Brazil Round 1

Market and Infrastructure

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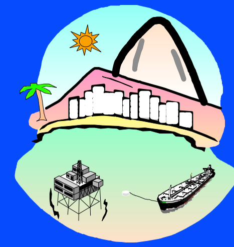
Supt. Strategic Studies

Market and Infrastructure

- General statistics on Brazilian market
- Existing infrastructure

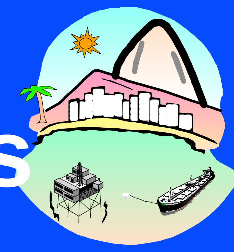
Market and Infrastructure



- Brazilian market (1998 average figures)

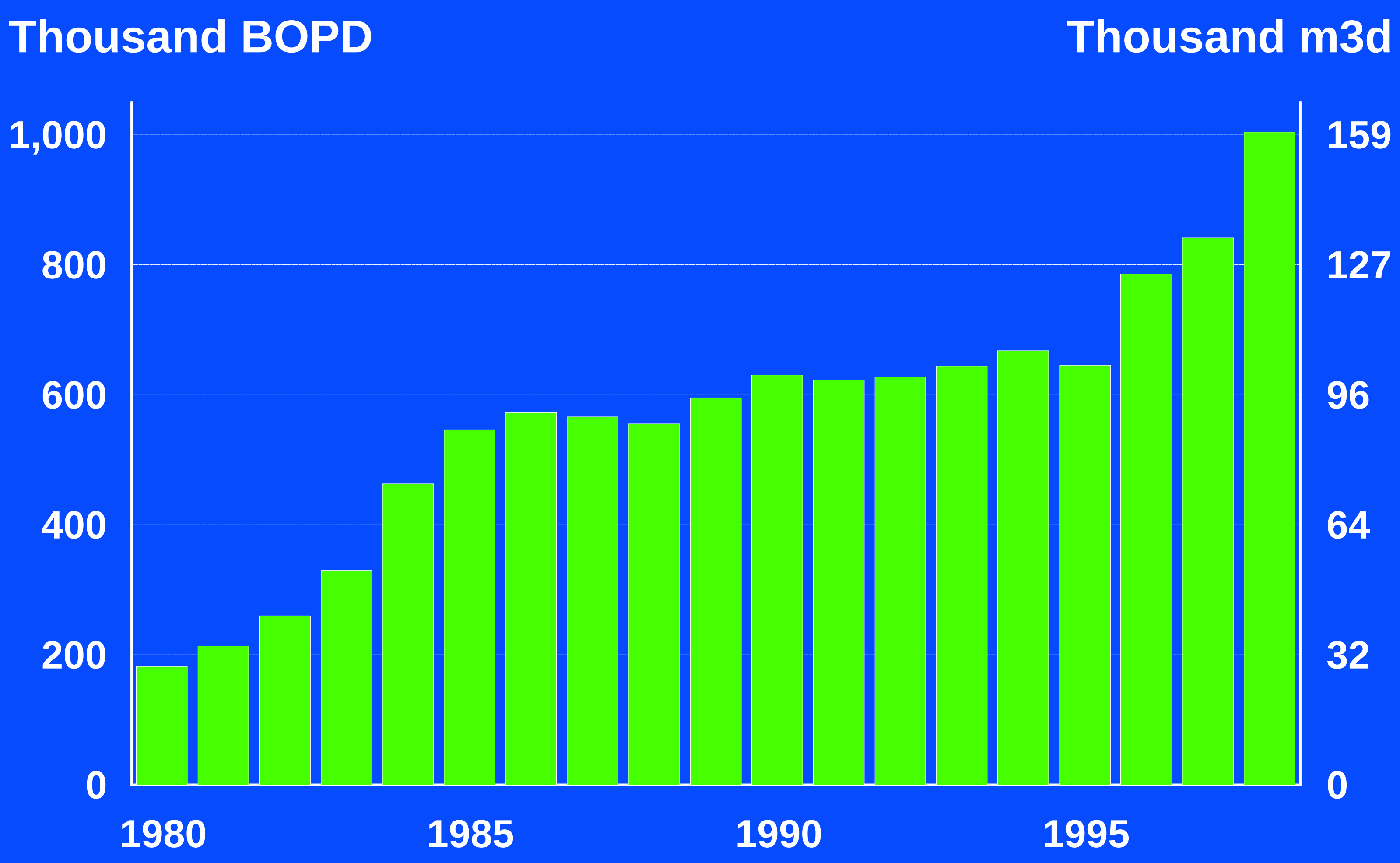
	(Thousand B/D)
• Production of crude oil	980
• Crude oil imports	460
• Oil products imports	410
• Natural gas production	190

