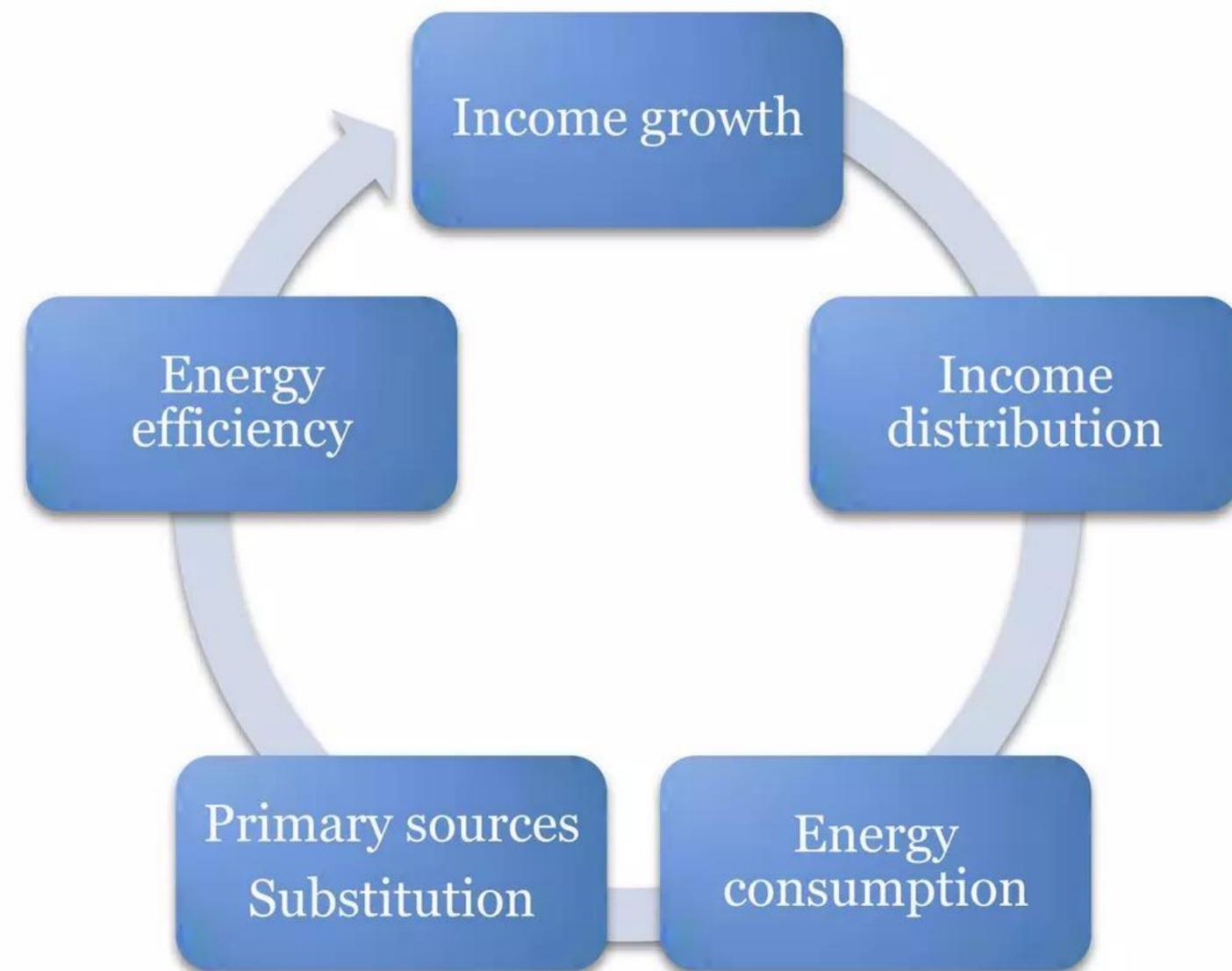


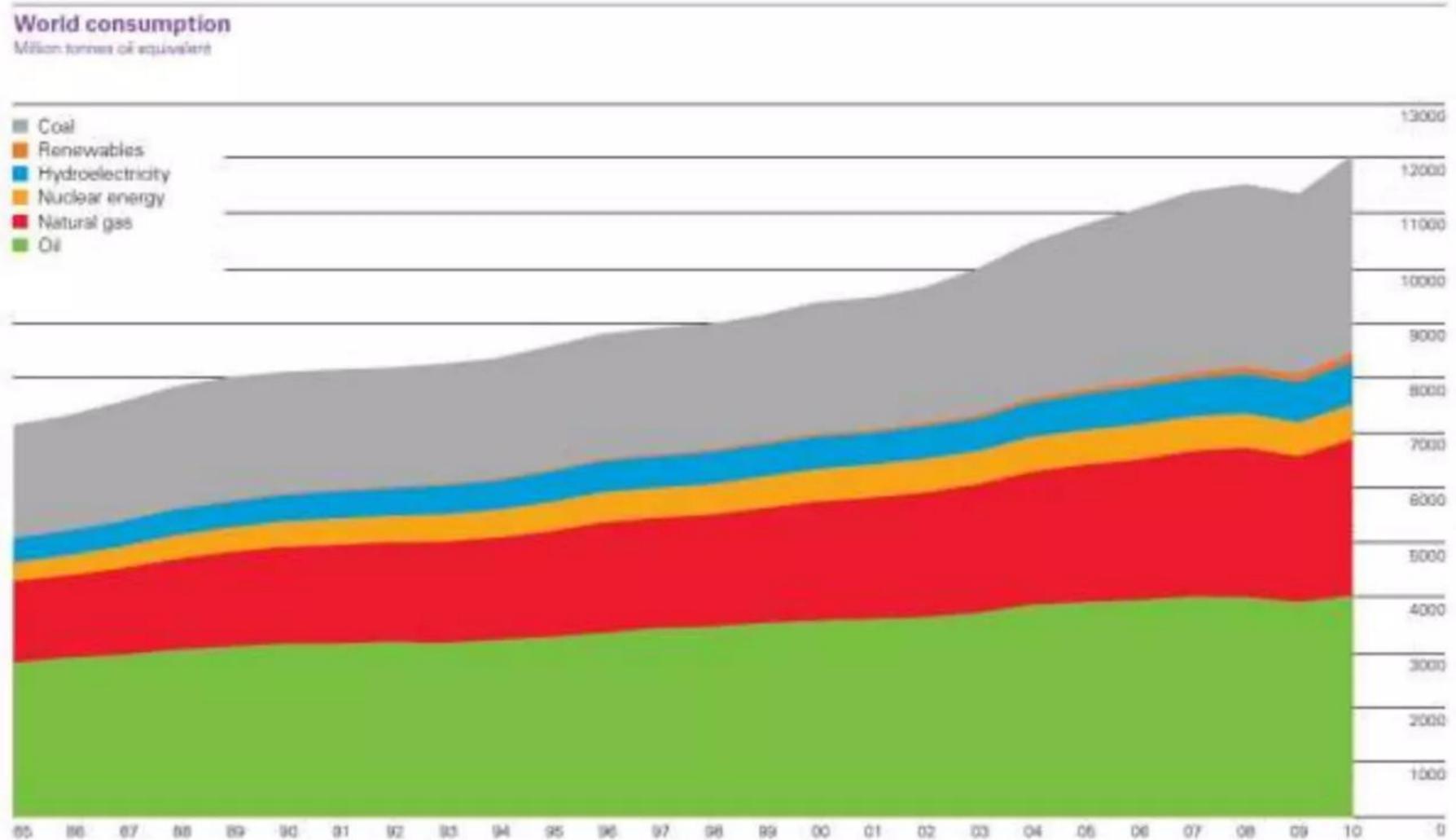
Looking Ahead

- Rising energy consumption
- Climate Change constraints
- Emerging countries demand
- Adjustment of primary sources of energy
- Oil, coal and natural gas remain big
- Time cycle for renewables
- New energy Geography



High energy consumption growth

- In spite of the OECD crisis, energy consumption rises at high rates (5.6% in 2010, the highest rate since 1973). Energy consumption in China grew by 11.2%.
- Coal consumption increased by 7.6% in 2010, also the highest since 1973.
- Biofuels production globally increased by 13.8%, led by the U.S. at 17% and Brazil at 11.5%.
- Renewable energy for power generation increased by 15.5%, led by wind power with an increase of 22.7%.
- China had the highest growth rate of renewable energy among large countries at 74.5%.



