

***23rd World Gas Conference  
Amsterdam***

***Brazilian Oil and Gas Perspectives  
A National Oil Company Approach***

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9th June 2006***

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# Petrobras: Overview

## Petrobras Overview: Petrobras 2015 – Mission and Vision

### Mission

Operate in a safe and profitable manner in the oil, gas and energy industry in Brazil and abroad, with social and environmental responsibility, providing products and services that meet clients' needs and that contribute to the development of Brazil and the countries in which it operates.

### Vision 2015

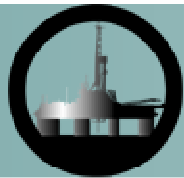
Petrobras will be an integrated energy company with a strong presence in the international market and as a leading force in Latin America, focusing on profitability and social and environmental responsibility.

# Petrobras in the World – Activities in 24 countries



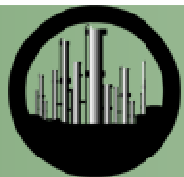
## Company Overview

An integrated energy company with US\$ 74 billion in gross revenue (2005 US GAAP)



### Exploration and Production

- Proven Reserves: 11.8 billion boe (SEC 2005)
- Oil and Gas Production: 2.22 million boed (2005)



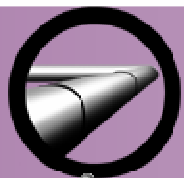
### Refining, Transport and Marketing

- 16 Refineries • Capacity: 2,114 thousand bpd
- Pipelines: 18,854 miles • Vessels (own fleet): 50



### Distribution

- 6,933 service stations (34% share in the Brazilian market), 746 in Argentina and 105 in Bolivia



### Natural Gas

- Sales of Natural Gas: 1.83 bcf/day



### Petrochemicals

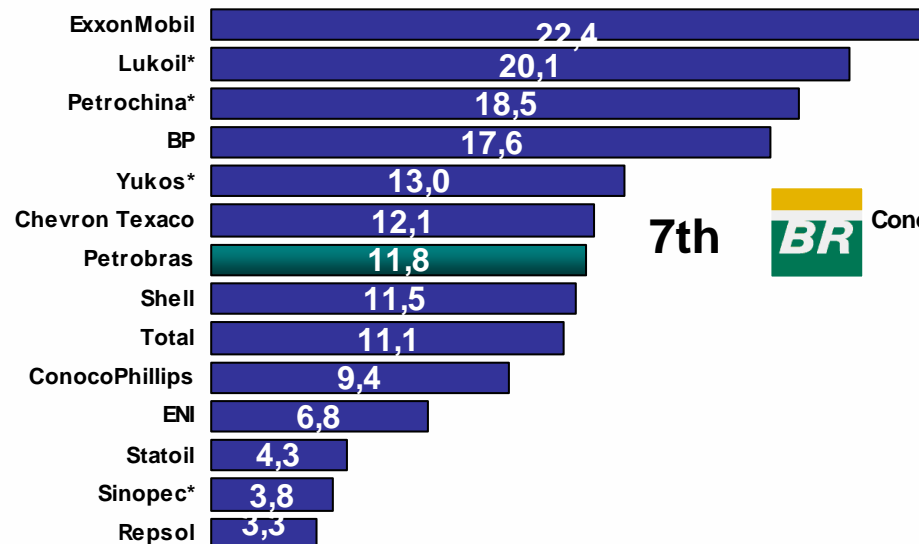
- Ethene Production: 460,000 tons/year
- Styrene Production: 250,000 tons/year
- Polystyrene Production: 120,000 tons/year

Operational data includes Petrobras Energia

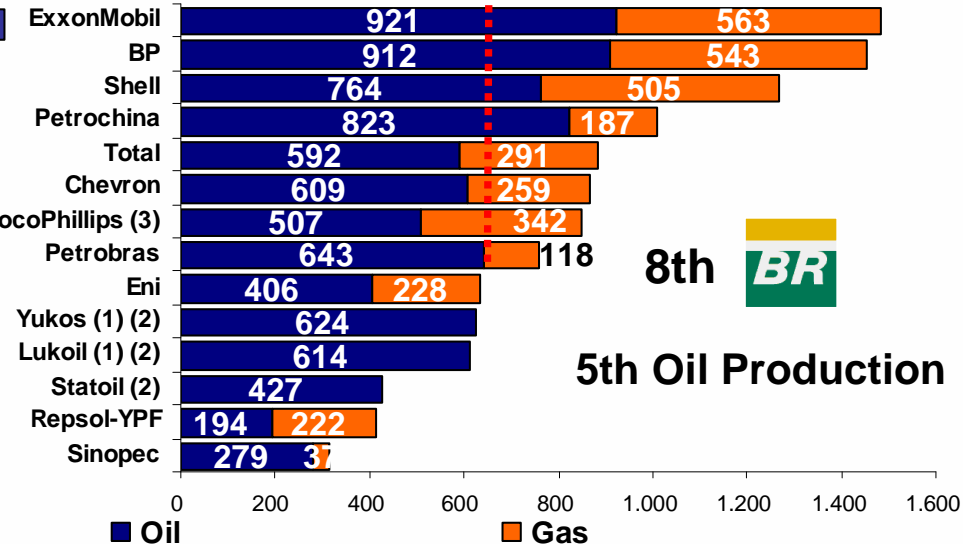
# Publicly traded peer comparison

(1) 2005 figures not available yet.  
 (2) Oil and Gas Production  
 (3) Proforma for acquisition of Burlington Resources

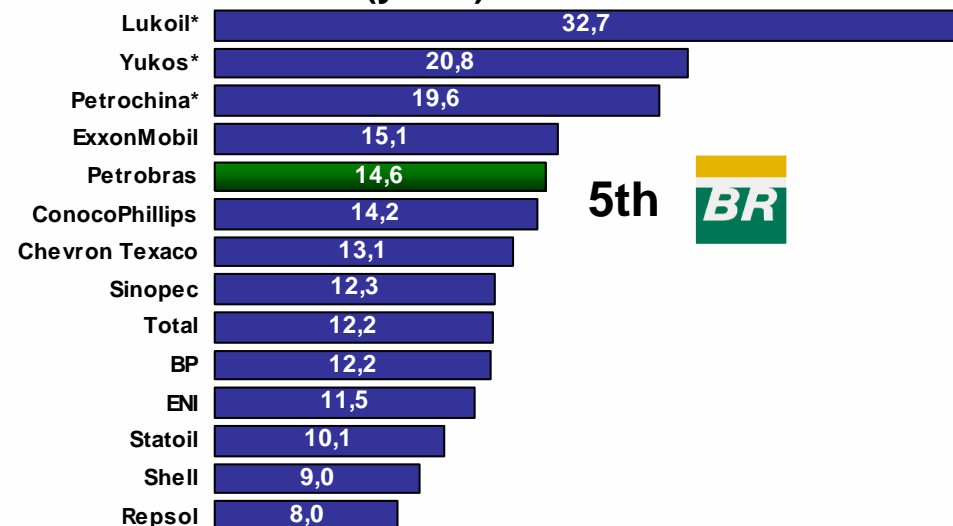
**Proven reserves (SEC - billion boe) – Dec. 2005**



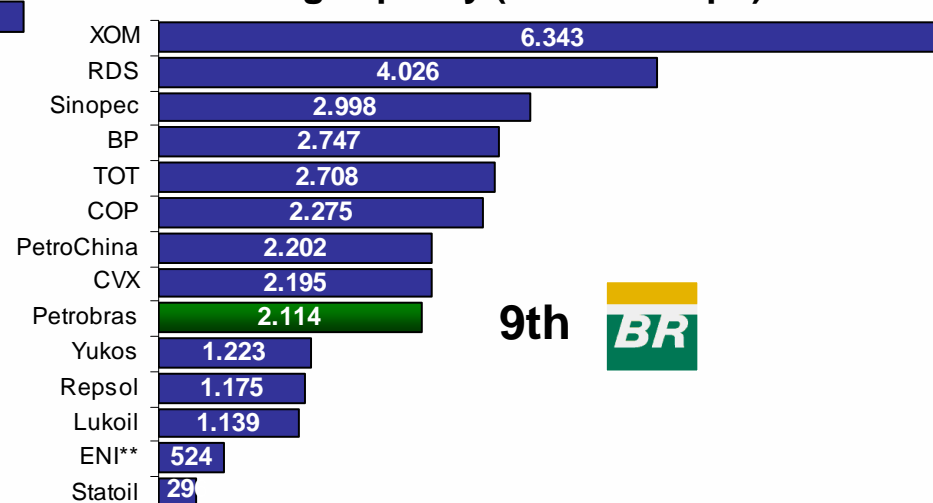
**Oil and gas production (million boe) - 2005**



