



MINISTRY OF MINES AND ENERGY

BRAZIL O&G AND BIOFUELS OVERVIEW

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Secretary of Petroleum, Natural Gas and Renewable Fuels

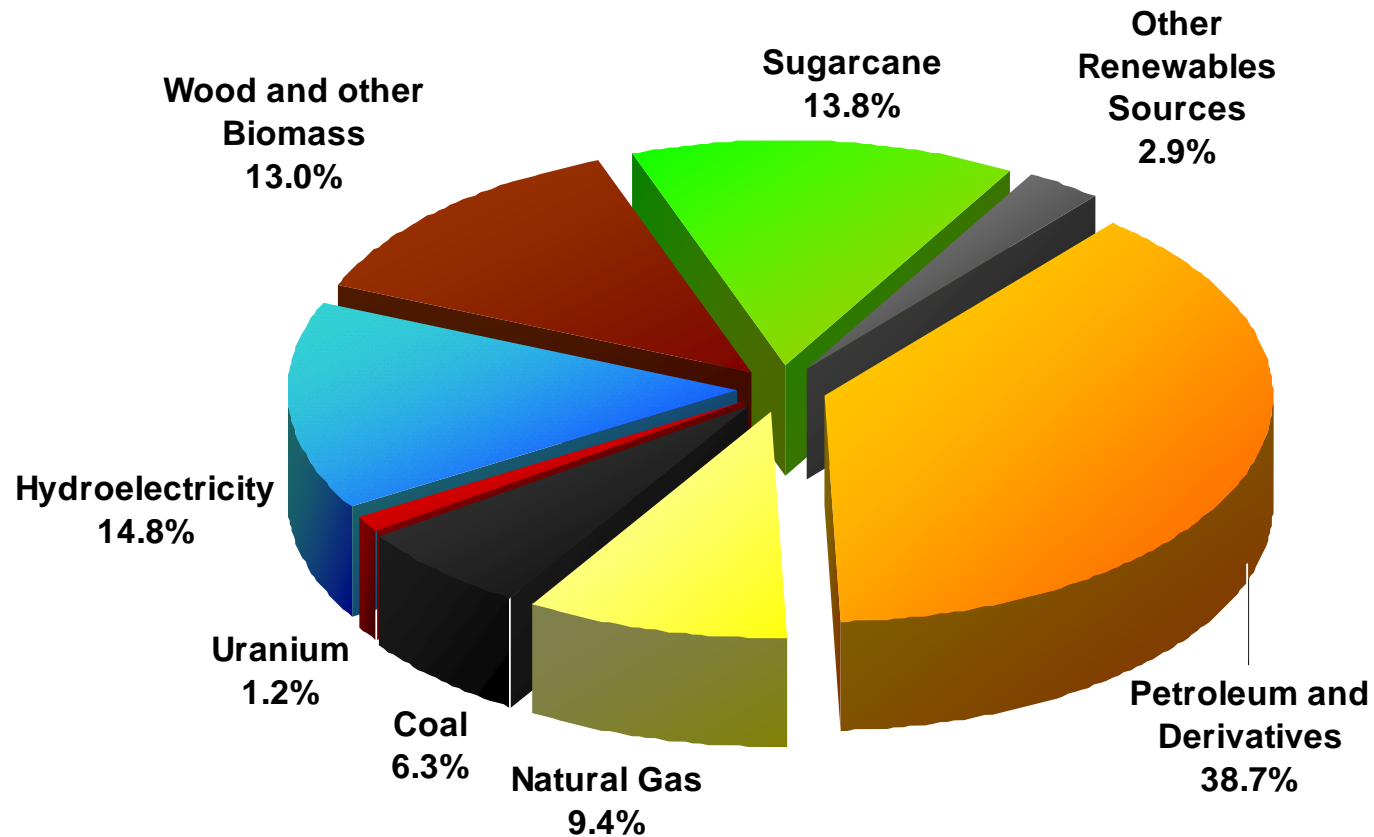
Brasília, March 8th, 2007

Summary

1. Energy Matrix
2. Oil & Gas Sector
3. Renewable Energy
4. H-BIO: A New Brazilian Technology
5. Final Remarks

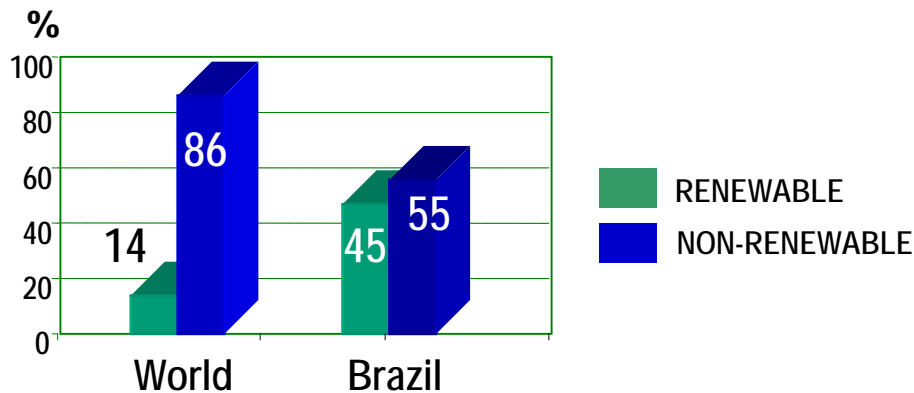
BRAZILIAN ENERGY MATRIX

BRAZILIAN ENERGY MATRIX



**RENEWABLE
SOURCES
44.5 %**

**218.7
MILLION
TOE**



Source: Brazilian Energy Balance (2006)