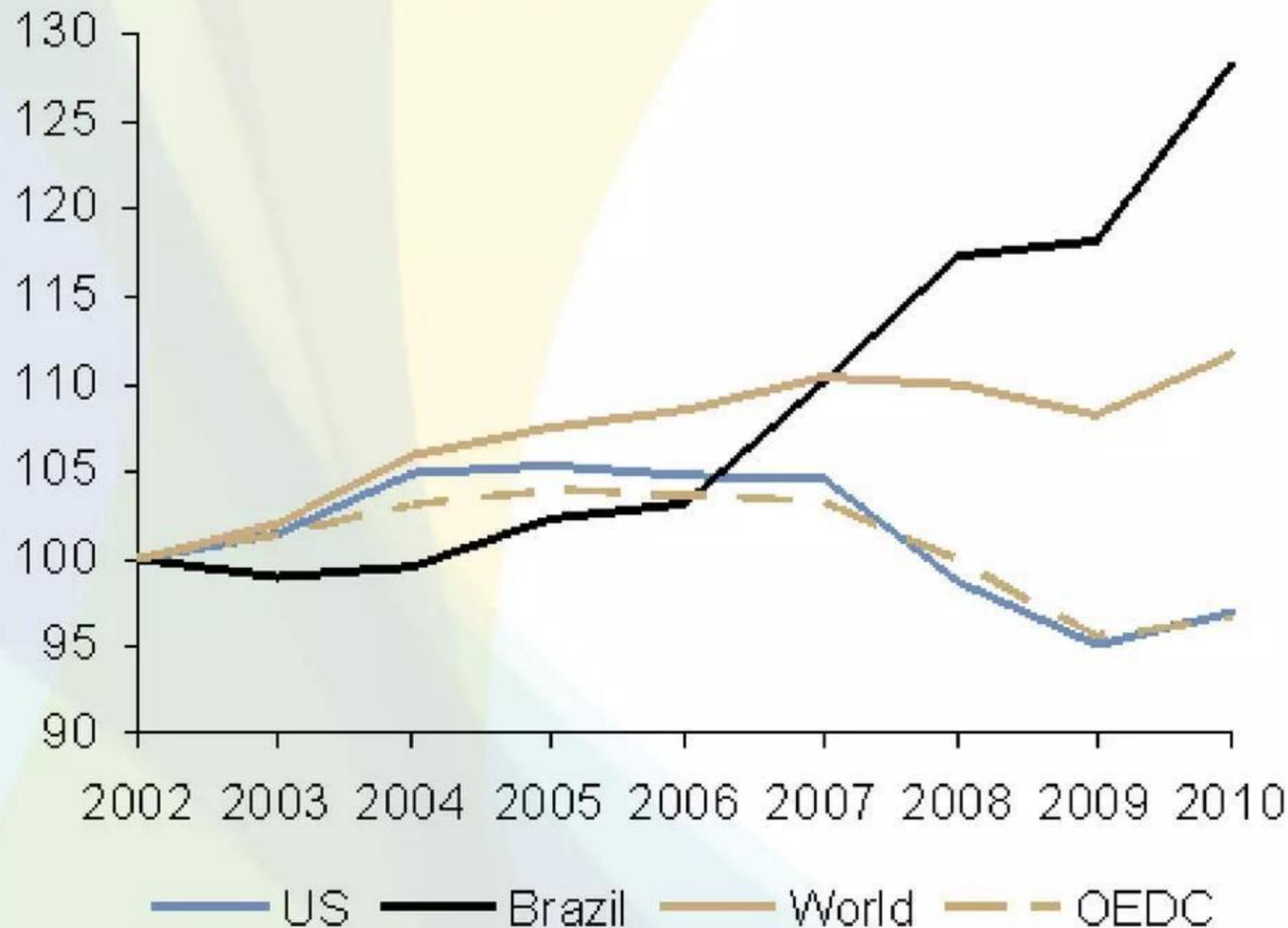
HIGH GROWTH POTENTIAL



Low per capita consumption supports demand growth in developing countries

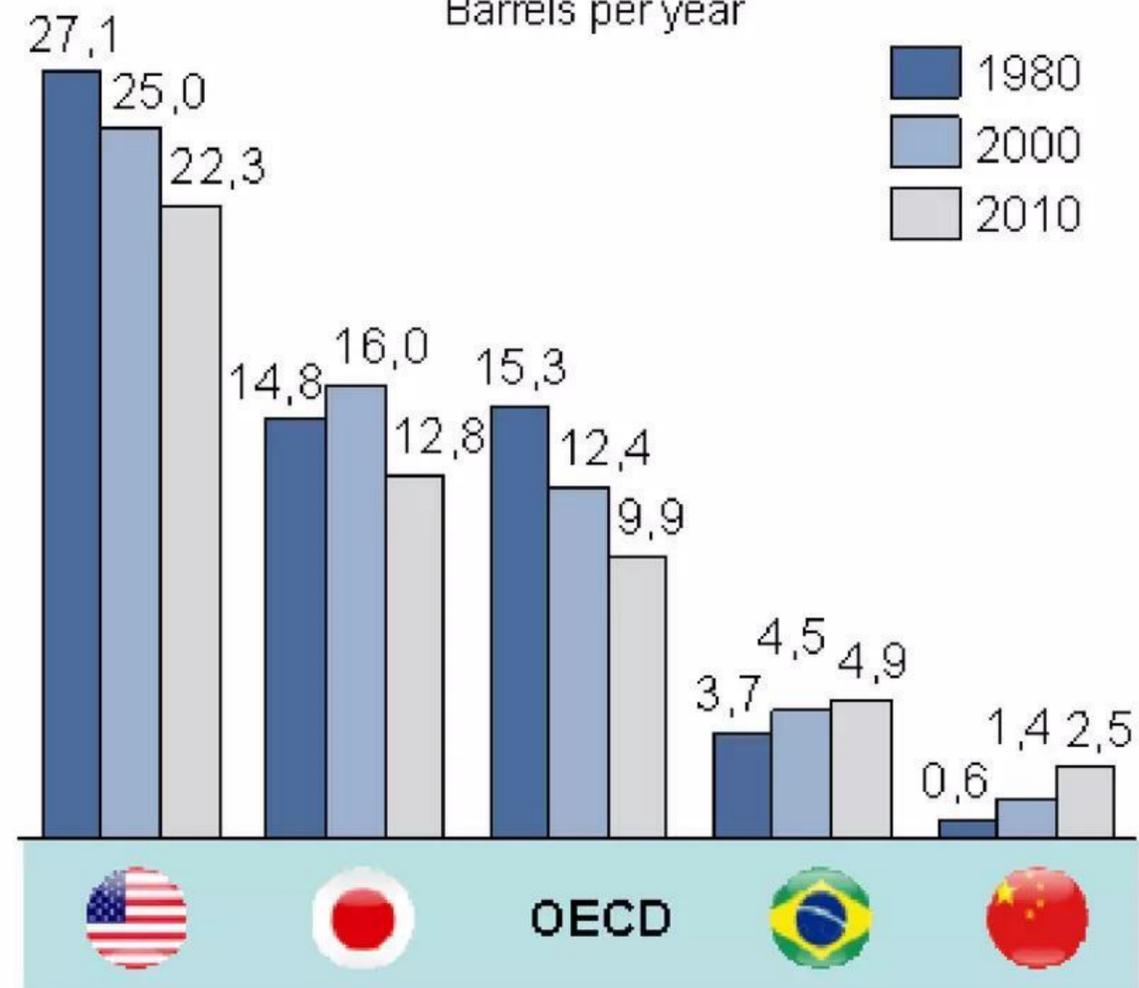
Total Oil Consumption

(Index = 100 in 2002)