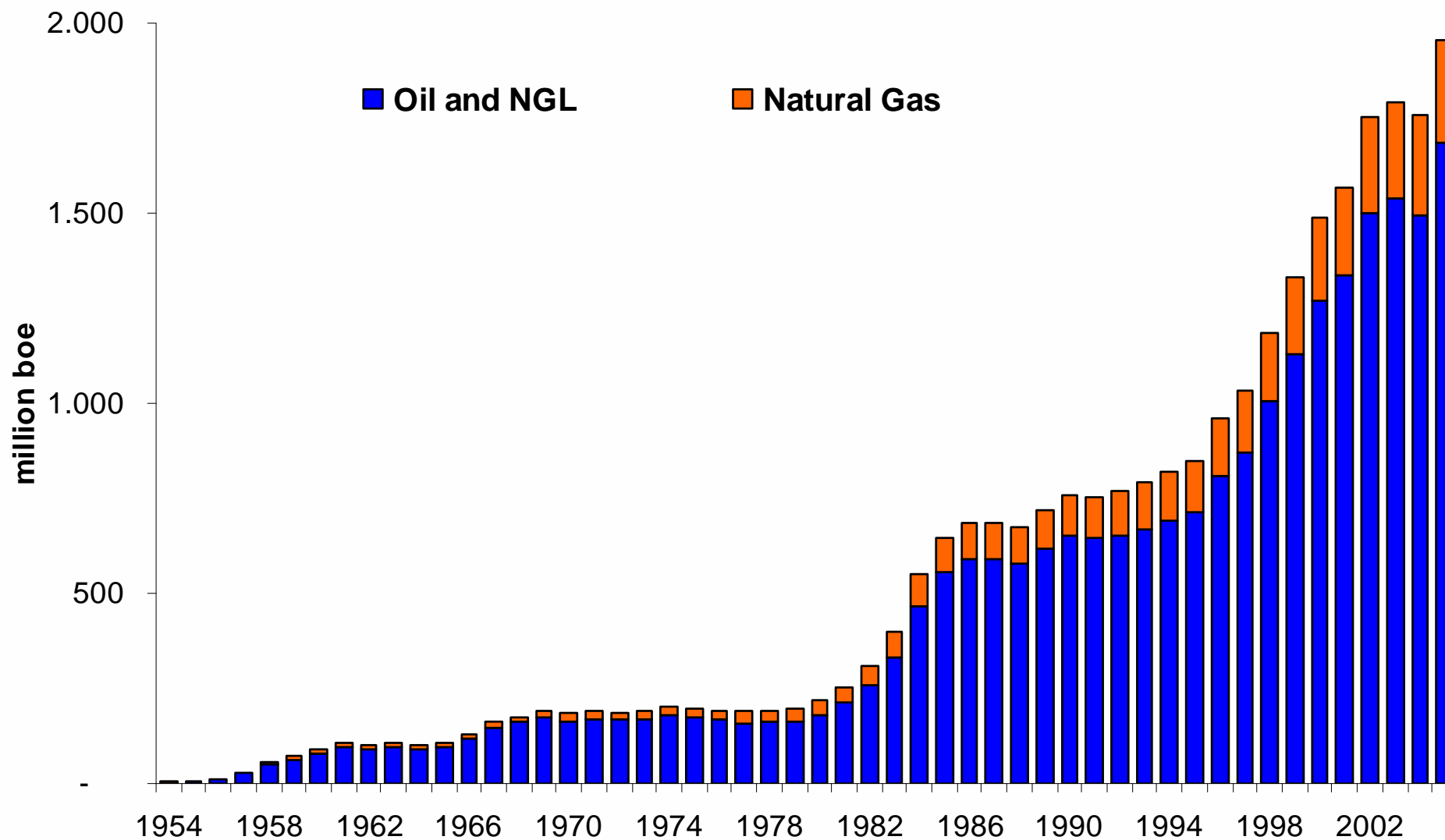
**Reserve life (years) – Dec. 2005**



**Refining capacity (thousand bpd) - 2004**



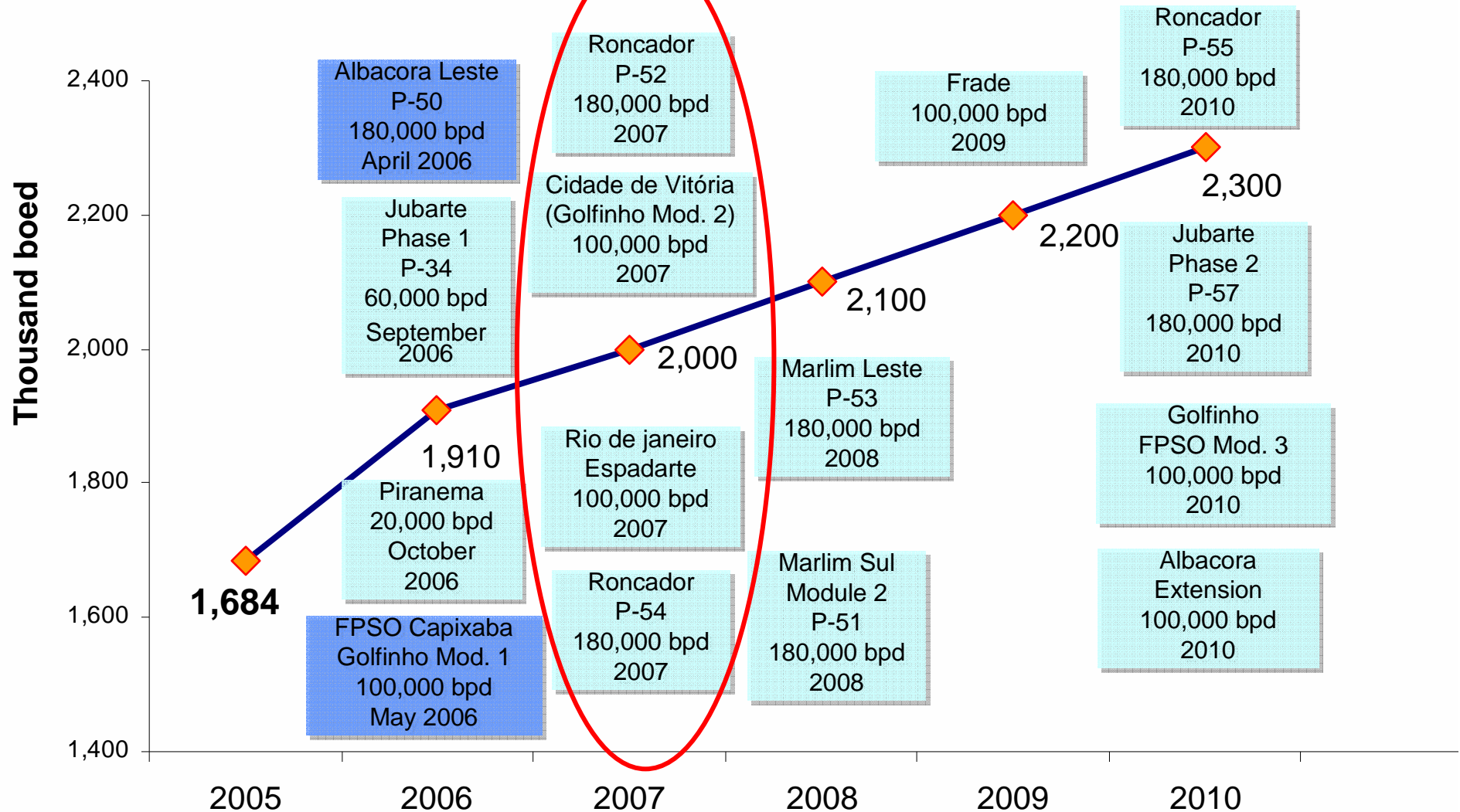
## Oil Production in Brazil



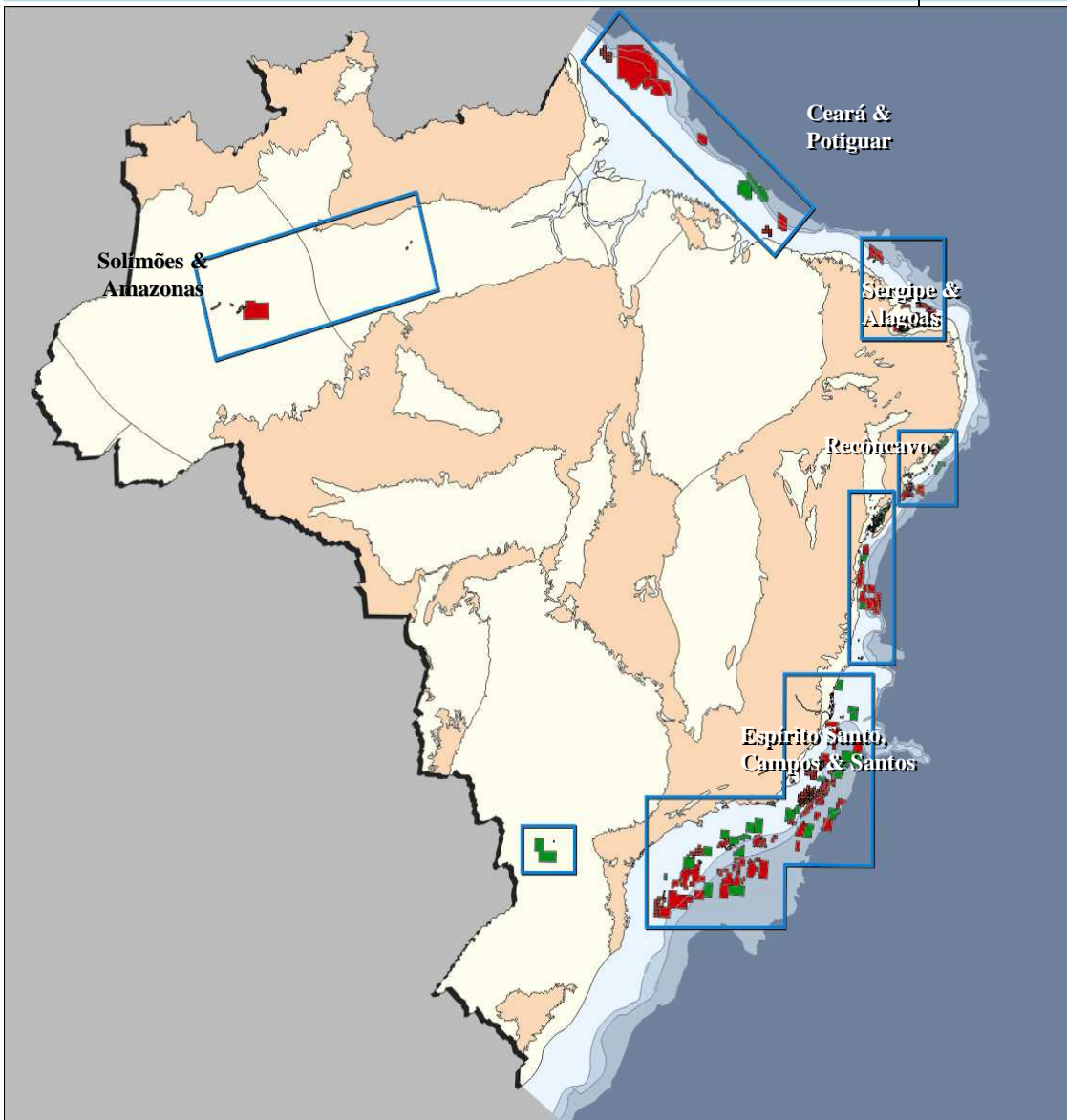


## E&P Brazil - Domestic production units

- Domestic production will grow at an average of 6.4% per year
- 15 new projects until 2010

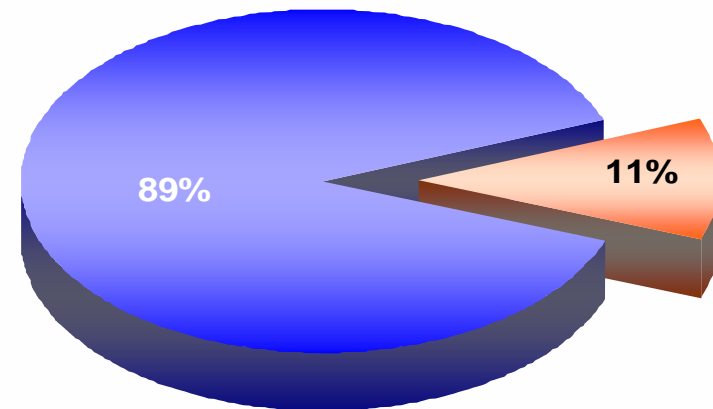


## Upstream Portfolio at Home



### 2005 Reserves

- Proven Reserves of 14.9 billion boe (SPE)
- Reserve life (SPE) = 19.7 years



■ Brazil      ■ International

- 10.6 billion boe (SEC)

### 2005 Production

- 1.969 million boed
- 1.684 million bpd oil

## Recent Acquisitions

### United States (Gulf of Mexico)



- Petrobras America successfully tendered for **10 blocks** in the US sector of the Gulf of Mexico;
- This year's estimated capital expenditures are **US\$ 305 millions**, and by 2010, **US\$ 1.5 billion**.