Ministry of Mines and Energy

BRAZILIAN O&G SECTOR

PETROLEUM & NATURAL GAS

Petroleum: Expected Investments E&P: US\$ 43.6 billion - 2007-2010

- **Proved Reserves (December, 31 - 2006):** 12.7 billion barrels
- **Production (2006):** 1.83 million barrels/day
- **Consumption (2006):** 1.81 million barrels/day
- **Imports (2006):** 0.361 million barrels/day
- **Exports (2006):** 0.368 million barrels/day
- **Reserve / Production Rate - R/P:** 19,2 years

Exchange Rate: 1US\$ = R\$ 2.14

Source: National Petroleum Agency-ANP, February/2007 (www.anp.gov.br)

NATURAL GAS

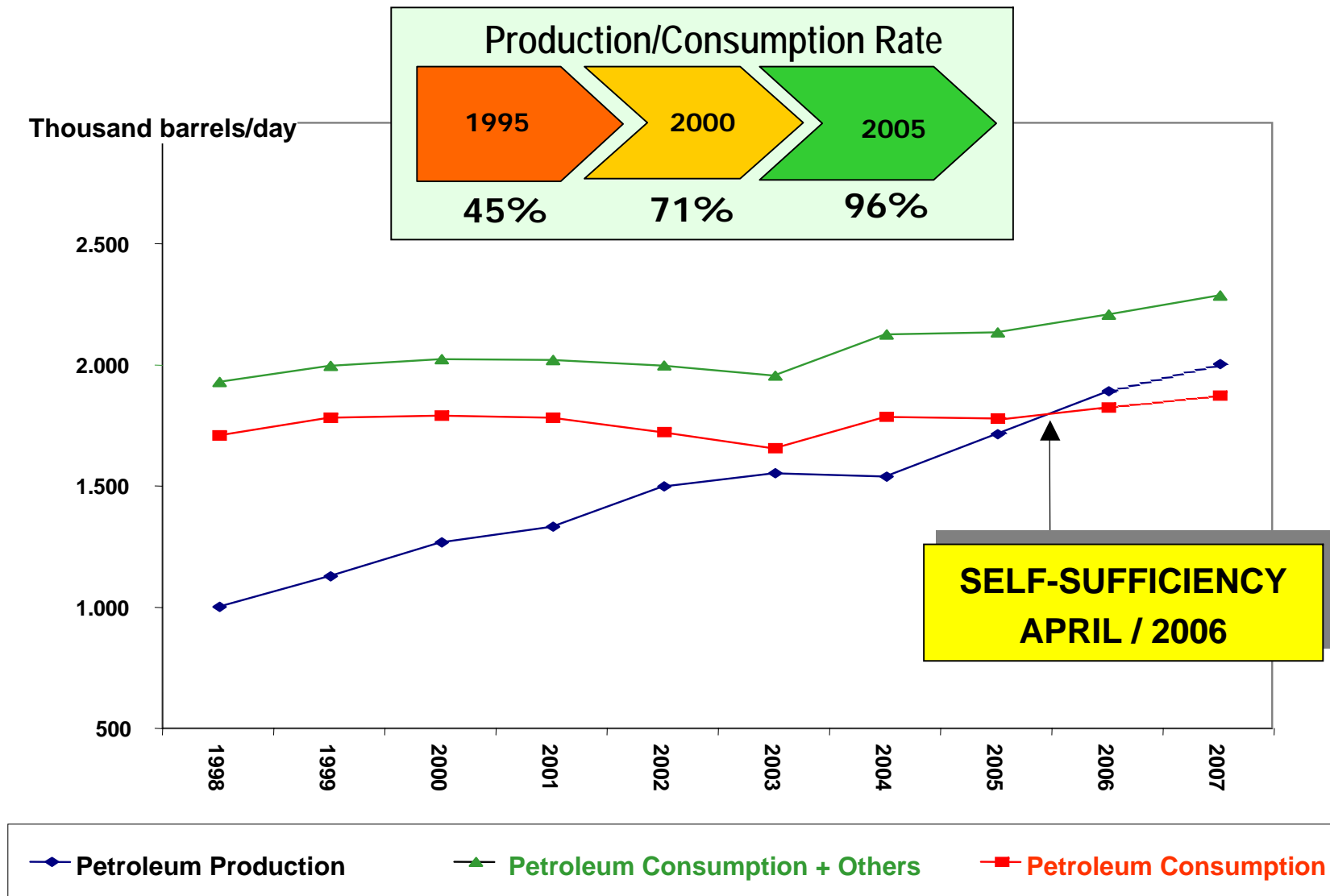
**Natural Gas: Expected Investments: US\$ 18.9 billion - 2007-2010
(include gas pipeline, LNG and PLANGAS)**

- **Proved Reserves (December, 31 - 2006):** **345 billion m³ (12,2 tcf)**
- **National Production of NG (2006):** **48.5 million m³/day**
- **Flare, Re-injection, Consumption in the Process (2006):** **21.7 million m³/day**
- **Imports (2006):** **26.8 million m³/day**
- **Total supply of natural gas (2006):** **53.9 million m³/day**
- **Reserve / Production Rate - R/P:** **24 years**

Exchange Rate: 1US\$ = R\$ 2.14

Sources: National Petroleum Agency -ANP (www.anp.gov.br), February/2007

PETROLEUM: SELF-SUFFICIENCY



Others = volume of refined petroleum products replaced by ethanol and natural gas