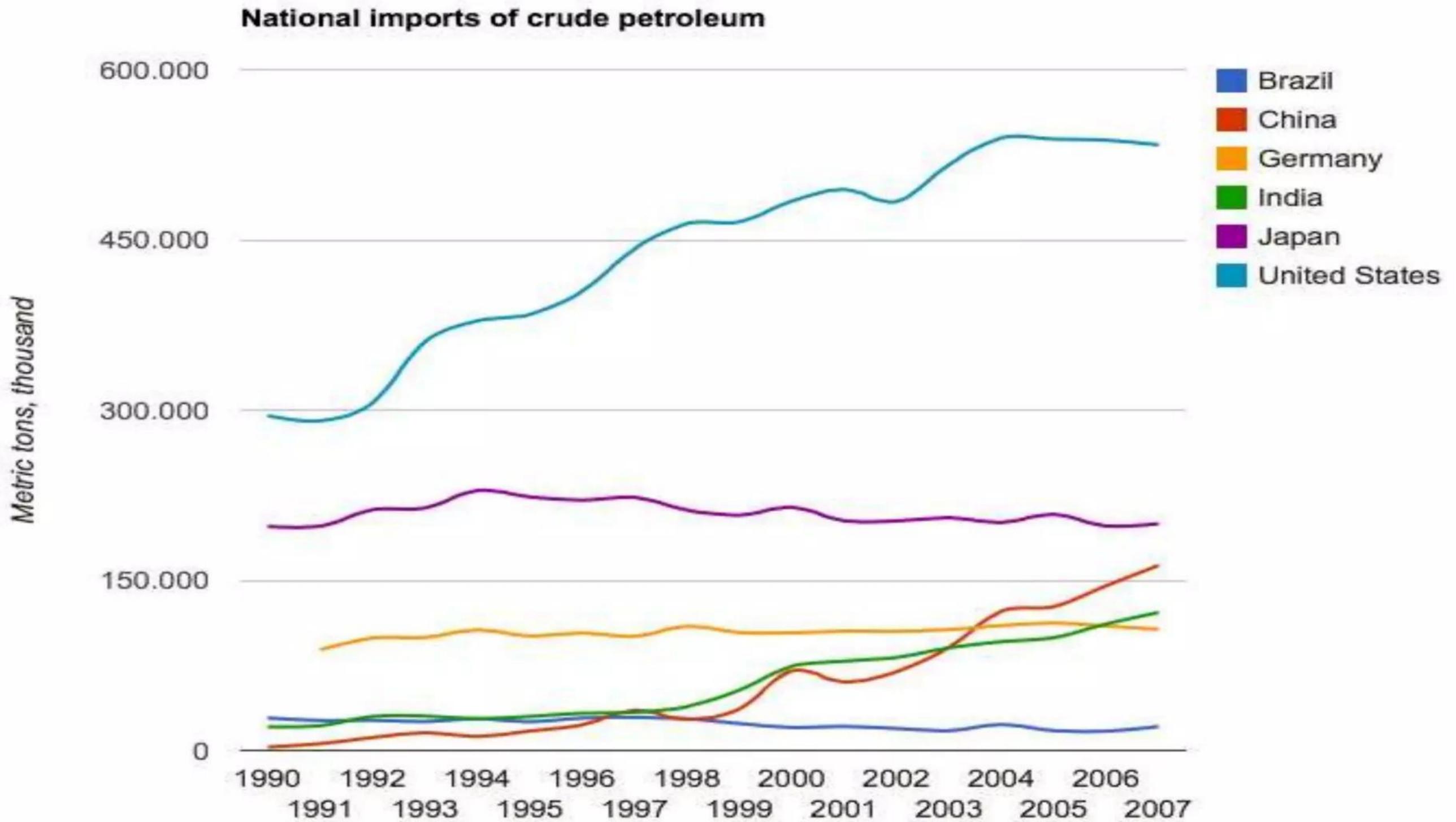


Per capita consumption

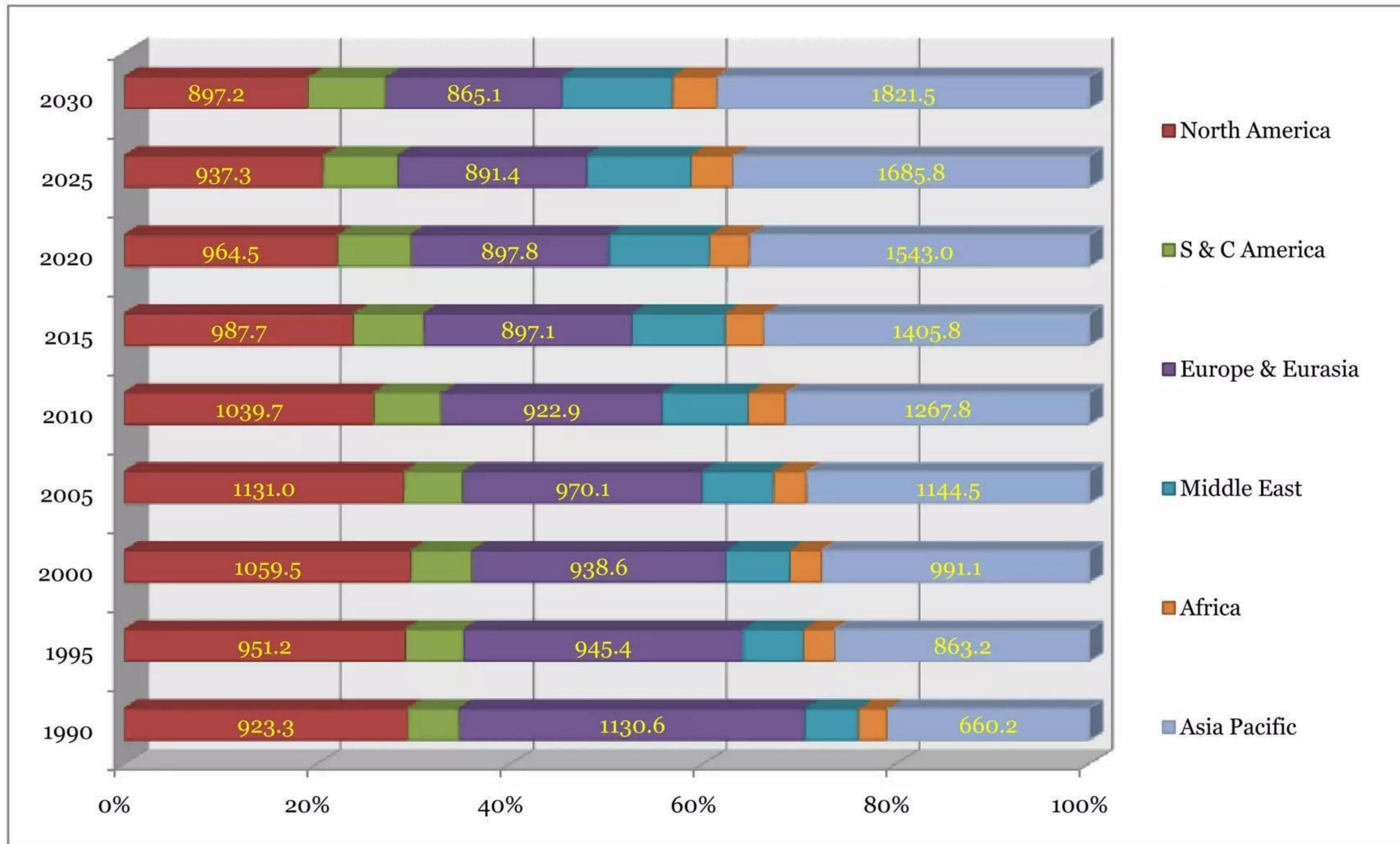
Barrels per year



Crude Oil Imports

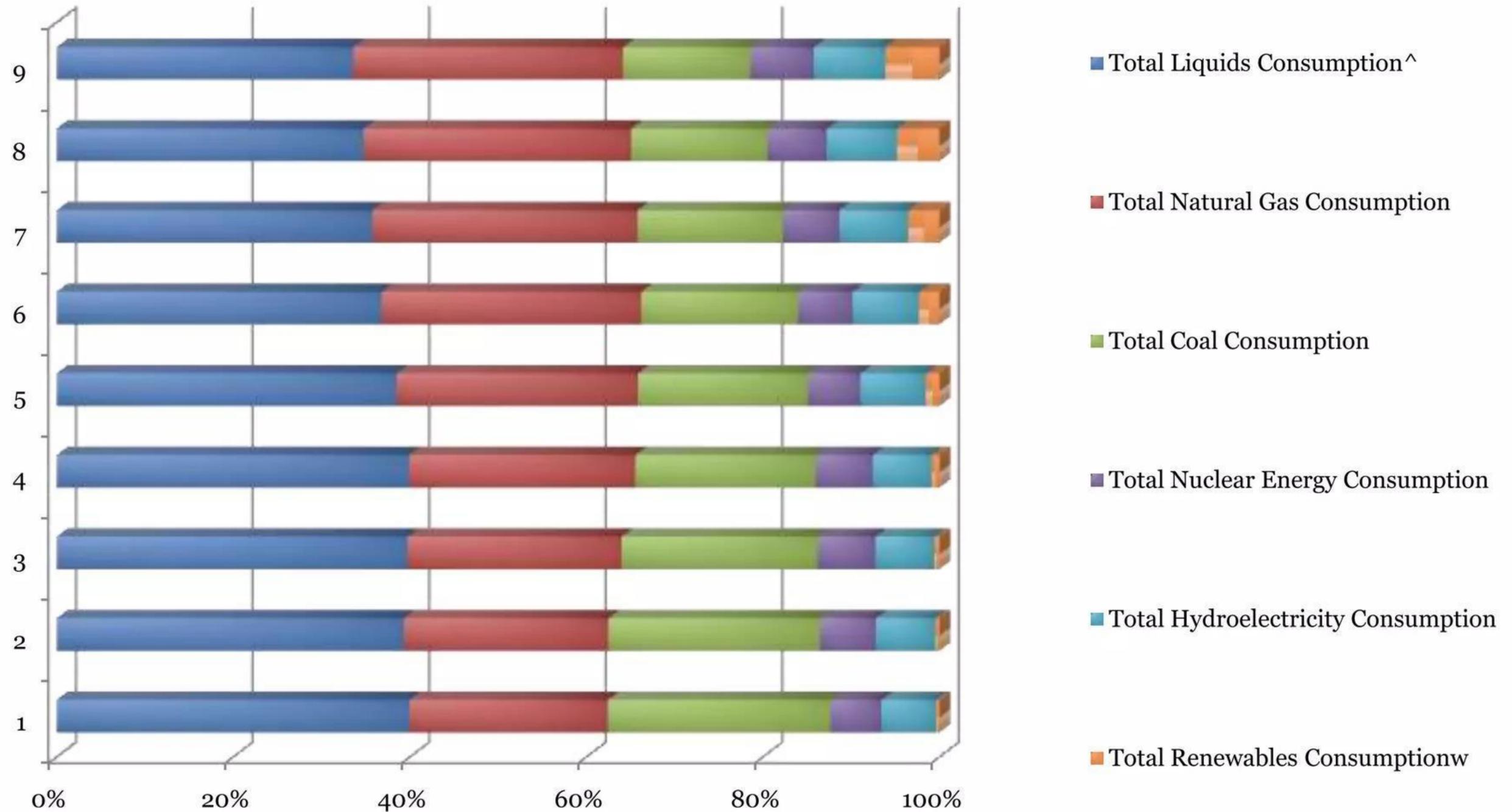