### Angola



- Petrobras has recently obtained a stake in **4 Angolan exploratory blocks** and will be operator in 3.
- The company has now interests in **six blocks**, including a production one (6,500 bpd).
- Petrobras aims at increasing its exploratory projects portfolio in Angola, one of the most competitive countries in the oil industry.

### Turkey



- Petrobras presented the winning bid for **two deepwater blocks** in the Black Sea;
- The company will sign a 50-50 partnership with the Turkish oil company (TPAO) for the exploration and production of the blocks.

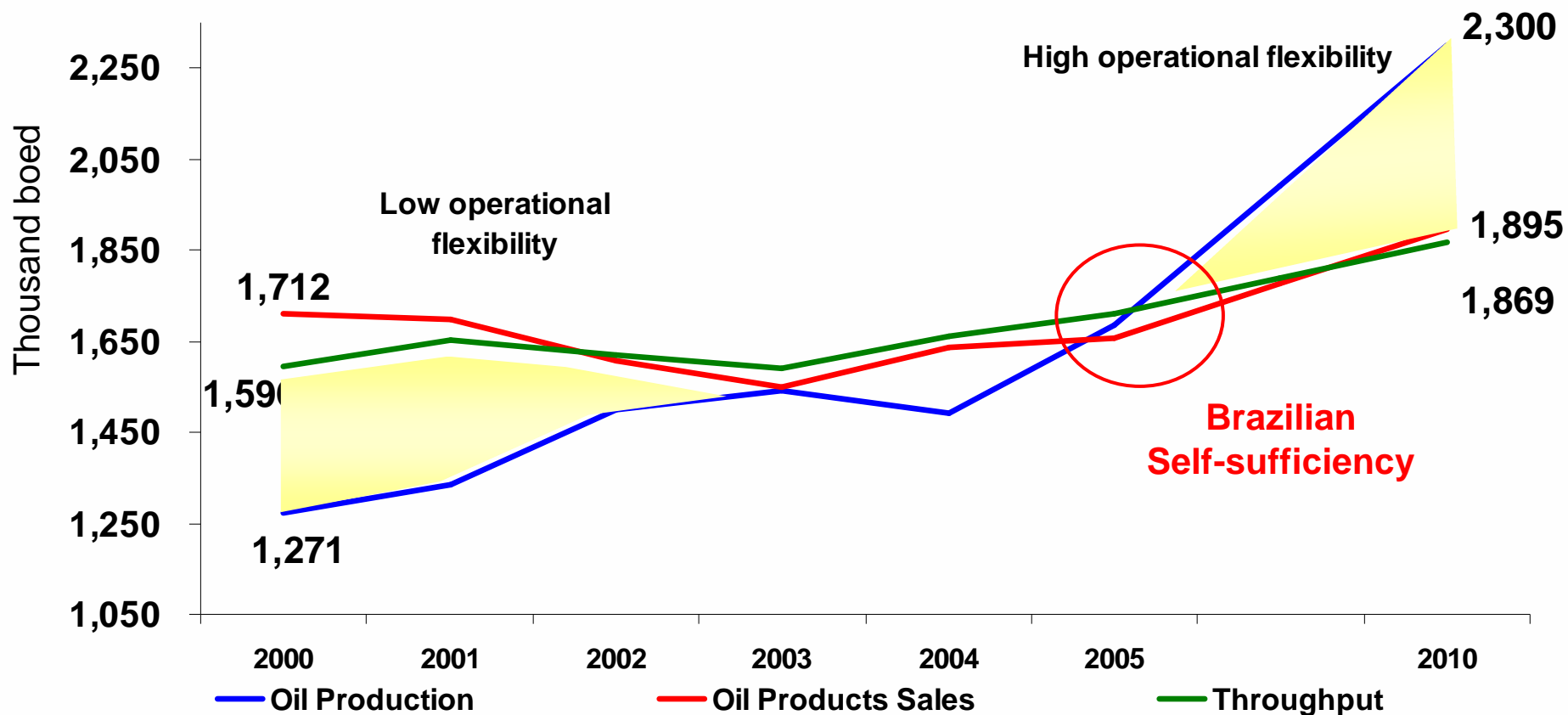
### Equatorial Guinea



- Petrobras acquired a 50% participating interest in a **deepwater block**
- The company has the option of becoming operator in the case of a commercial discovery

# Downstream Strategies

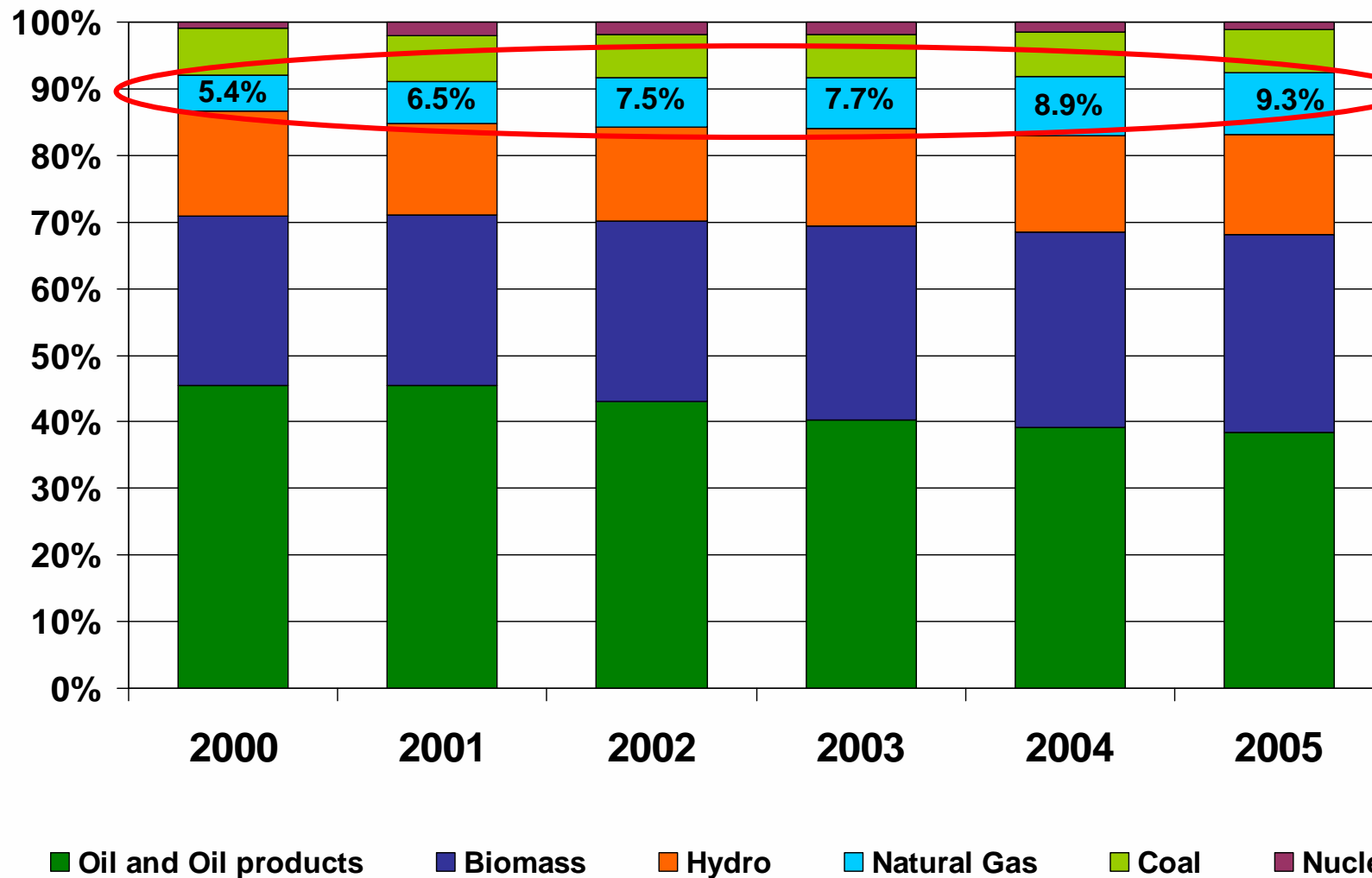
- Domestic oil production will exceed throughput;
- In 2010 oil products sales will be equal to throughput;
- Increase of the domestic oil participation in throughput, reaching 91% in 2010.



# Gas and Power

# Brazilian Energy Matrix Development

Natural gas participation in the Brazilian energy matrix rose from 5.4%, in 2000, to 9.3% in 2005, inspite of low thermal electric use