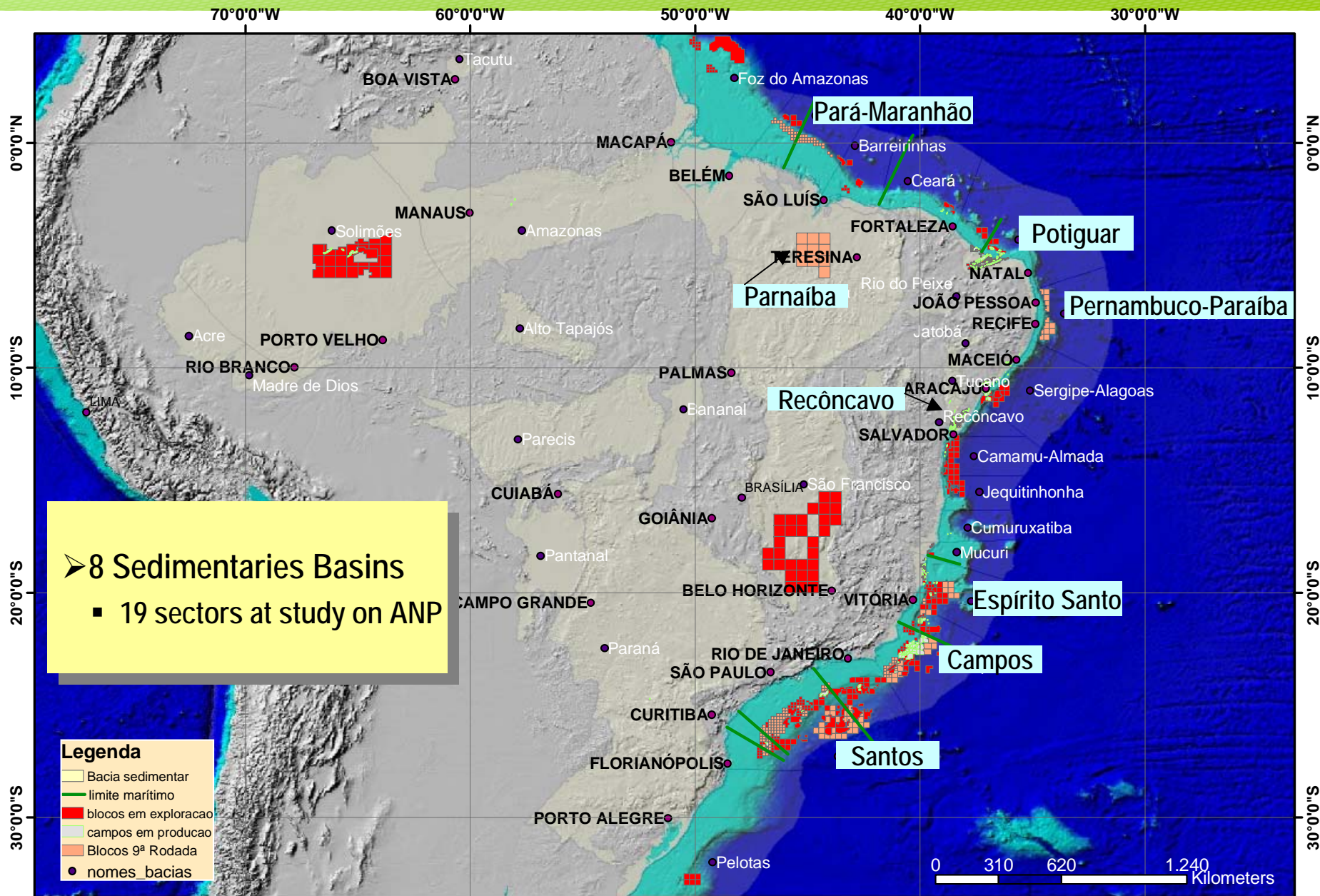
SEVEN SUCCESSFUL ROUNDS: 1999-2005

- ❑ **Stable rules**
- ❑ **More than US\$ 1.3 billion in signature bonus**
- ❑ **US\$ 16 billion in exploration predicted investments (Minimum Exploratory Program)**
- ❑ **594 awarded blocks**
- ❑ **62 E&P concessionaries**
 - ❖ 28 from Brazil
 - ❖ 34 foreign companies from 15 different countries

- **Sedimentary basins:**
 - 6.4 million sq km
- **Granted area:**
 - 332 thousand sq km (5%)

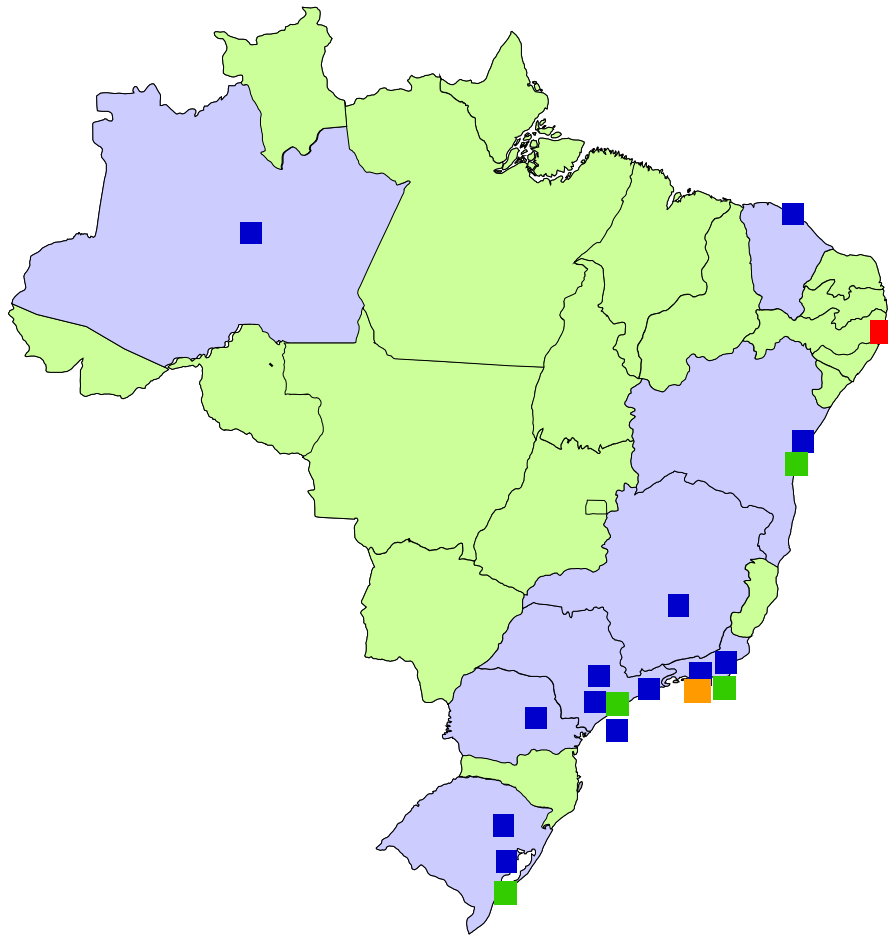
Perspective for 2007
9th Bidding Round for
Exploratory Blocks