Energy Consumption Projections



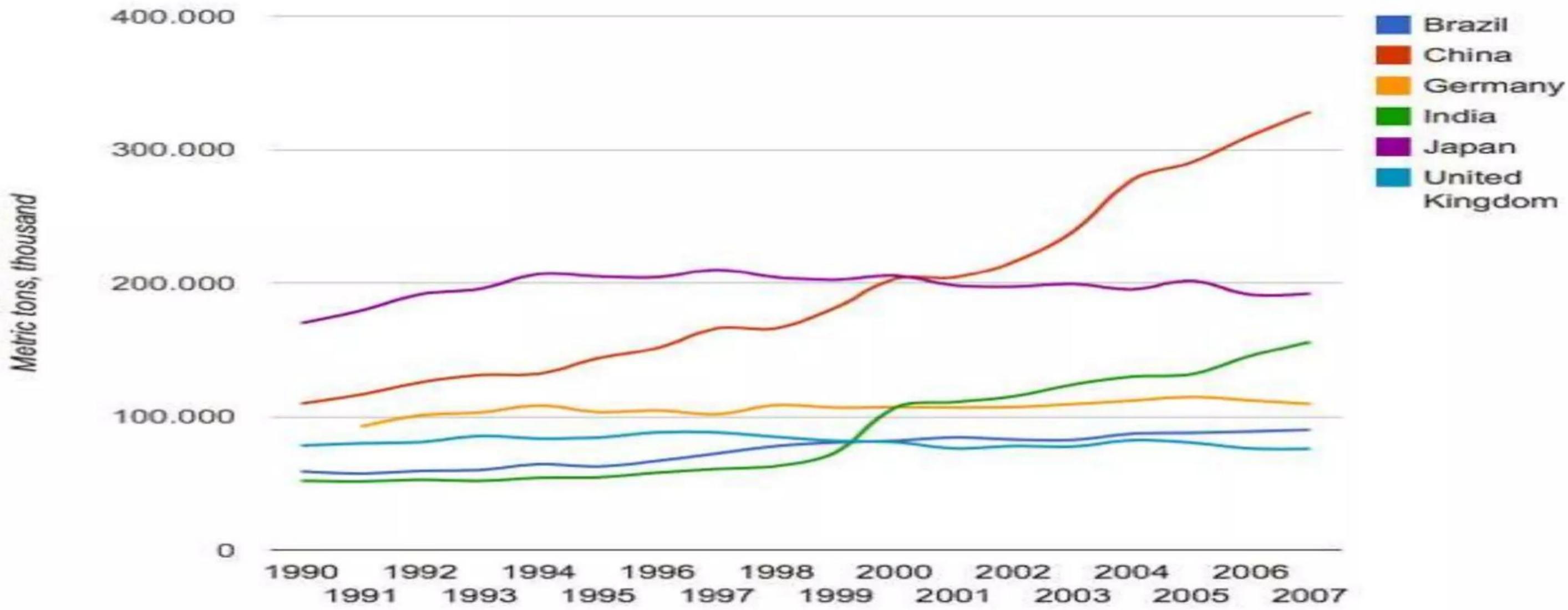
Source: BP Energy Outlook 2030

Energy Consumption by Primary Source 1990-2030