Historical Demand Growth Rates

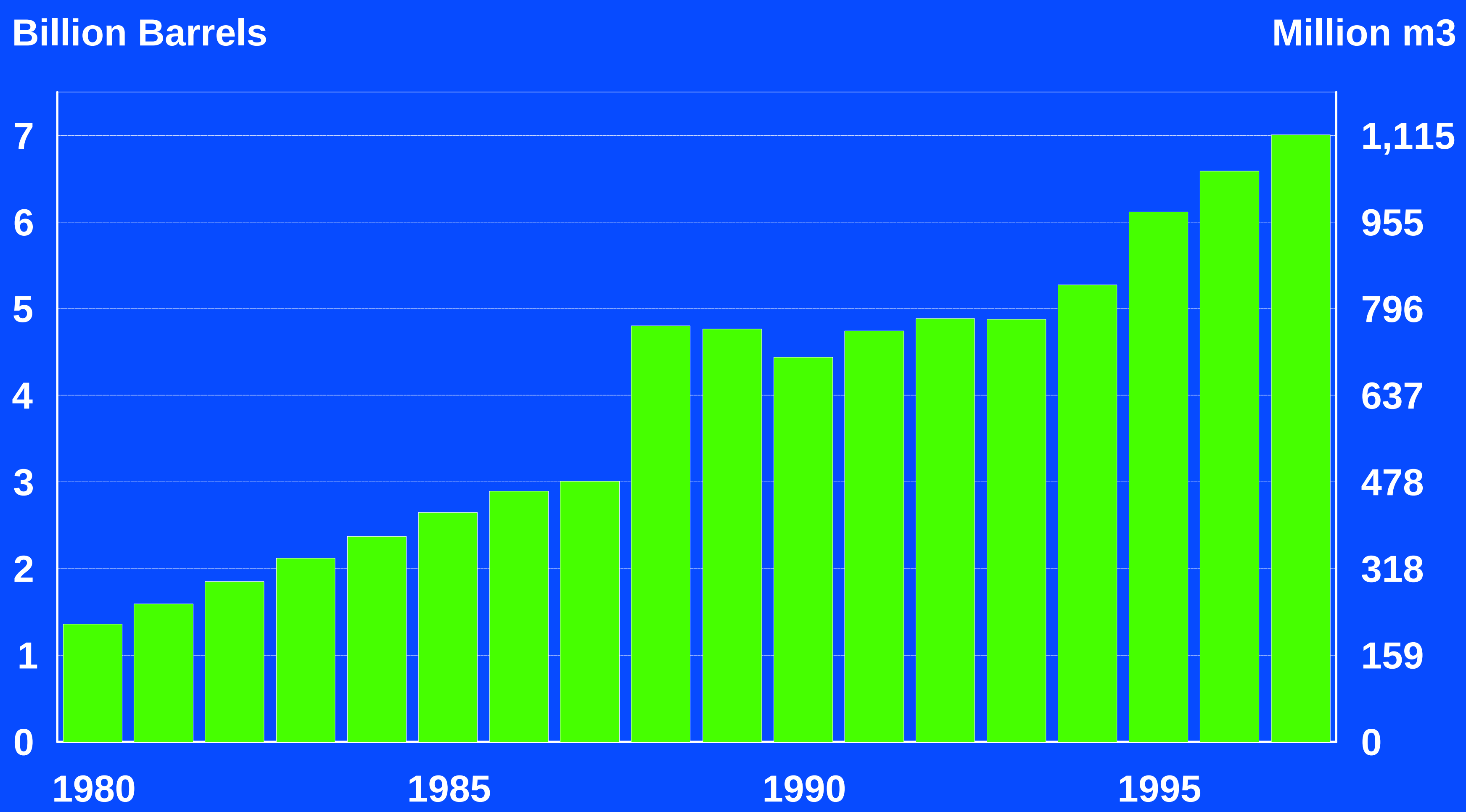


	Growth Rate (1980-1990)	Growth Rate (1990-1997)
Diesel	5.6%	4.3%
Gasoline	-3.7%	9.5%
LPG	13.2%	3.2%
Natural Gas	30.9%	6.3%