9th ROUND FOR EXPLORATORIES BLOCKS



Source: MME/ANP (FEB/2007)

REFINING AND PETROCHEMICAL



Estimated Investments:

- **Refineries:** **US\$ 18,3 billion**
(Until 2010 : US\$ 11,3 billion)
- **Petrochemical Complexes :** **US\$ 10,5 billion**
(a new one and others) (Until 2010 : US\$ 5 billion)

- **Refineries :** (13) – nominal capacity: 2,000 thousand barrels/day
- **New Refinery:** (1) – nominal capacity: 200 thousand barrels/day
- **Petrochemical Complexes:** (4) – nominal capacity: 7,500 thousand ton / year
- **New Petrochemical:** (1) – nominal capacity: 150 thousand barrels/day

GAS PIPELINES NETWORK

- Gas pipelines network expansion: 4,526 km
- Investment: US\$ 5.84 billion



█ Existing Gas Pipelines
 █ Gas Pipelines under construction
█ Planned Gas Pipelines
 █ Gas Pipelines in study

PIPELINES	km	IVESTMENT US\$ billion
Existent	5,716	-
Under Construction	2,011	5.84
Planned / in Study	2,515	
Total	10,242	5.84

Markets	million m ³ /d
Consumption (*)	48.0
Potential until 2010	100

(*) Industry, automobile, residence, commerce, power generation, cogeneration and others (including CNG).

Exchange Rate: 1US\$ = R\$ 2.14

INVESTMENTS IN LNG INFRASTRUCTURE



LNG Regasification Terminal

Place: Port of Pecém – CE

Capacity: 6 million m³/day

Operation Start: March 2008

Investment: US\$ 463 million

LNG Regaseification Terminal

Place: Bay of Guanabara – RJ

Capacity: 14 million m³/day

Operation Start: May 2008

Investment: US\$ 888 million

RENEWABLE FUELS

Fuel Production and Dependency - 2006

Fuel	Production	Consumption	Net Imports	Net Exports	Net Imports	Net Exports
	Thousand m3	Thousand m3	Thousand m3	Thousand m3	% of demand	% of production
GASOLINE A	21,325	18,656	-	2,668		13%
DIESEL	38,660	41,604	2,943	-	7%	
ETHANOL	17,764	14,445	-	3,319		19%
FUEL OIL	15,220	8,680	-	6,541		43%
JET KEROSENE	3,748	4,449	701	-	16%	
NATURAL GAS (million m ³ /day)	21.5	47.8	26.3	-	55%	