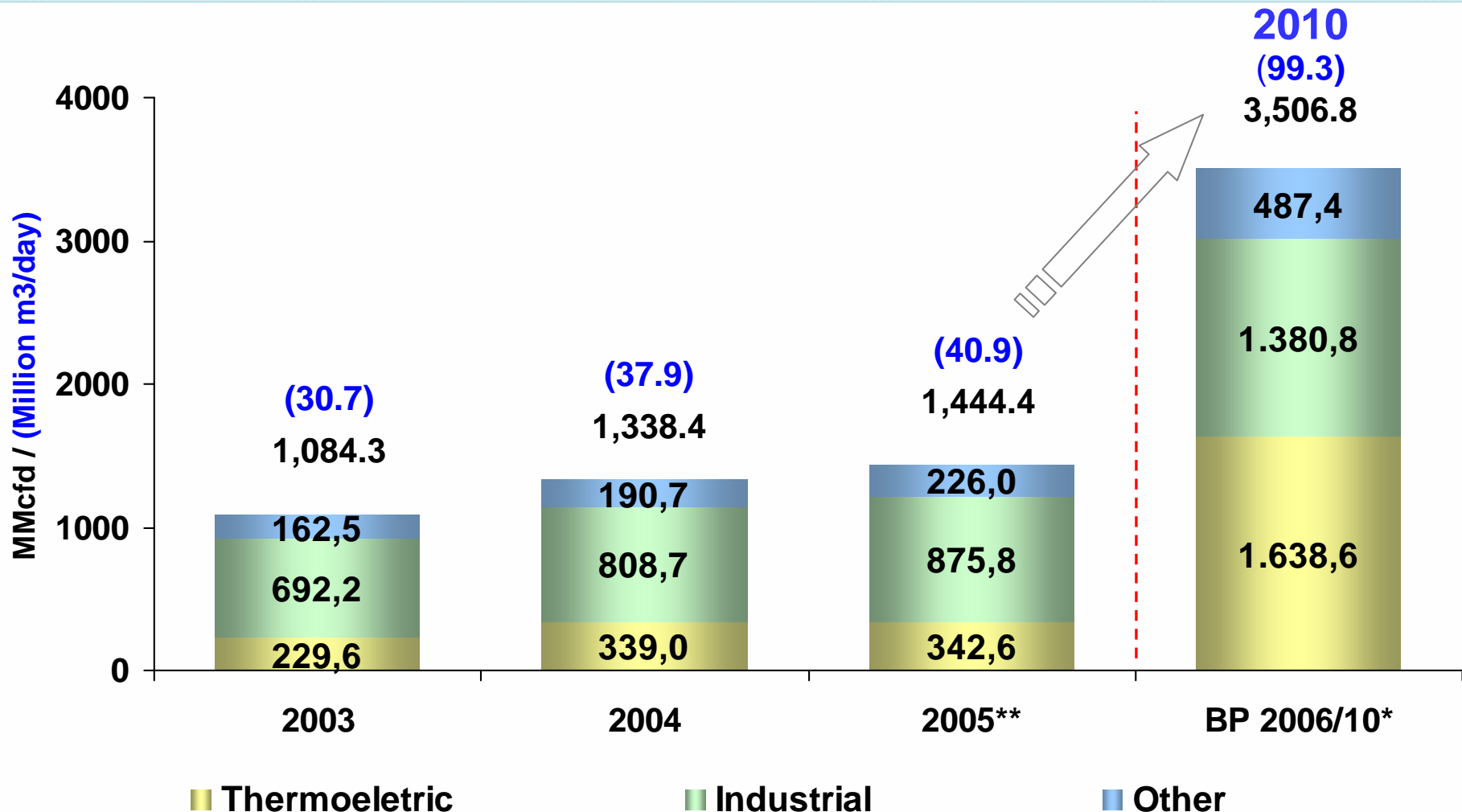
## Gas & Power - Brazil Current Situation

- High potential for growth in gas demand:
  - Gas represents only 9% of the Brazilian energy matrix
  - 80% of total power generation is hydro
  - Residential-industrial- thermal consumption are likely to increase



- Installed capacity of thermoelectric and cogeneration plants will be 4,857 MW in 2010
- Energy investments: US\$ 1.3 billion slated primarily for conclusion of projects already underway

## Natural Gas Market in Brazil



(\*) Considers the total supplying capacity, including bi-fuel conversion, contingency demand managing and isolated system in the North region. In the previous plan only the forecasted shipping of the thermo-electric demand was contemplated.

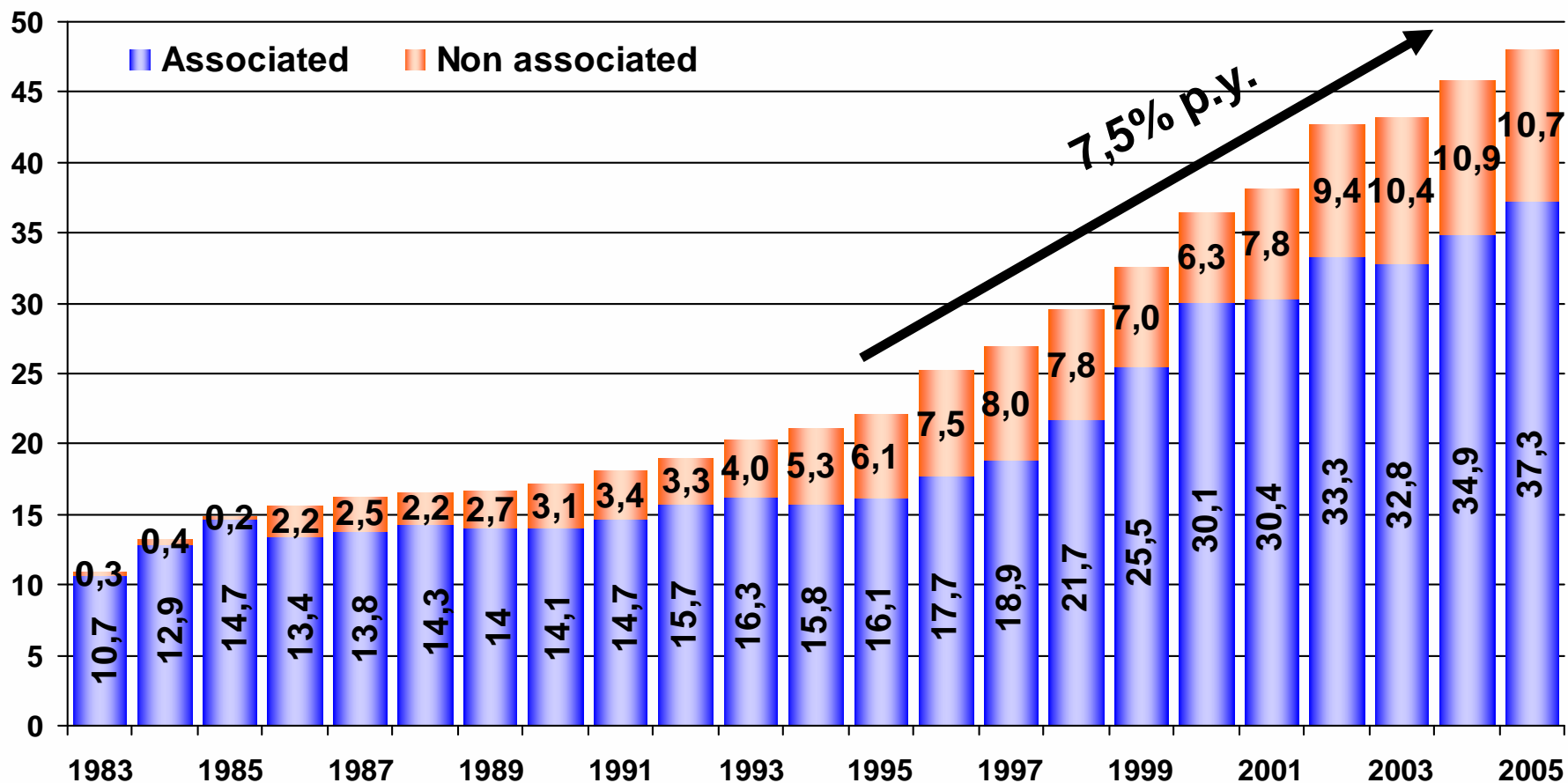
(\*\*) Source: ABEGAS

Note: does not include Petrobras direct consumption



# Natural Gas Production in Brazil

(million m<sup>3</sup>/day)

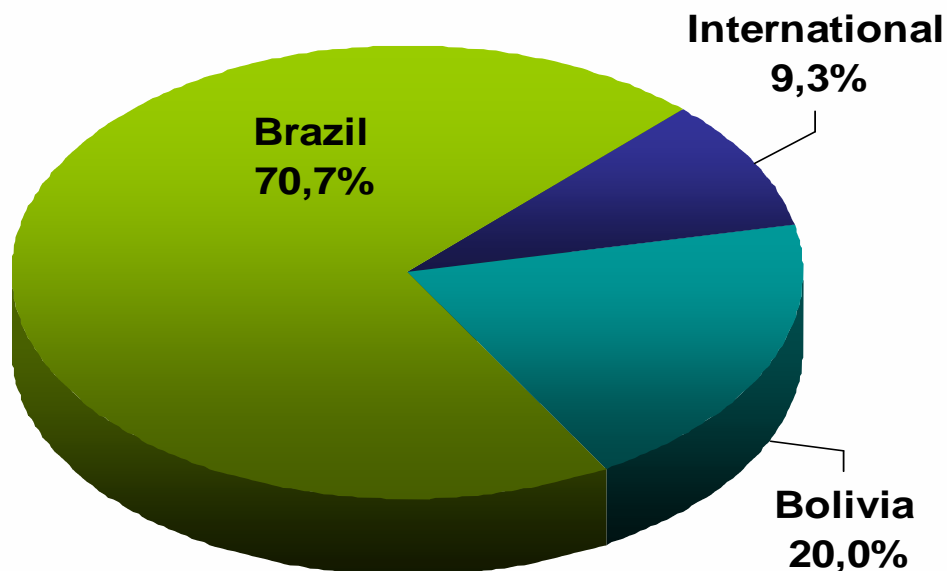


**Increasing non-associated natural gas participation in production.**

## 2005 Natural Gas Proven Reserves and Production

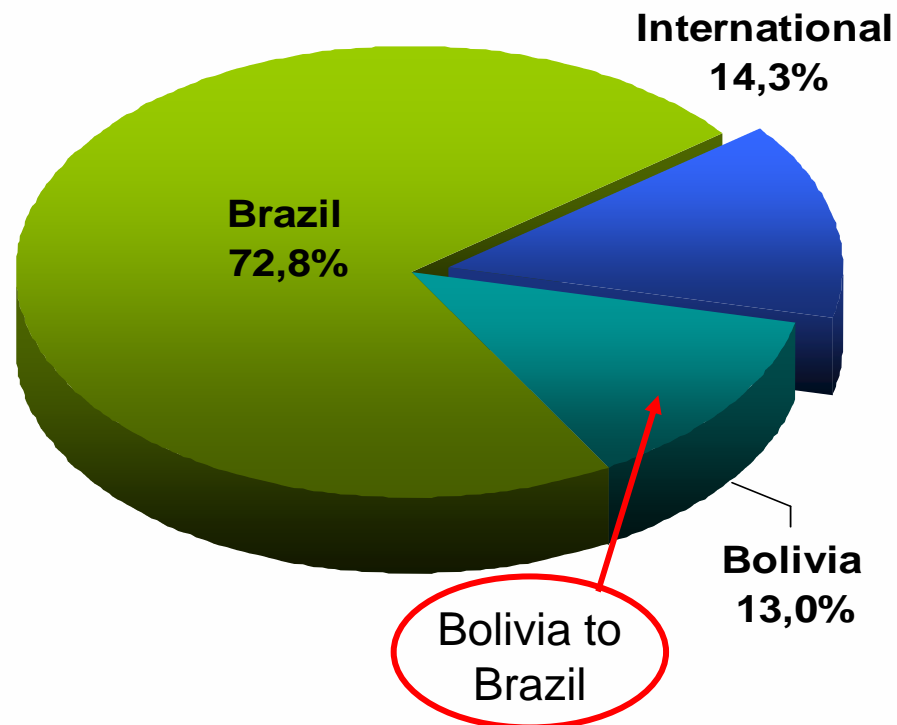
### Natural Gas Reserves

- Total Petrobras: 420.2 billion m<sup>3</sup>
- Brazil: 296.9 billion m<sup>3</sup>
- International: 123.3 billion m<sup>3</sup>
- Bolivia: 84.1 billion m<sup>3</sup>