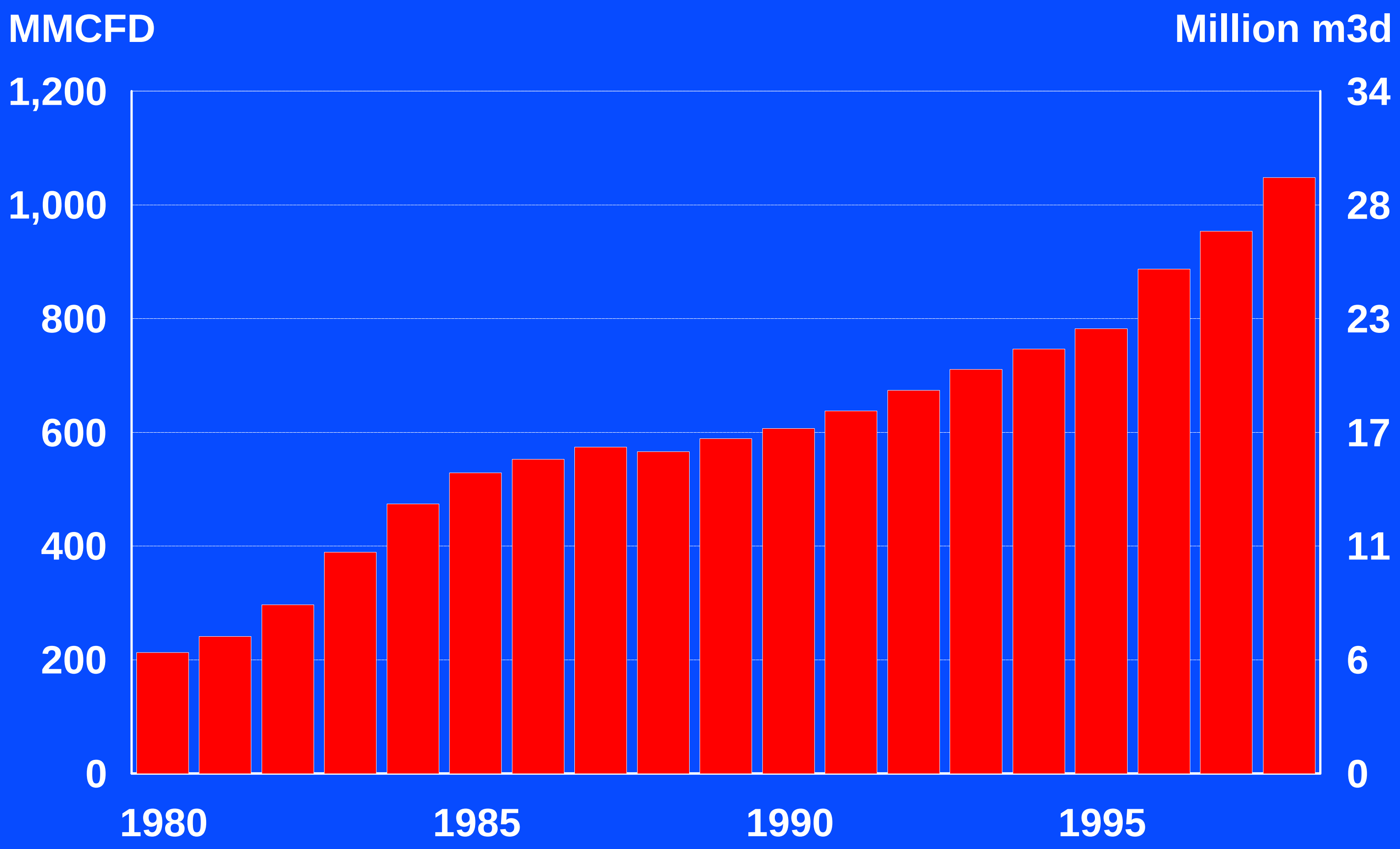
Oil Production



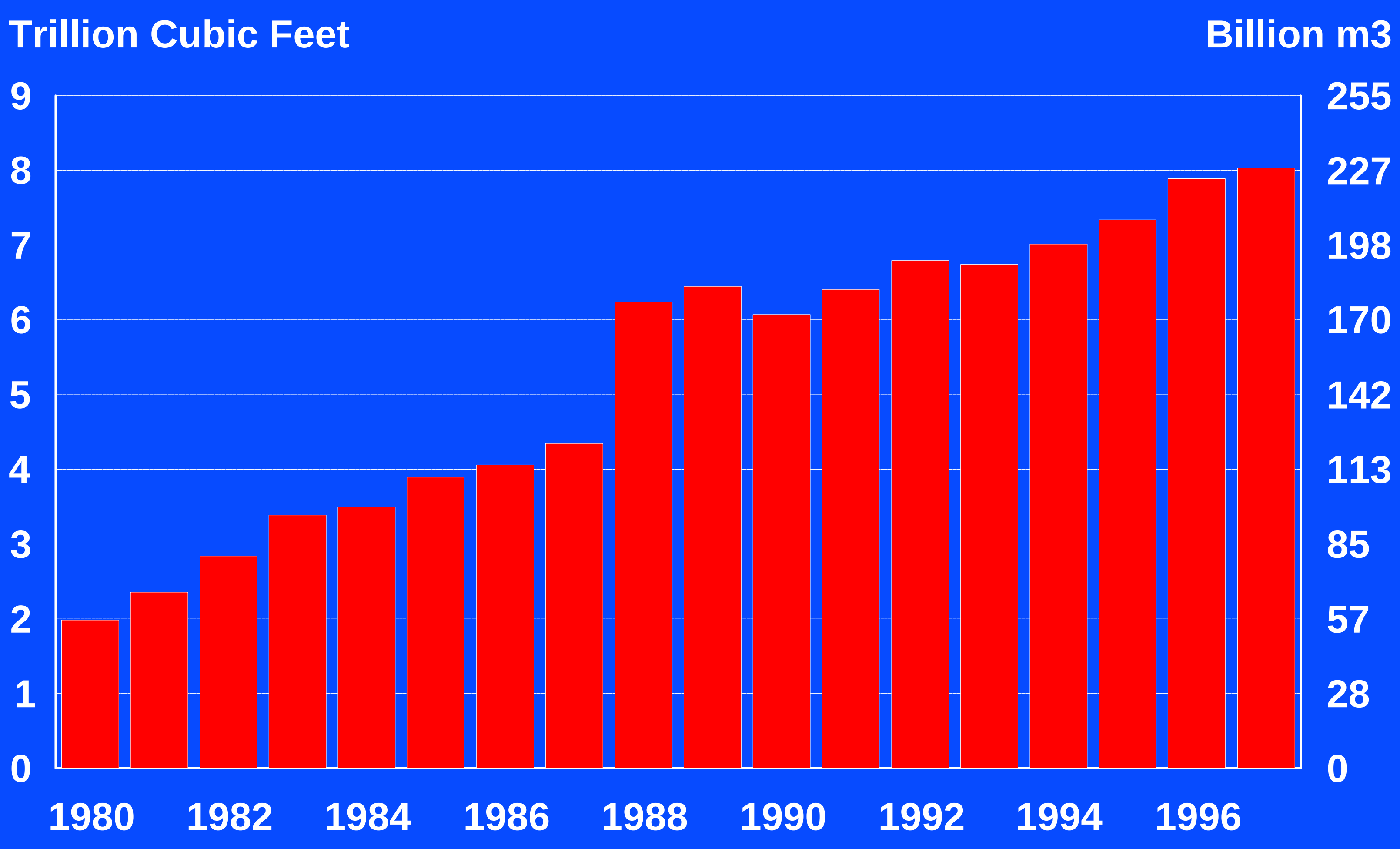
Proved Oil Reserves



Natural Gas Production

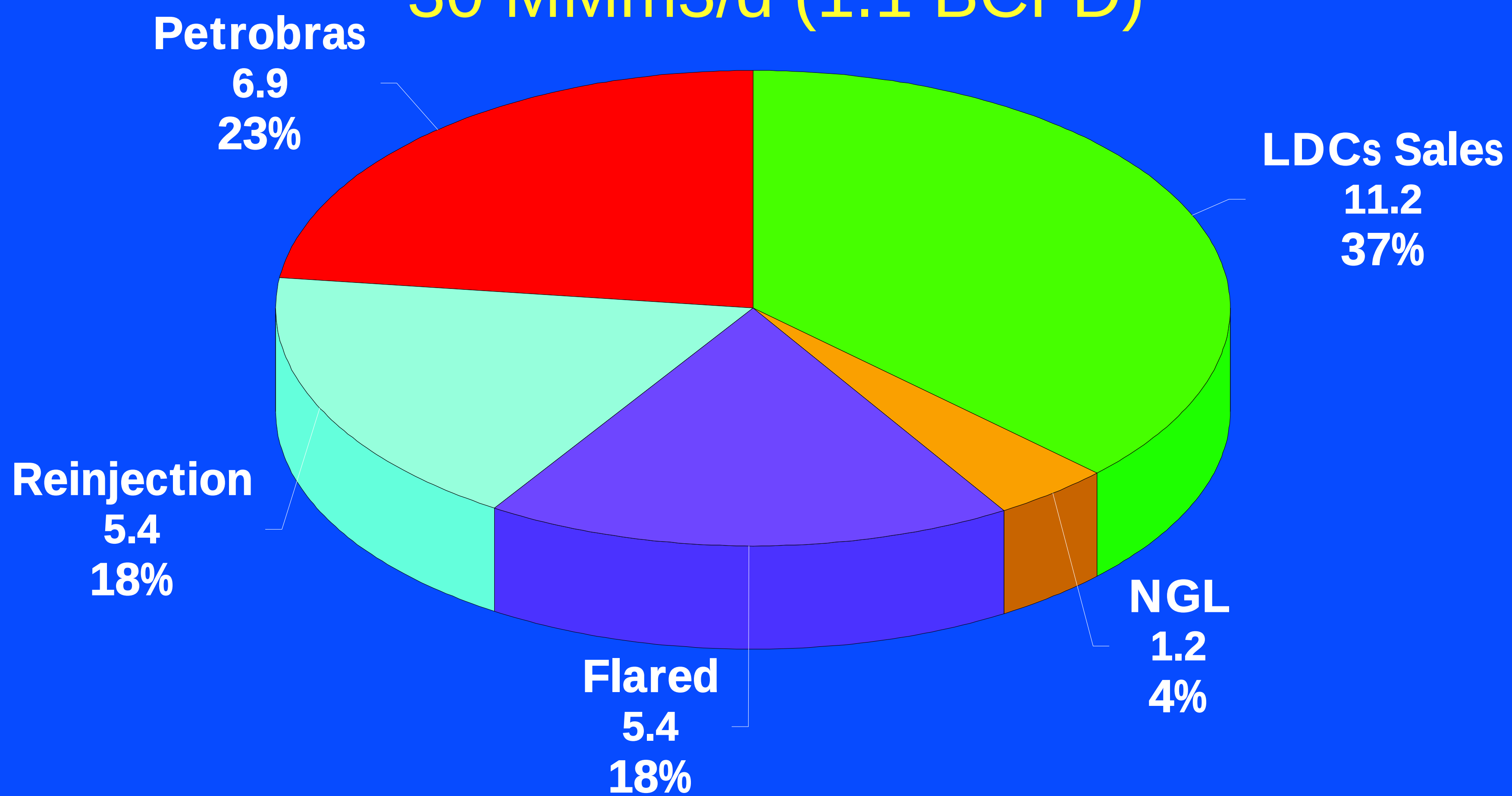


Proved Natural Gas Reserves



Brazil
Natural Gas Usage - 1998

Domestic production (December 1998)
30 MMm3/d (1.1 BCFD)



Market and Infrastructure

- Brazilian infrastructure (1998 figures)