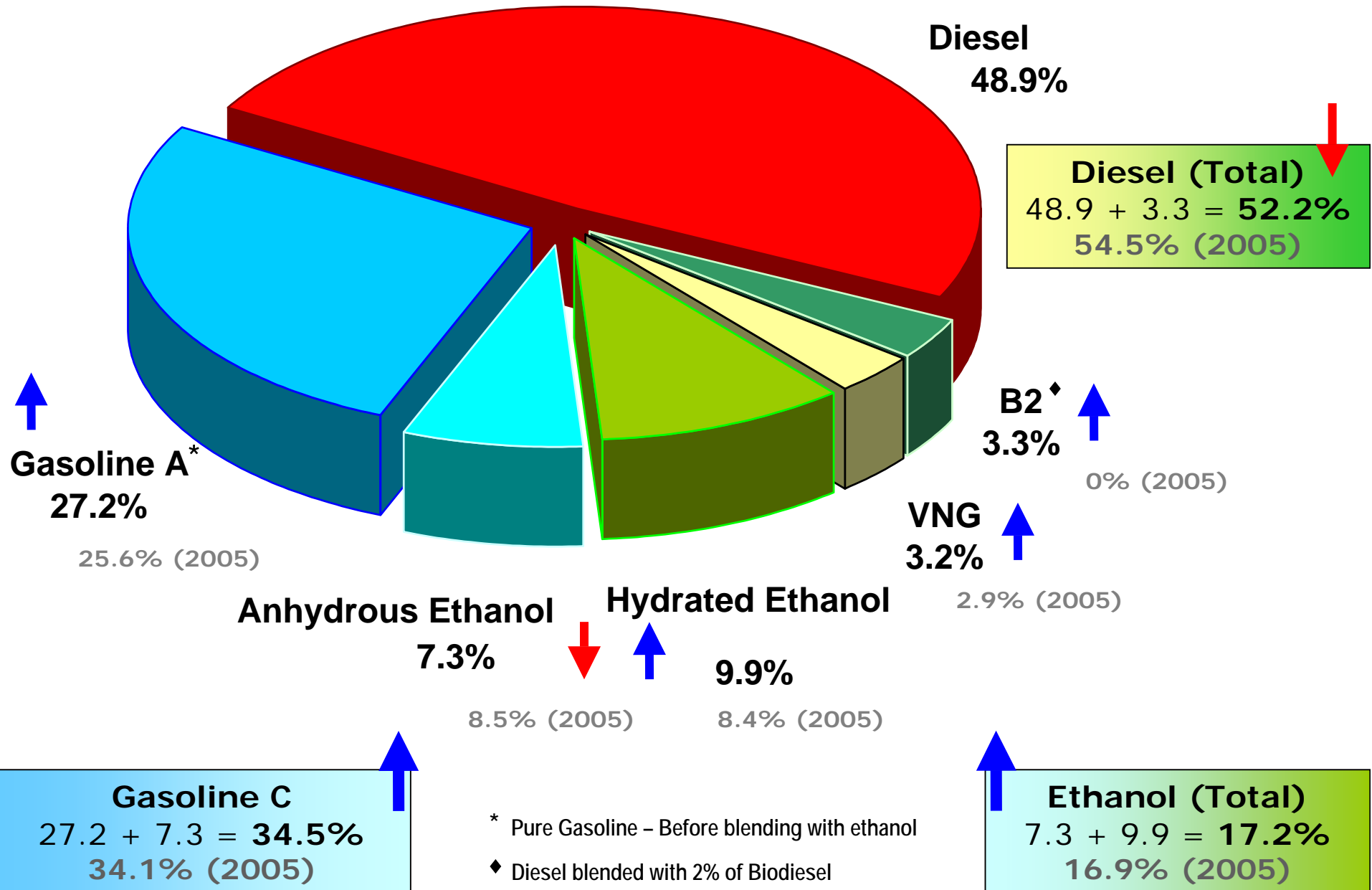
Dependency

Self-Sufficiency

(1) Apparent Consumption = production + net imports.

Source: ANP, MAPA e MDIC (Elaborated by MME – Fev/07)

CURRENT MATRIX OF VEHICLE FUELS - 2006



SUGARCANE AGRO-INDUSTRY

Ethanol Figures (2006):

- Production: 18 million m³
- Production Capacity: 20 million m³
- Cropped Area for ethanol Production: 3 million hectares
- Exports in 2006: 3,4 million m³
- Exports infrastructure: 4 million m³/year

As of 2010:

- Investments* that will amount US\$ 8.6 billion in 77 plants
- Increase in the ethanol production (in comparison with 2006): 6 million m³
- Expansion in the sugarcane cropped area: 2 million hectares
- Expansion in exports infrastructure: to reach a capacity of 8 million m³/year

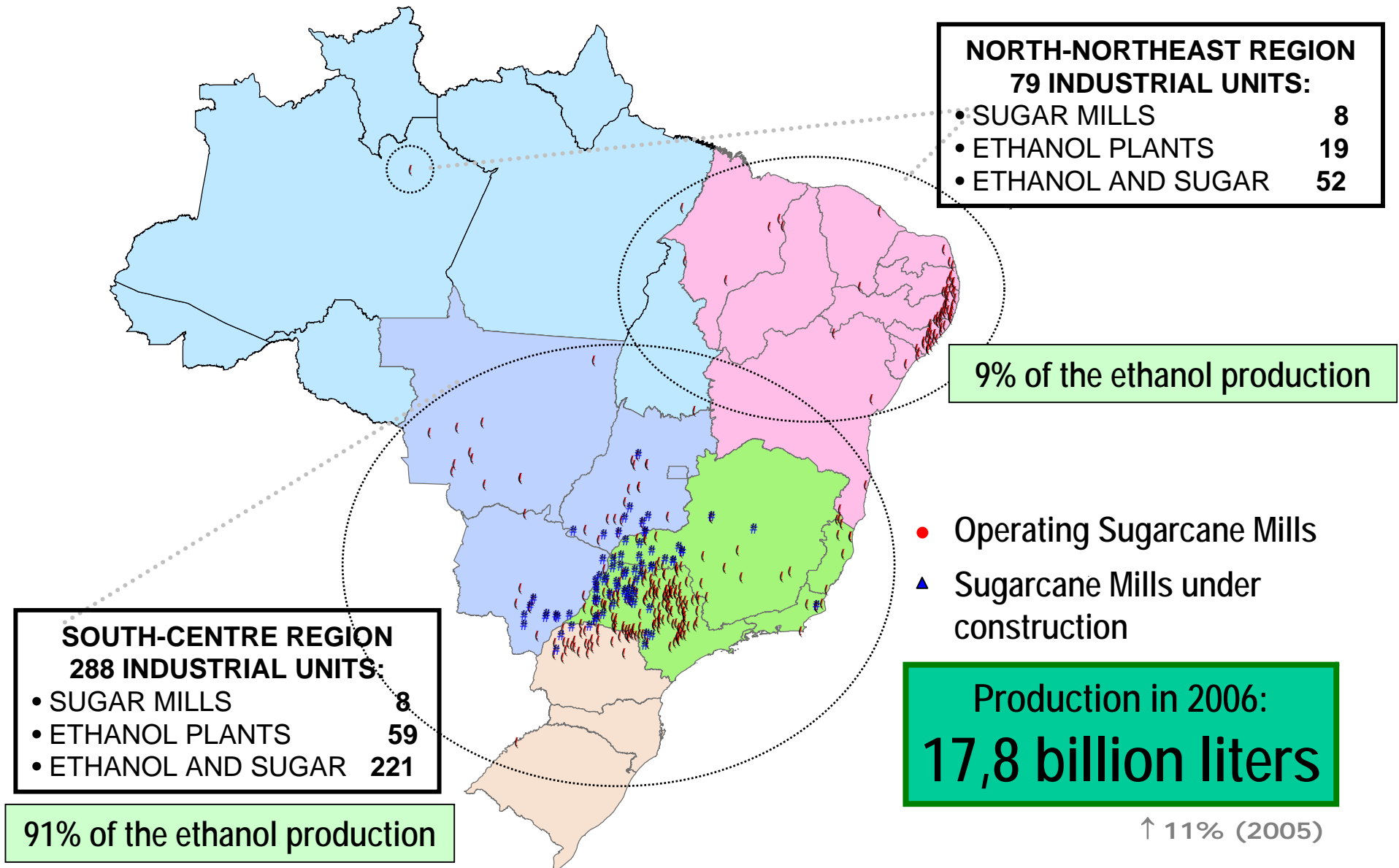
* Agricultural and Industrial phases



BRAZIL (Territorial Extension):	851
Total Agriculture Area:	383
of which:	
Fertile and free areas for agriculture:	91
Present cropped area for ethanol:	3
	<u>(in million hectares)</u>

