transform ethanol in a great commodity, together with other countries*

# HOW TO EXPAND SUGAR CANE WITH SUSTAINABILITY?



Current plants: 360 mills

Forecast for 2010: + 77 mills



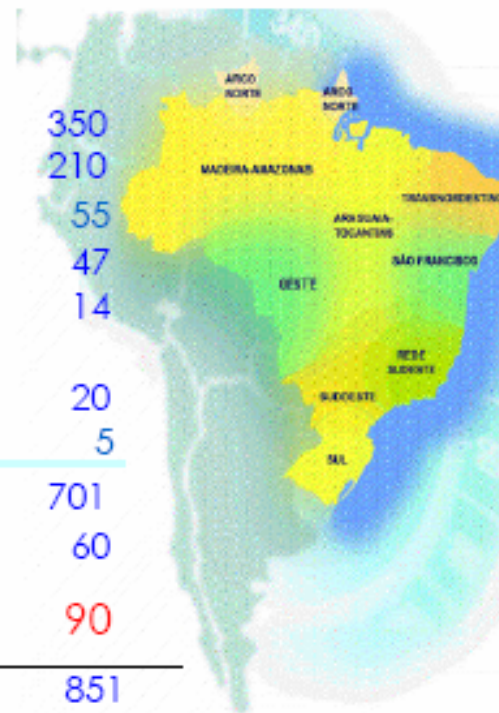
**AREAS FOR  
EXPANSION**

# DOES BRAZIL HAVE THE CONDITIONS TO EXPAND ITS SUGAR CANE PRODUCTION WITH SUSTAINABILITY?

NATIONAL TERRITORY: 8,51 MILLION KM<sup>2</sup>

Millions of hectares

AMAZON FOREST.....	350
BREEDING PASTURES .....	210
PROTECTED AREAS .....	55
ANNUAL CULTURES .....	47
PERMANENT CULTURES .....	14
CITIES, LAKES, ROADS AND SWAMPS .....	20
CULTIVATED FORESTS.....	5
<hr/>	
OTHER USES	701
	60
UNEXPLOITED AREA STILL AVAILABLE FOR AGRICULTURE	90
TOTAL	<hr/> 851



**TOTAL SUGAR CANE CULTIVATED AREA IN BRAZIL TODAY:**

**~ 6 million hectares (less than 1% of the Brazilian territory)**

**New areas of sugar cane necessary to supply the external sugar and internal ethanol demand foresighted for 2013:**

**~ 3 million hectares**

# ***HOW TO START AN ETHANOL MIXTURE PROGRAM?***

## **MAIN ASPECTS TO BE ADDRESSED:**

- Definition of a regulatory framework, with clear investment rules;
- Definition of a tax system;
- Planning of economic viability and product supply guarantee;
- Infra-structure and logistics investment;
- Marketing plan;
- Technological development.

***THESE ARE ONLY A FEW TIPS FROM THE BRAZILAN EXPERIENCE, BUT EACH COUNTRY HAS TO DESIGN ITS OWN MODEL.***

# ***HOW TO INVEST IN THE ETHANOL SECTOR IN BRAZIL?***

- The ethanol sector in Brazil is catching the attention of many investors worldwide
- Some international groups already have invested in this sector in Brazil
- Usually these investments are made together with Brazilian groups with expertise in the ethanol sector
- There are some institutions in Brazil who are able to give guidance for foreign investors such as:

The National Investment Information Network - RENAI

[http://sistemasweb.desenvolvimento.gov.br/investimento\\_web/renai\\_en/index.asp](http://sistemasweb.desenvolvimento.gov.br/investimento_web/renai_en/index.asp)

Trade and Investment Promotion Agency – APEX

<http://www.apexbrasil.com.br/eng/>

Trade and Investment Information Net - BrazilTradeNet

<http://www.braziltradenet.gov.br/>

## ***LAST COMMENTS...***

- **The transition from the oil era to the renewable energies may take time and demand a lot of different sources and technologies, such as: hydrogen, solar, wind power etc. However ethanol is an already viable and competitive fuel.**
- **Bioenergy contributes to reduce poverty and improve the democratic access of energy in the world. Brazil has a historical opportunity to be a great biofuel and clean technology exporter together with other countries.**
- **Biorefinery concept: ethanol and sugar to chemical uses; power generation; fertilizers; ethanol from lignocelluloses hydrolysis; etc.**
- **Bioenergy also contributes to the sustainable development and to avoid the global climate change.**



**THANK YOU!**

**OBRIGADO!**

**LINNEU CARLOS DA COSTA LIMA**

**+ 55 61 3218-2147 / 3218-2945**

**daa@agricultura.gov.br**

**www.agricultura.gov.br**





# BRAZILIAN ETHANOL PRODUCTION