  - Refining capacity 1,830 MBOPD
    - 13 refineries
    - 11 belonging to Petrobras; 98% market share

  - Gas processing capacity 20.6 MMm3/d
    - 11 units
    - All belong to Petrobras

  - No open access to gas processing facilities

Market and Infrastructure

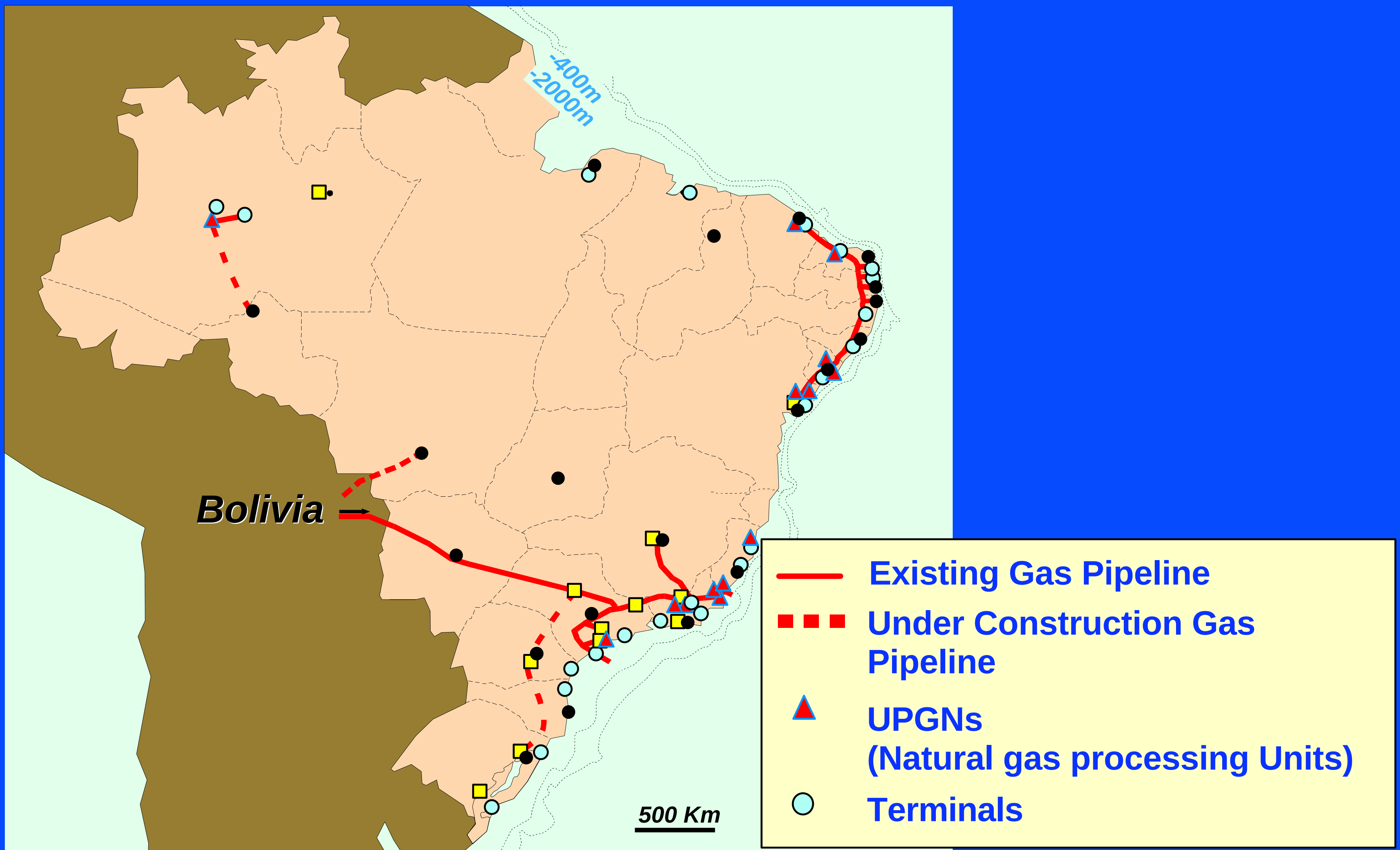
- Brazilian infrastructure (1998 figures)
  - Gas pipelines (kms)