Source: Ministry of Mines and Energy;
Ministry of Agriculture, Livestock and Food Supply - 2007

Ethanol in Brazil – Sugar Mills Location - 2007



2006: Total FFV – a Brazilian reality

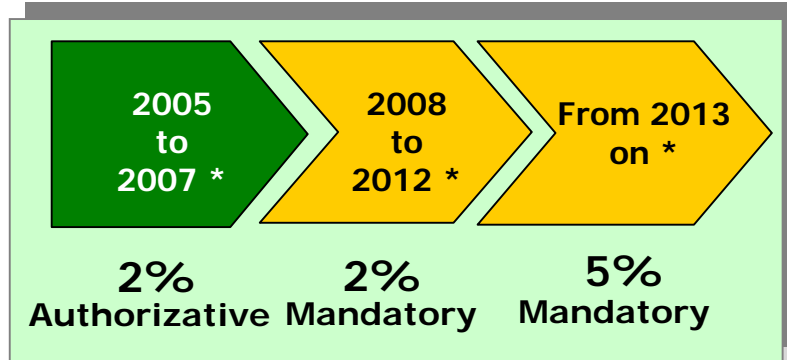
- Any mixture of gasoline and ethanol can be used, from 0 to 100%;
- In 2006: The domestic flex-fuel vehicle sales represented **78%** of all 1,824,266 light vehicles sold in the same period (imports included);
- Total domestic flex-fuel vehicle sales (2003-2006): 2.67 million units)

8 multinational automotive manufacturers settled in Brazil are producing nearly 100 different models of Total FFV



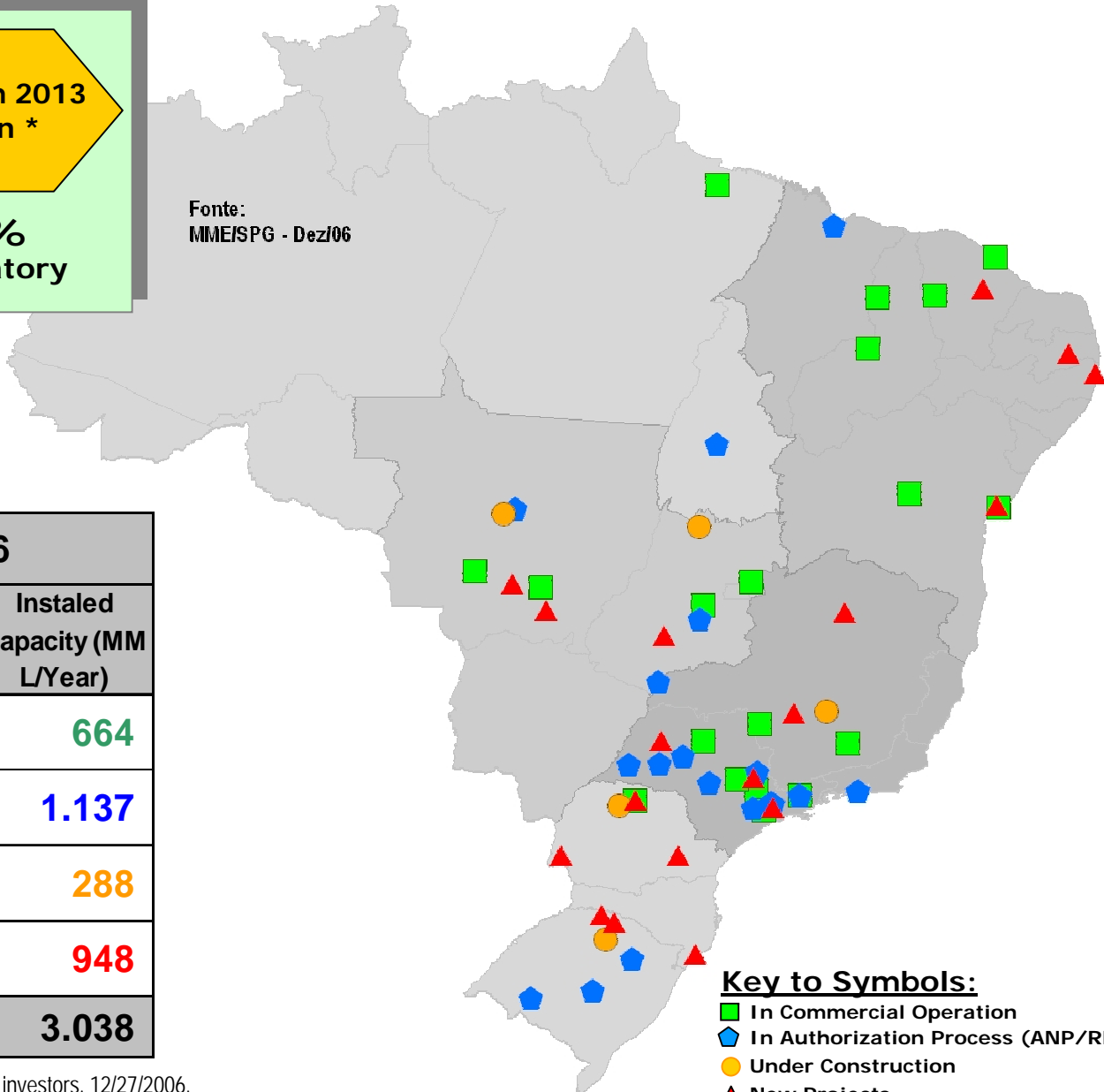
Source: Ministry of Development, Industry and Foreign Trade;
Brazilian Association of Automotive Vehicle Manufacturers - 2007

BIODIESEL IN BRAZIL



* In accordance with Federal Law nº 11.097/05

Fonte:
MMEISPG - Dez/06



Biodiesel Producers	2006	
	Number of Plants	Instaled Capacity (MM L/Year)
In Commercial Operation	19	664
In Authorization Process	22	1.137
Under Construction	5	288
New Projects	19	948
TOTAL	65	3.038

Key to Symbols:

- In Commercial Operation
- In Authorization Process (ANP/RF)
- Under Construction
- New Projects

(*) Based on information gathered from potential producers and investors. 12/27/2006.