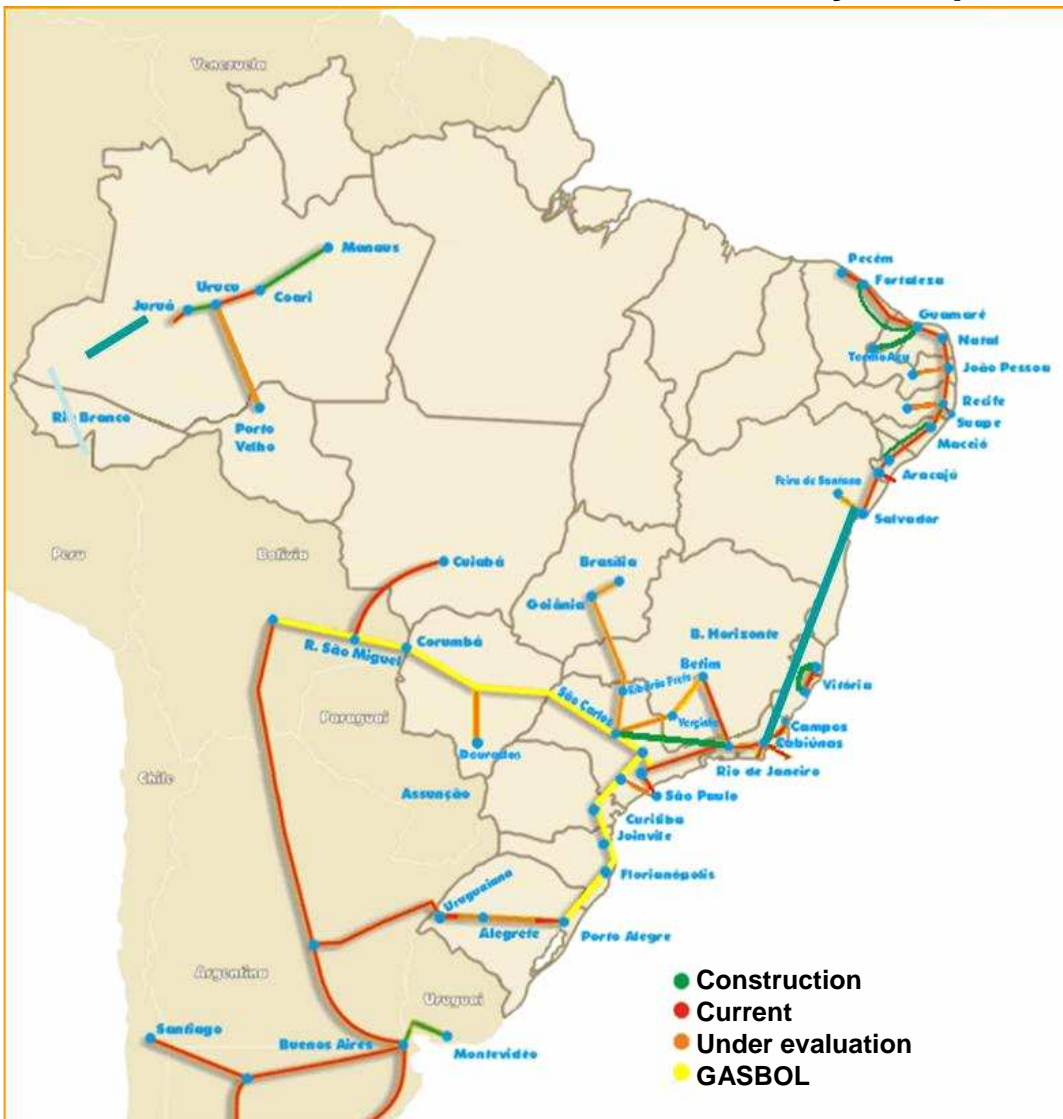
### Natural Gas Production

- Total Petrobras: 59,816 thous. m<sup>3</sup>/day
- Brazil: 43,532 thous. m<sup>3</sup>/day
- International: 16,284 thous. m<sup>3</sup>/day
- Bolivia: 7,753 mil thous. m<sup>3</sup>/day

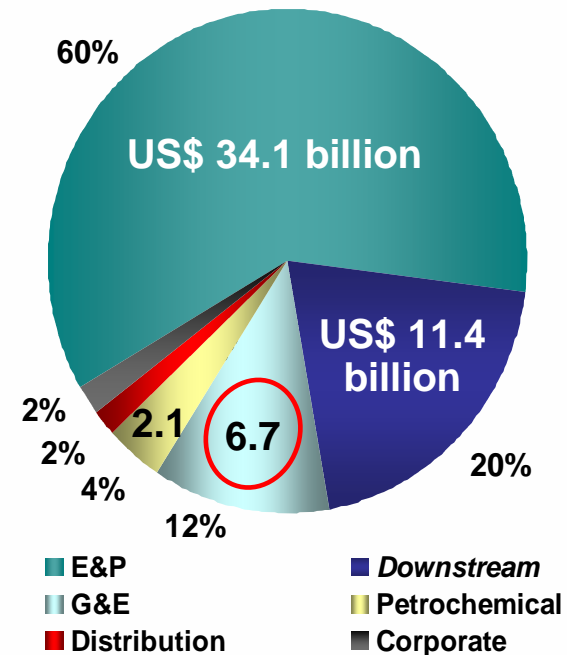


# Gas Pipelines

New investments will reduce the country's dependence on imported gas.



Business Plan 2006-10 US\$ 56.4 billion

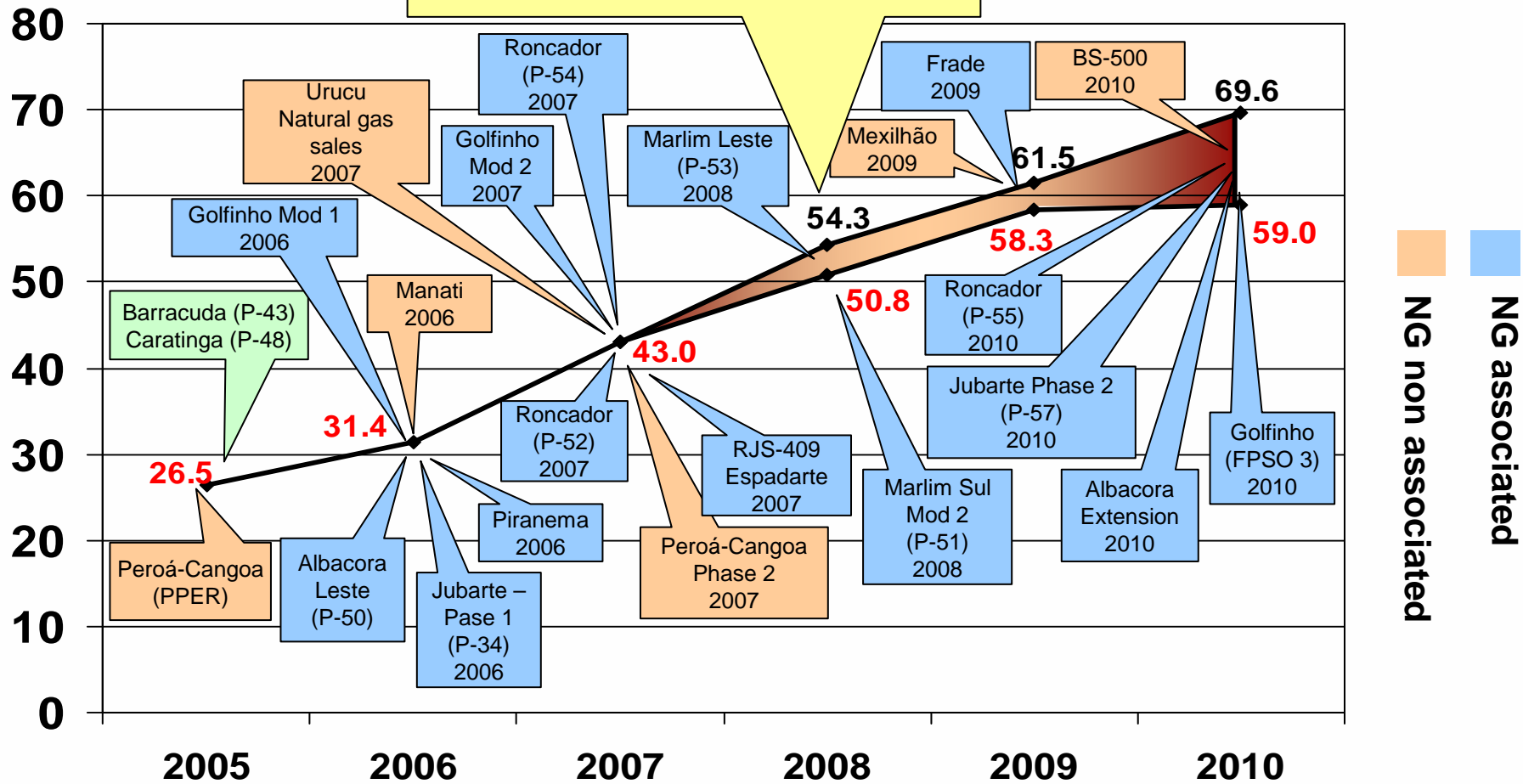


- Production in Southeast will raise from the current 15.8 million to 40 million m<sup>3</sup> per day in 2008.
- Demand Flexibilization
  - Refineries, Distributors and flex-fuel thermoelectric plants ( LNG, diesel and alcohol)