• Transportation	4,000
• of which, Bolivia gas line to Campinas	1,400
• Transfer	2,200
• LDC's	4,800
• of which, São Paulo and RJ	4,400

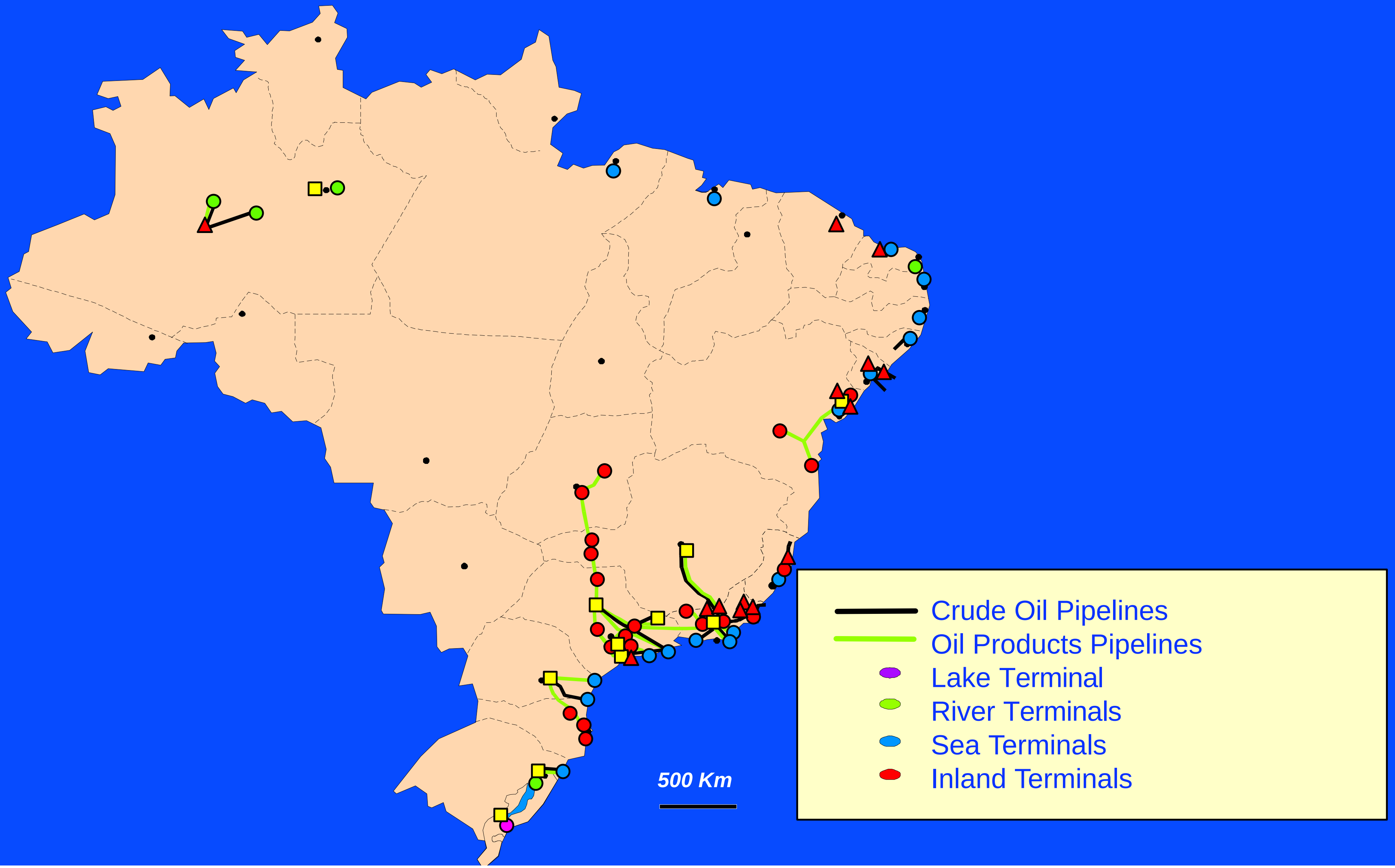
  - Crude oil and oil products pipelines (kms)