"In Commercial Operation" includes plants that already have ANP authorization, but still wait the Federal Revenue Office authorization in process.

PAC – New Projects in Renewable Fuels

INVESTMENTS: R\$ 17,4 billions

Ethanol Pipelines

Senador Canedo-GO - São Sebastião-SP

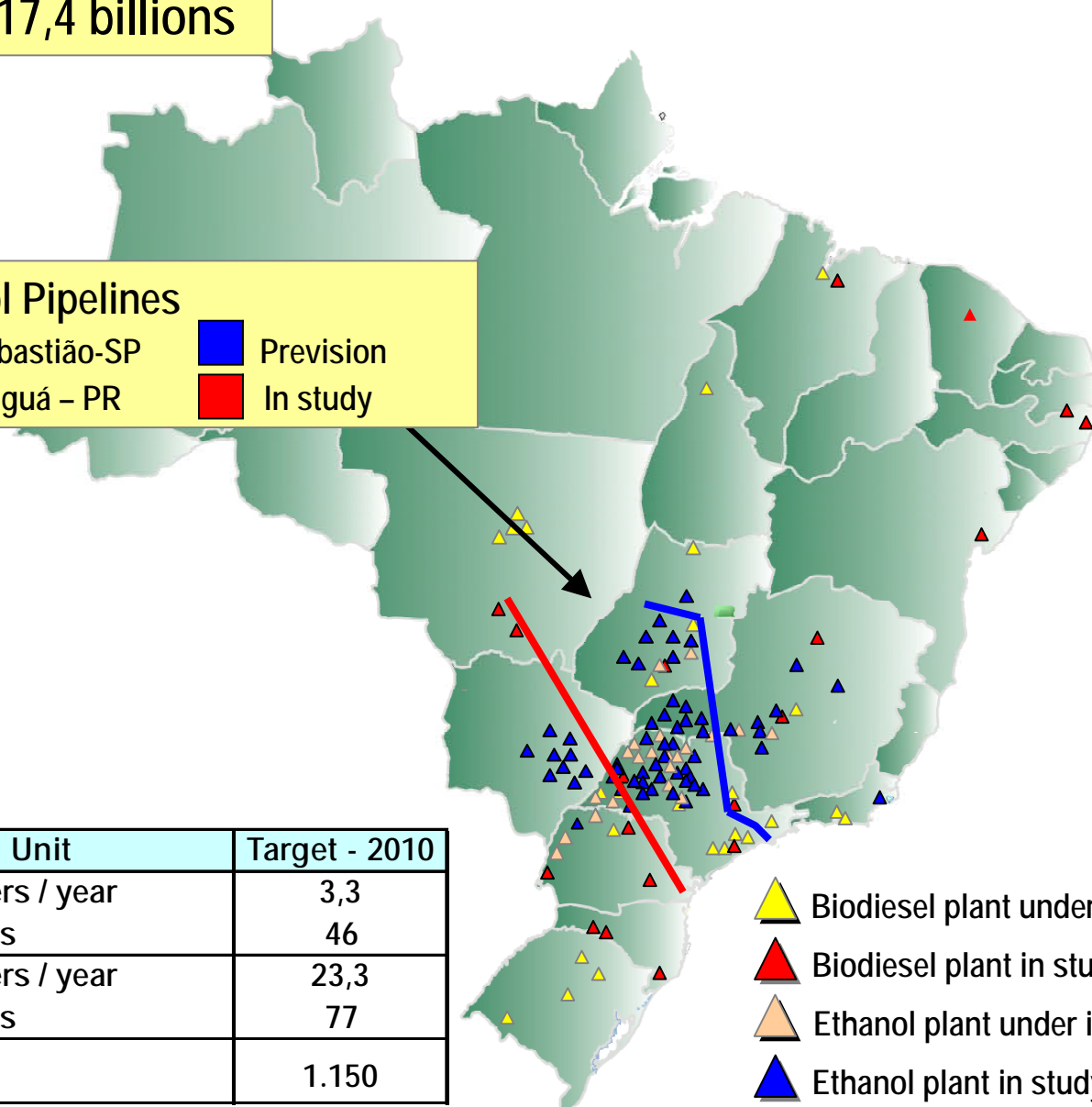
■ Prevision

Cuiabá-MT - REPAR - Paranaguá - PR

■ In study

Program	Unit	Target - 2010
Biodiesel	billion liters / year	3,3
	new plants	46
Ethanol	billion liters / year	23,3
	new plants	77
Ethanol Pipeline	km	1.150

- ▲ Biodiesel plant under implementation
- ▲ Biodiesel plant in study
- ▲ Ethanol plant under implementation
- ▲ Ethanol plant in study