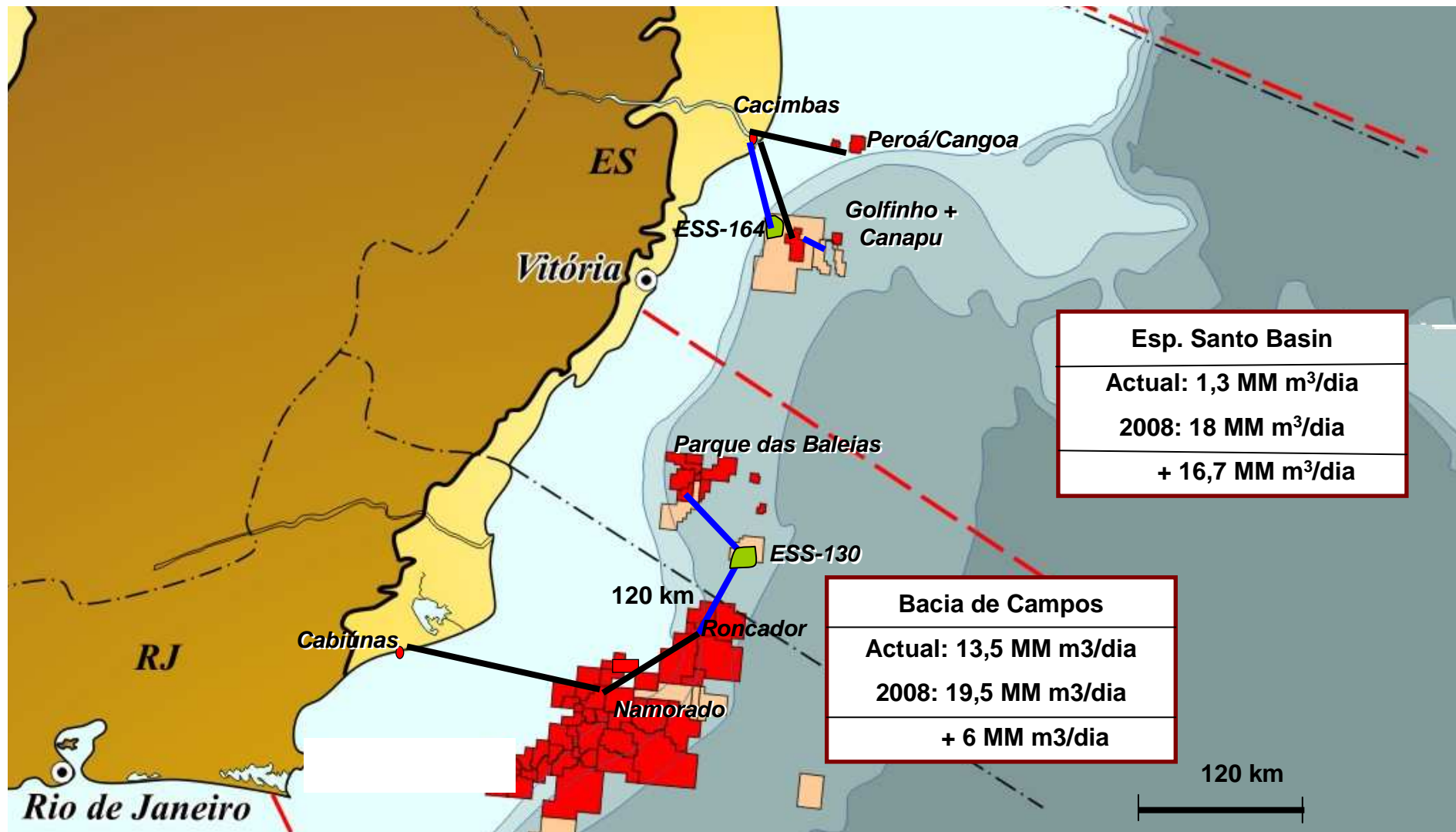
# Expected Production Growth

**Southeast Natural Gas Supply Expansion**

- Two new fields in Espírito Santo
- Increase of supply from Marlim field
- Expansion of production in Merluza field

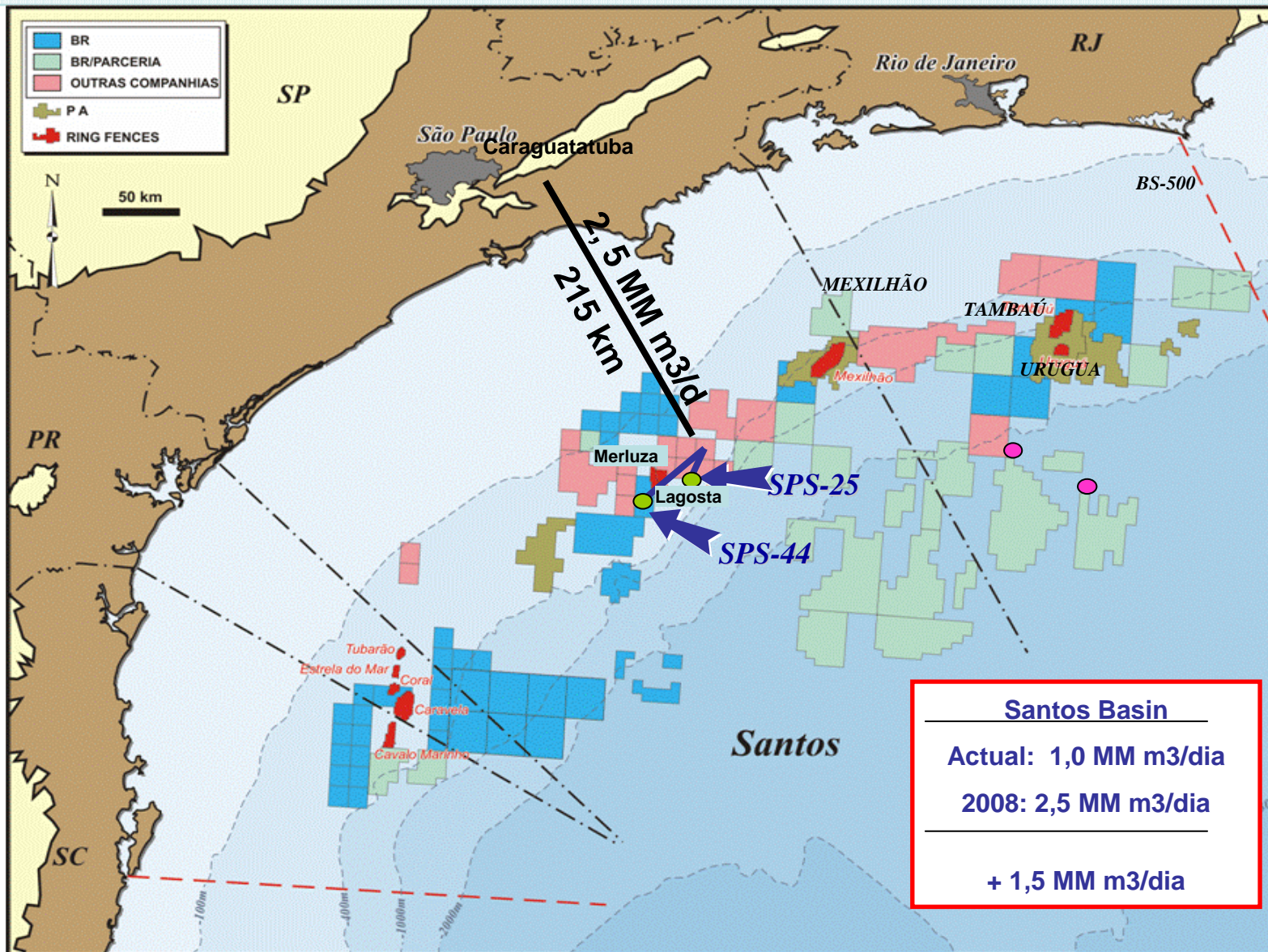


## Espírito Santo and Campos Basin: 2006-2008





# Santos Basin: 2006-2008



## Flexible LNG Project

- Facilitates the adjustment of the offer to the market's characteristic:
  - Flexible Offer (with guarantee) to the thermoelectric plants.
- More efficient than Diesel in the thermo plants;
- Mitigates the risk of failing to supply the gas due to abnormalities;
- Diversifies the sources of imported gas;
- Projects under evaluation:
  - Purchase or freight of floating storage and regasification units (FSRU);
  - Maritime terminal in Pecém (Ceará) - 6 MM m<sup>3</sup>/day (estimate Jul/2008 ± 3 months)
  - Maritime terminal in the Guanabara Bay (Rio de Janeiro)– 12/14 MM m<sup>3</sup>/day (estimate Jul/2008 ± 3 months)



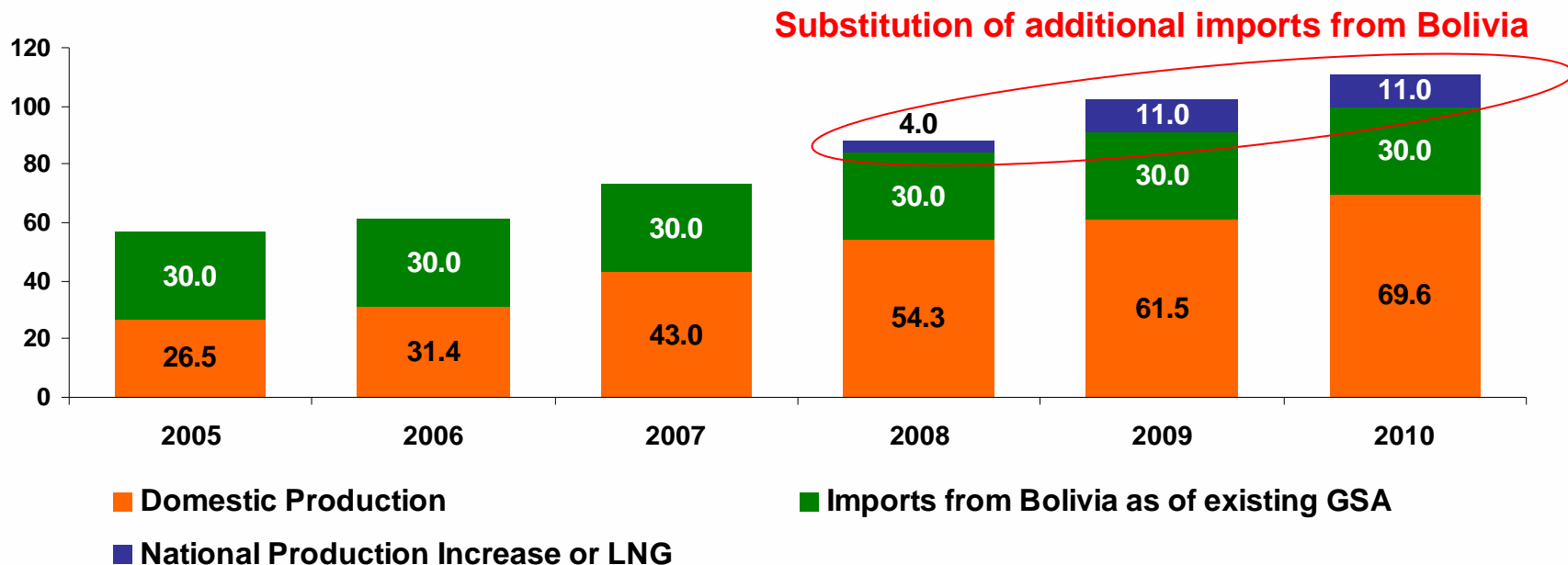
**FSRU**  
Floating Storage and Regasification Unit