• Transportation	4,650
• Transfer	2,750

Infrastructure
Natural Gas



Crude Oil and Products Pipelines



Refineries and Gas Processing Units

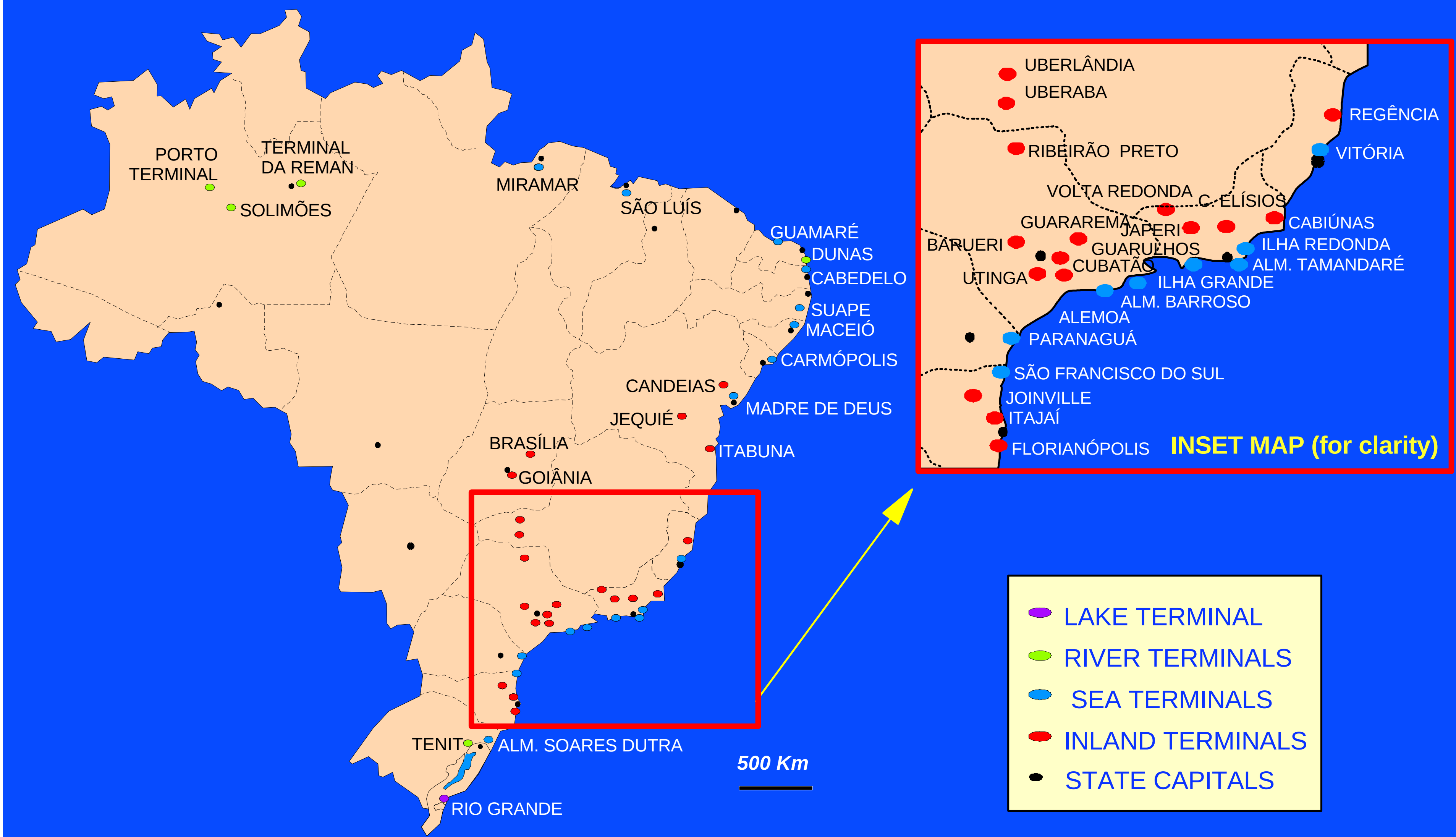
- Main Refineries
- Other refining Units
- UPGNs (Natural Gas Processing Units)
- UPGNs under construction
- State capitals