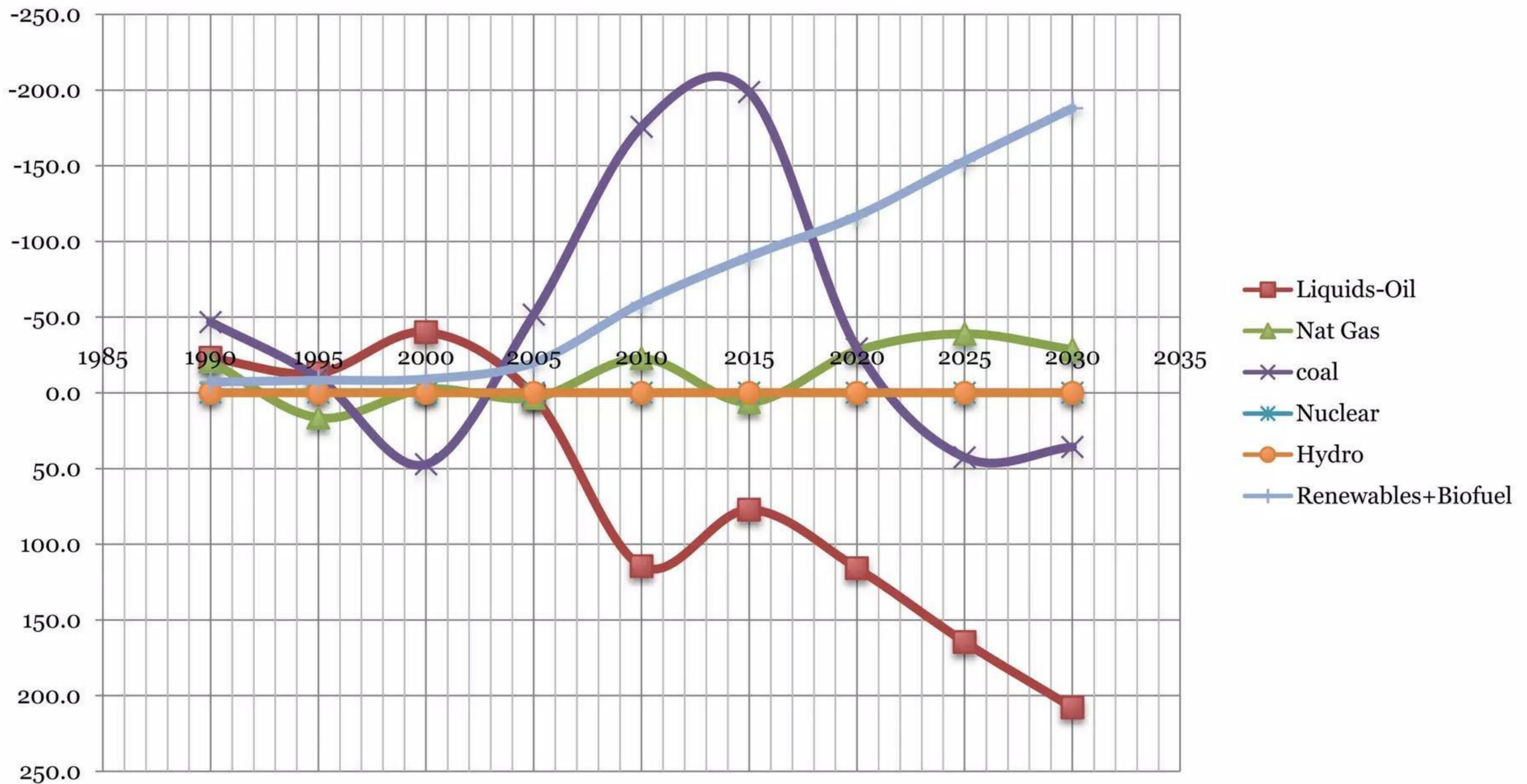


Source: BP Energy Outlook 2030

National conversion in refineries



Difference between Expected Consumption and Production by