## Situation in Bolivia

- As a consequence to the measures adopted by the Bolivian Government, Petrobras will act to:

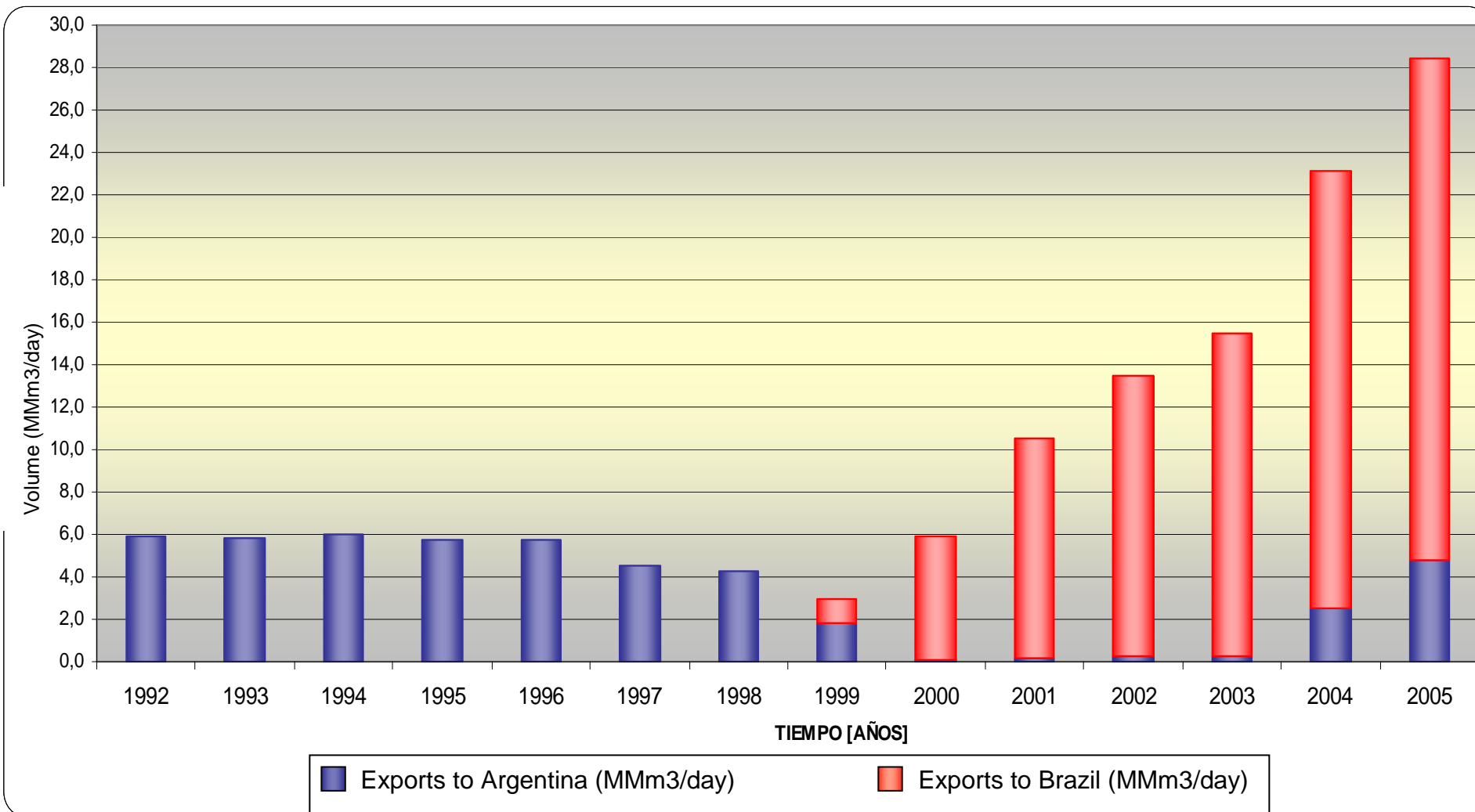
- Protect its interests through negotiations by all legal means;
- Suspend all new investments in Bolivia as well as those related to the Bolivia-Brazil Gas Pipeline (GASBOL);
- Immediately initiate studies to diversify supply sources, including LNG regasefication project(s);

### Natural Gas Offer - Million m<sup>3</sup>/day





## Gas exports from Bolivia (MM m<sup>3</sup>/dia)



## Gas Purchase: contractual structure

**Bolivia**

**Brazil**

**YPFB - PETROBRAS BOLIVIA/OTHER PRODUCERS - YPFB - PETROBRAS**

**Shared Risk Contract  
(exploratory and production concession)**

**Back-to-back contracts  
(gas sales)**

**GSA contract  
(gas exports)**

**Bolivian Legislation  
Forum: Santa Cruz  
Court of Arbitration: International  
Chamber of Commerce (ICC)**

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Forum: Santa Cruz  
Court of Arbitration: International  
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**Forum: New York  
Court of Arbitration: American  
Arbitration Association**

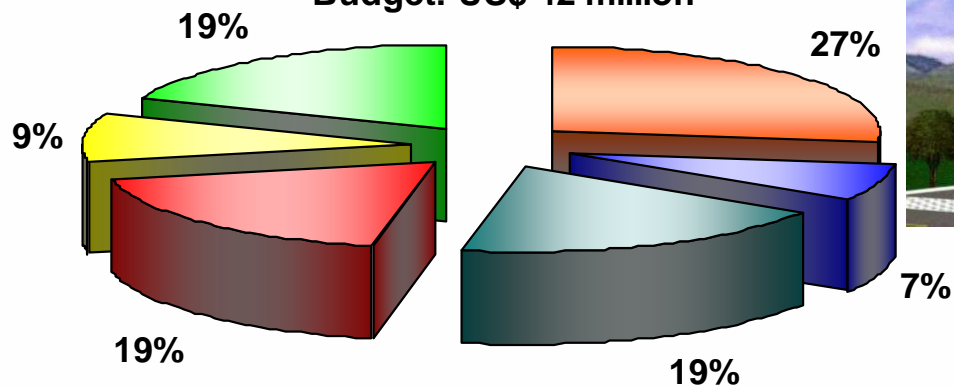
**Investment Protection Treaty between Bolivia and the Netherlands  
ICSID (International Center for Settlement of Investments Disputes)**

# Renewable Energy and New Technologies



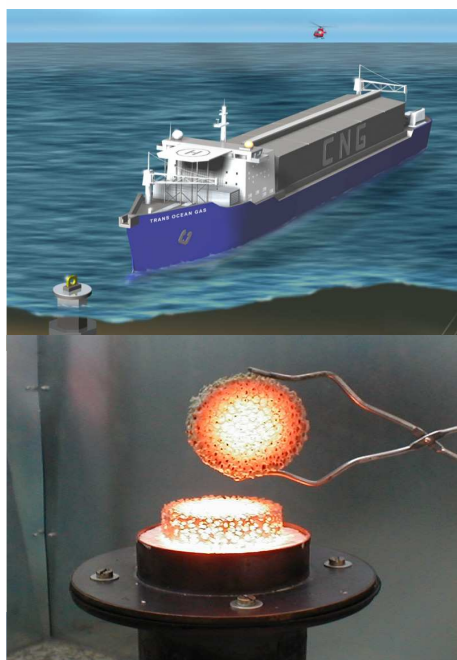
# Research Center – Natural Gas Main topics

Budget: US\$ 42 million



- GTL
- Transportation
- Hydrogen

- Cogeneration & Thermoelectric
- Industrial Application
- Automotive Application



## GTL

## Main Projects

## Transportation

- FT Synthesis: Catalyst Development
- FT Reactor design ( Fixed Bed)
- GTL Offshore
- GTL Pilot Plant Construction
- DME

- Marine CNG
- GtS ( Hydrates)
- ANG (Adsorbed Natural Gas)
- Expert System
- LNG Offshore Regasification

## Cogeneration & Thermoelectric

## Hydrogen

- Fuel Cells
- Microturbines
- Optimization of Thermal Cycles
- Gas Turbine Development

- ATR (autothermal Reforming)
- Plasma pyrolysis of NG
- Fuel Cell application
- Fueling station
- Development of a Bus with Fuel Cell
- Blend of Natural Gas and Hydrogen

## Ethanol Market

- Ethanol global market is 46.5 Billion Liters (2005)
- Ethanol as a Fuel is 30.6 Billion Liters (67% of total ethanol production)
- Today the ethanol consumption is 2.6% of gasoline MKT
- 10% of ethanol in gasoline will represent 118 Billion Lt