Terminals

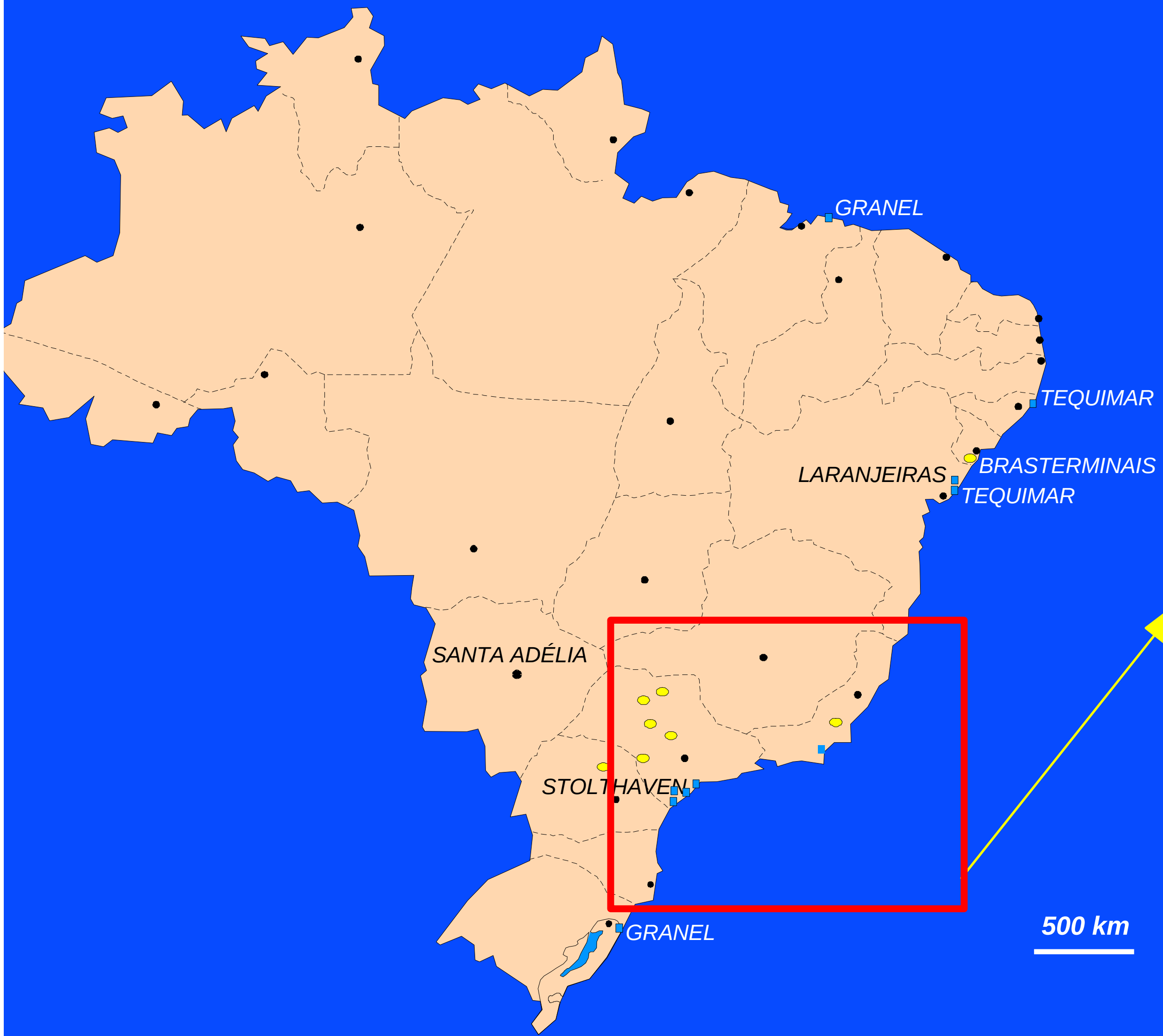
Terminals located on	Owned by Petrobras	Storage Capacity (M m3)	Total *	Storage Capacity (M m3)
Sea	19	6,219	30	6,796
River	5	171	5	171
Lake	1	35	1	35
Inland	29	3,511	32	3,528
TOTAL	54	9,935	68	10,530

* *Includes terminals owned by other companies certified by ANP under Portaria 80*