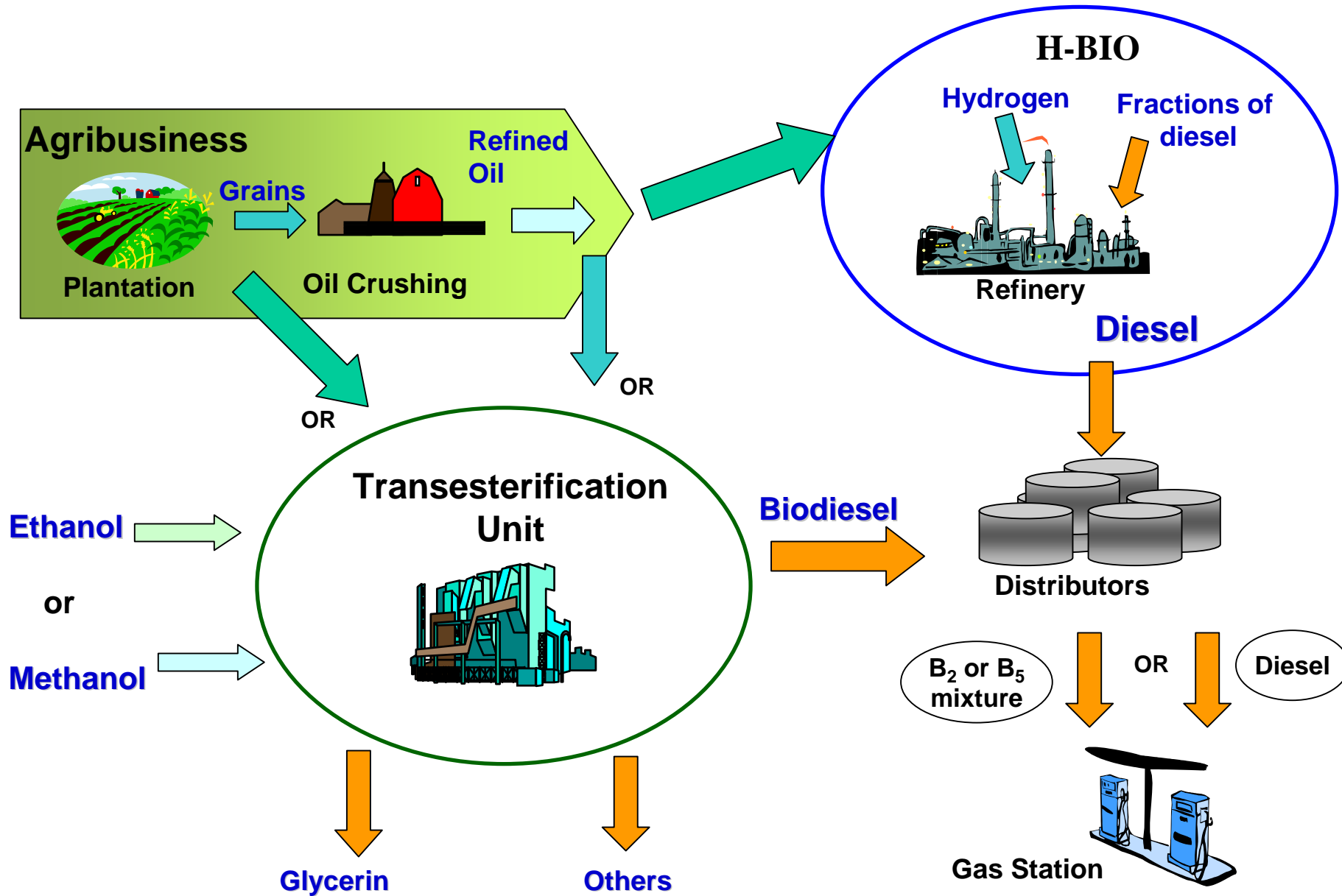


H-BIO: A NEW BRAZILIAN TECHNOLOGY

H-BIO AND BIODIESEL: COMPLEMENTARY PROCESSES

- Diesel oil production process that uses vegetable oils as raw materials in a petroleum refinery.
- H-Bio = Hydrogenation of the mixture:
 - diesel fractions + vegetable oil.

BIOFUELS PRODUCTION



FINAL REMARKS

FINAL REMARKS

Brazilian Development Factors

- Macroeconomic stability
- Large Territory Extension and Favorable Climate
- Energy Matrix Diversification
- Stable regulation in the oil and gas sectors
- Increasing dynamism on international trading
- Investments in infrastructure



Great opportunities for companies to invest in new projects

THANK YOU!

João José de Nora Souto

Secretary of Petroleum, Natural Gas and Renewable Fuels

8th BIDDING ROUND - 2006

- **Round:** Occurred at November, 28 and 29 of 2006, with the offer of 284 exploratory blocks, distributed on 14 sectors from 7 sedimentary basins.
- **Results:** The Auction was abruptly finished by decision of a court of justice, resulting in a bidding of only the SS-AP3 and STUC-T sectors, from Santos and Tucano basins. On those sectors were sold 38 blocks by US\$ 275 millions of Signature Bonus and a Minimum Exploratory Program estimated in US\$ 282 million.

Basin	Offered Blocks	Sold Blocks	%	Signature Bonus	Exploratory Program	Sold Area (km ²)
Santos	11	10	91%	R\$ 560.114.071,00	R\$ 122.950.000,00	6.942
Tucano	47	28	60%	R\$ 27.258.490,00	R\$ 481.600.000,00	4.969
TOTAL	58	38	66%	R\$ 587.372.561,00	R\$ 604.550.000,00	11.911

- **Lawsuit:** The Auction was interrupted at the afternoon of November, 28 because justice decision based on two claims on courts of law and finished in the morning of the next day, after not successfully attempts to judicially release the event carried out by both the Mines and Energy Ministry and the National Petroleum, Natural Gas and Biofuels Agency – ANP.
- **Actual Situation:** On November, 29 of 2006, at the conclusion of the 8th Round, the ANP Directory informed that the blocks sold before the premature end of the event are going to have their contracts signed according to the schedule, what means March, 14 of 2007.