### Brazil-Japan Ethanol Inc.

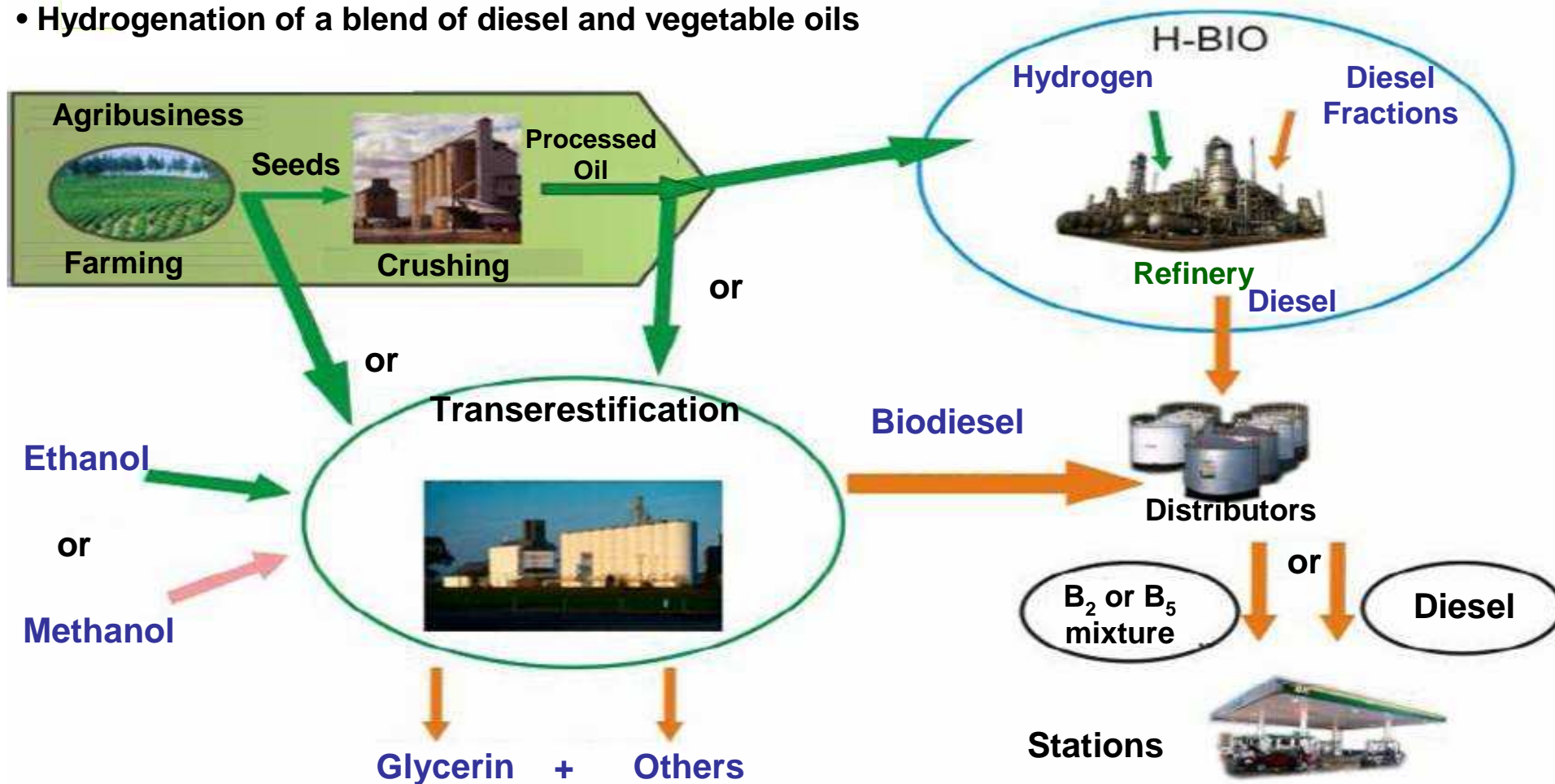
- Recently, Petrobras incorporated Brazil-Japan Ethanol Inc.
- The company will import and distribute Brazilian-produced ethanol in Japan;
- Development of technical and commercial solutions for the reliable and long term supply of alcohol in the Japanese market;
- Petrobras will break into one of the most complex and important energy markets in the World:
  - ethanol logistics distribution
  - fuel distribution sector in Japan.





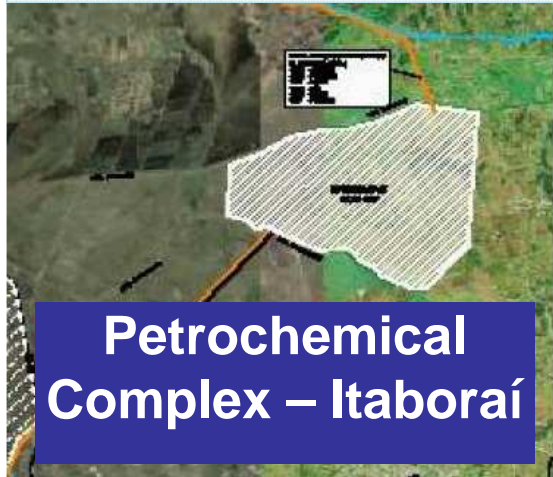
# Biofuel Production

- H-Bio: refining process that utilizes vegetable oils as an input, in order to obtain diesel oil
- Hydrogenation of a blend of diesel and vegetable oils

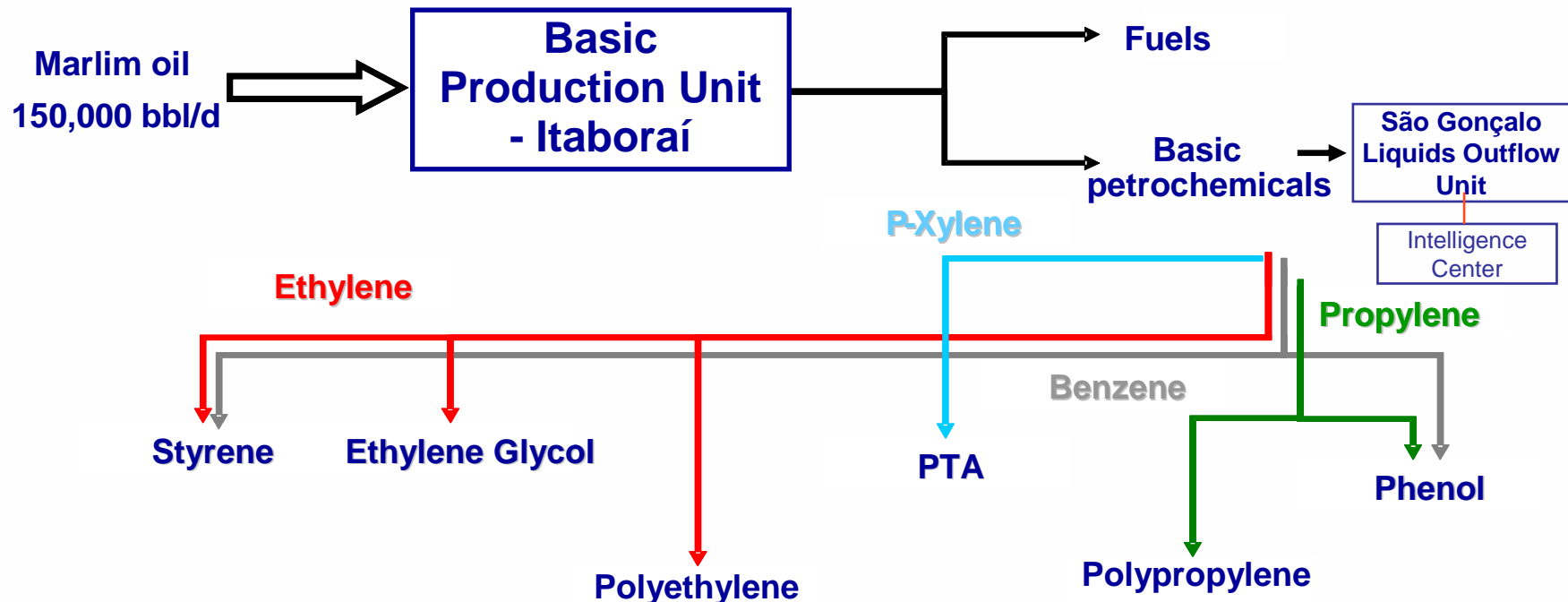


**Complementary and not competitive processes**

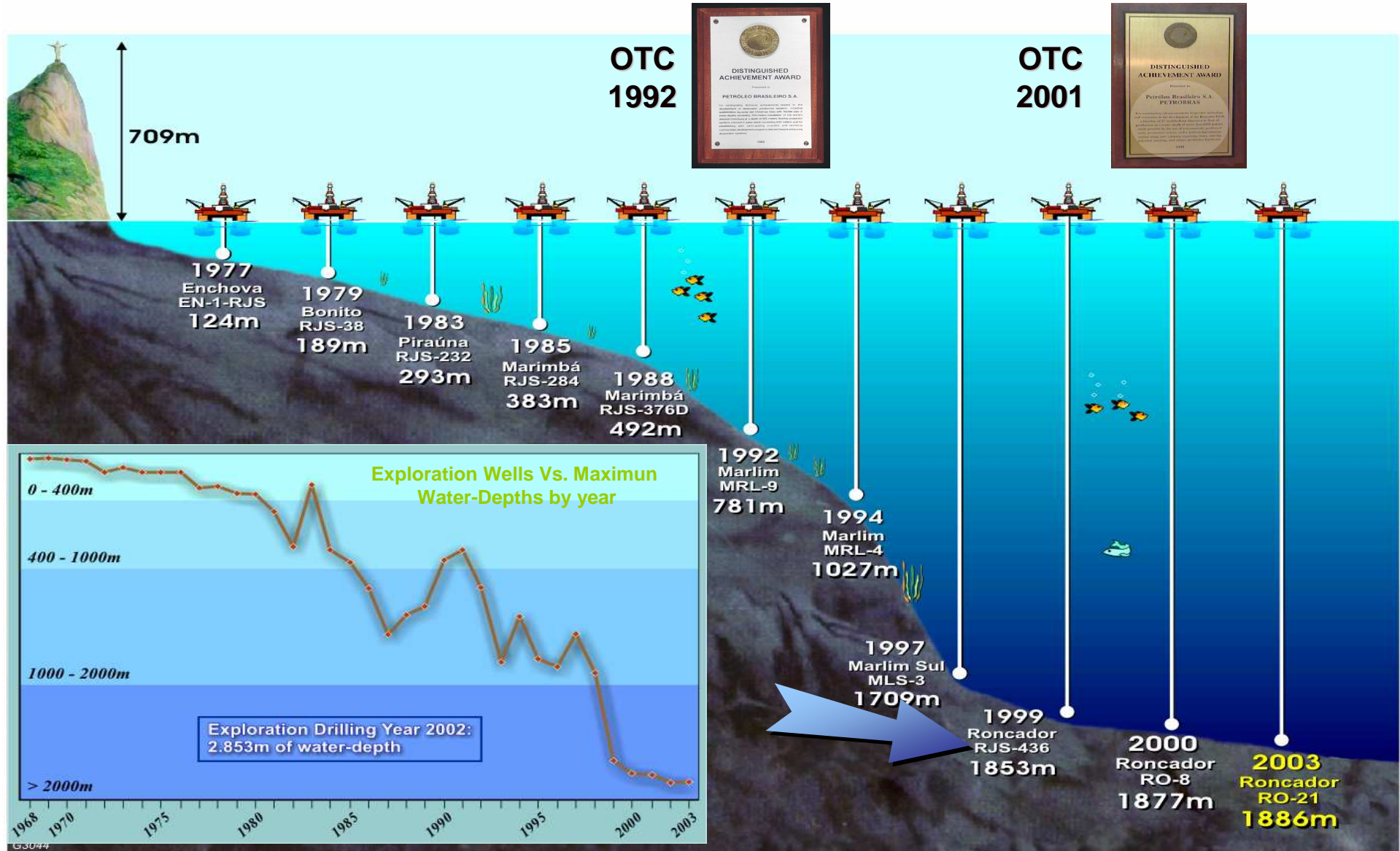
# Rio de Janeiro Petrochemical Complex



- Investment: US\$ 6,5 billion
- Expected Annual Production:
  - 1,3 million tons of Ethane;
  - 900,000 tons of propane;
  - 360,000 tons of benzene;
  - 700,000 tons of p-xylene.
- The Complex will add value to 150,000 barrels/day of heavy oil from the Campos Basin.



# Records in Completion/Production and Exploration Drilling Offshore





# **QUESTION AND ANSWER SESSION**

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