Petrobras Terminals



Other Products Terminals



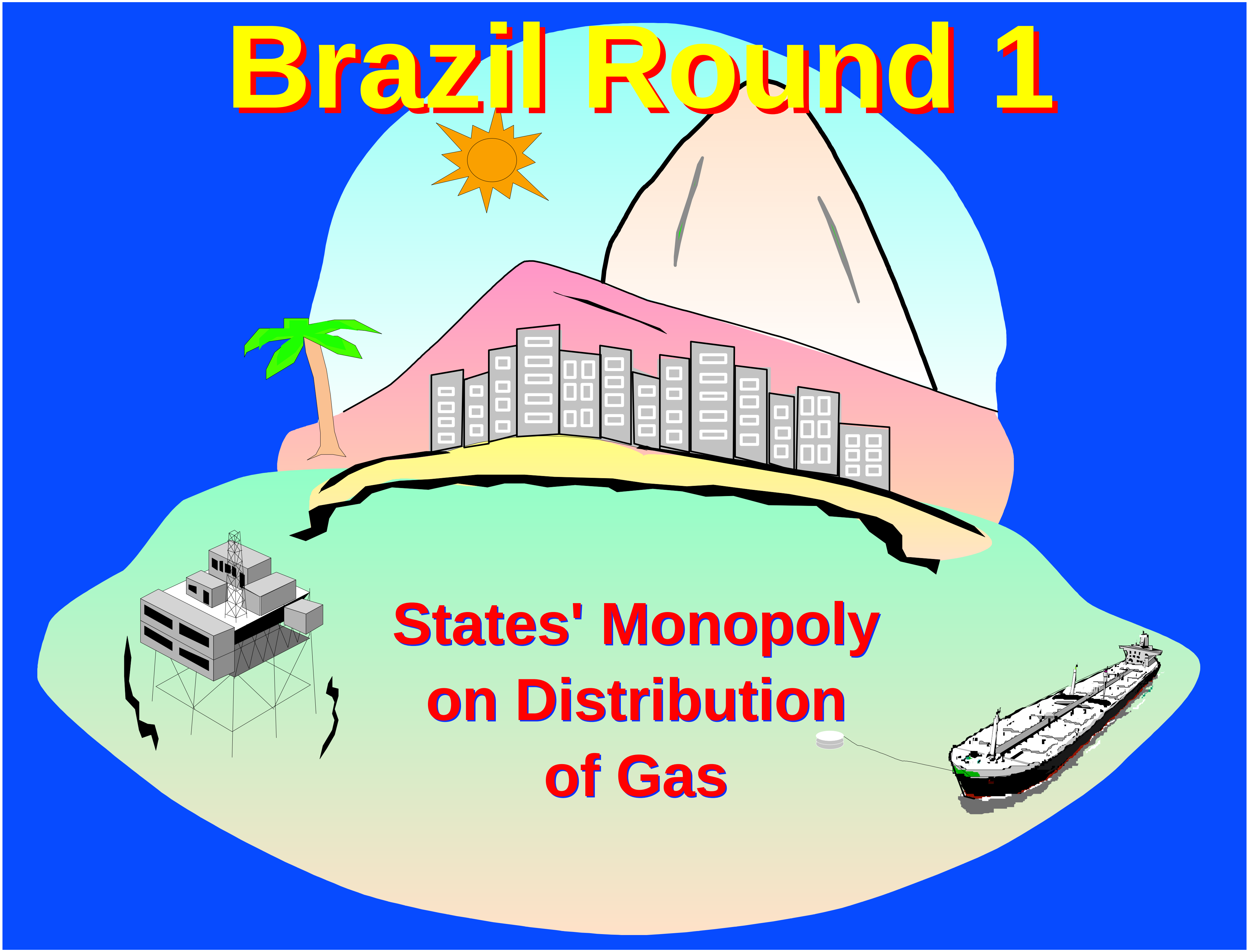
PETROBRAS

ALCOHOL COLLECTING CENTER

OTHER COMPANYS

SEA TERMINALS

STATE CAPITALS


Brazil Round 1
States' Monopoly
on Distribution
of Gas

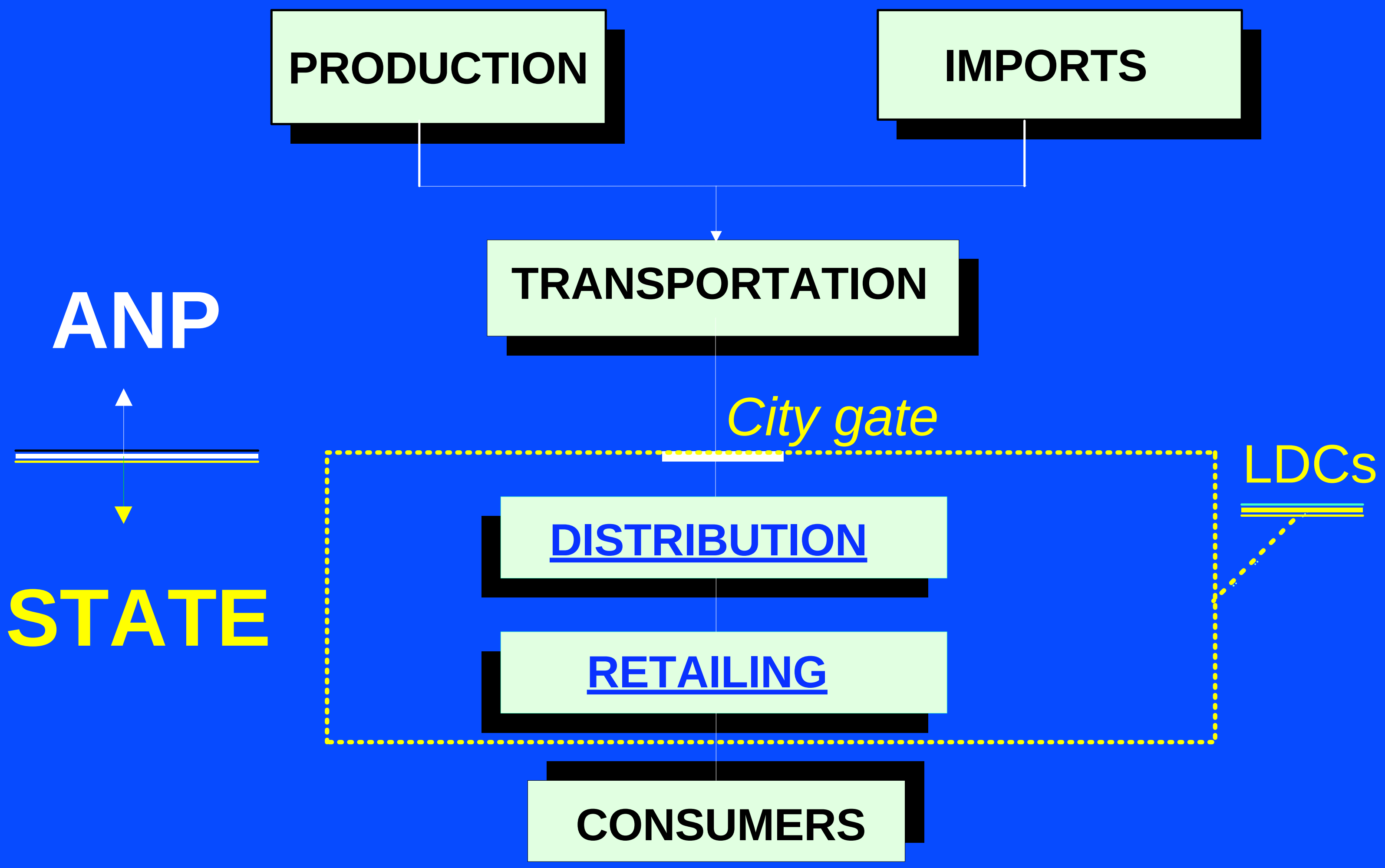
State Monopoly on Distribution of Gas

- States' monopoly begins at the "city gate"
- State regulatory agencies control distribution
- All states granting exclusive distribution rights to LDCs within their territories
  - Statewide or in specific in-state regions
- No competition among distributors within the states

State Monopoly on Distribution of Gas (*Continued*)

- Exemptions or special treatment regarding distribution tariffs after "city gate"
  - Granted at sole discretion of each State
- ANP negotiating cooperative agreements with regulatory agencies in certain states

Natural Gas Market Structure



Brazil Round 1

Access to Infrastructure

Open Access Requirements in Petroleum Law

- **Required for pipelines and maritime facilities**
  - **ANP has promulgated rules for <u>gas</u> pipelines *(Portaria 169)***
  - **Rules for <u>oil</u> pipelines and maritime terminals expected later in 1999**

Refineries and Other Infrastructure

- No open access requirements for refineries or gas processing units, tank farms, etc.
- Construction and increases in capacity of refineries require ANP authorization
  - Rules are set forth in Portaria No. 28, issued February 1999
  - Applicant's prepared summary will be published, but certain information (such as market analysis, statements of planned production capacity and financial projections) will be treated as confidential