Primary Source 1990-2030



Source: BP Energy Outlook 2030

Big Expected Changes

Shale Gas

Increasing demand of fossil energy

- Oil prices remains high

Rising consumption of coal

- New technologies, regulation, social conflict

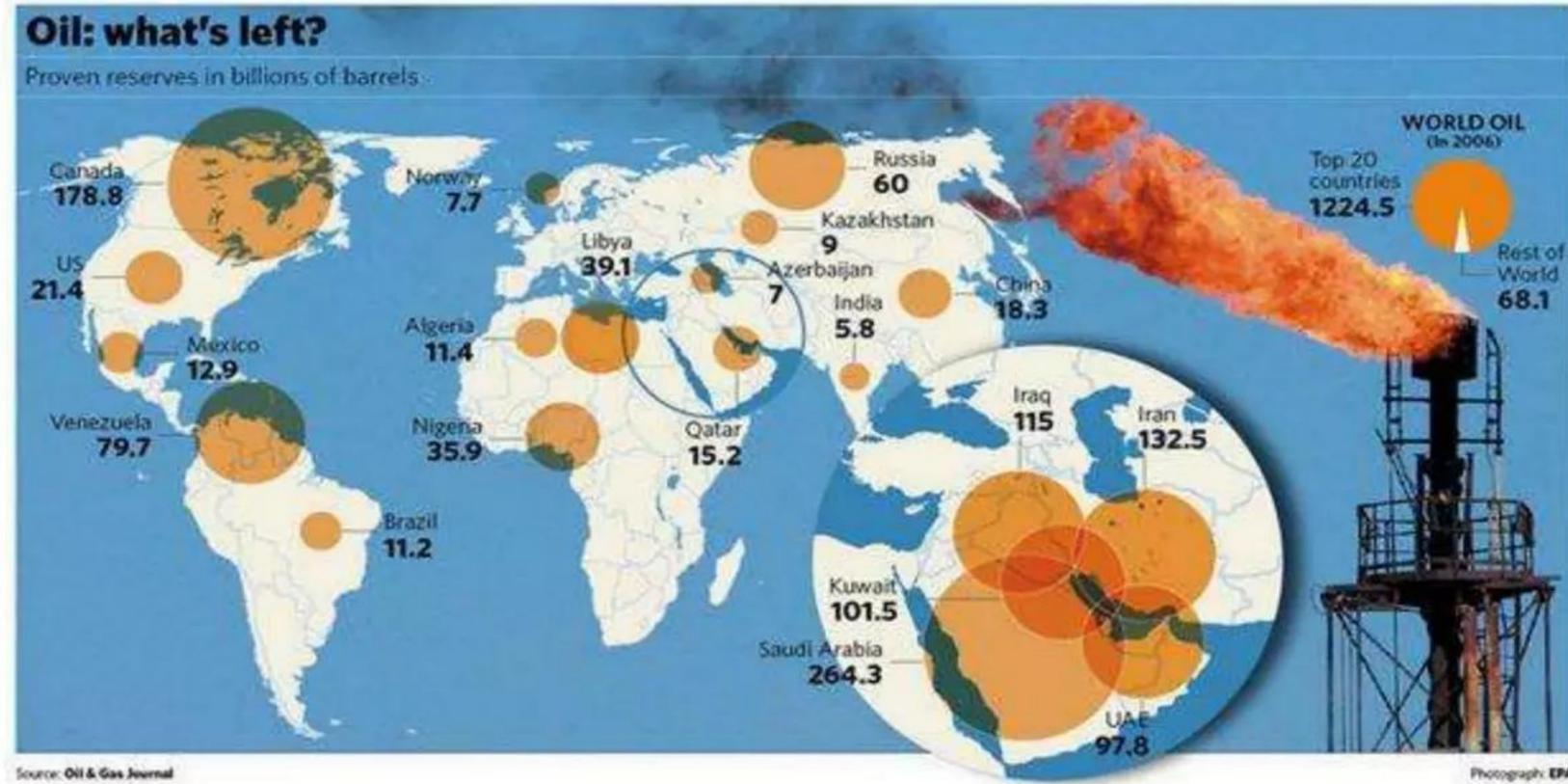
Search for new technologies of renewables

- Energy Efficiency rises

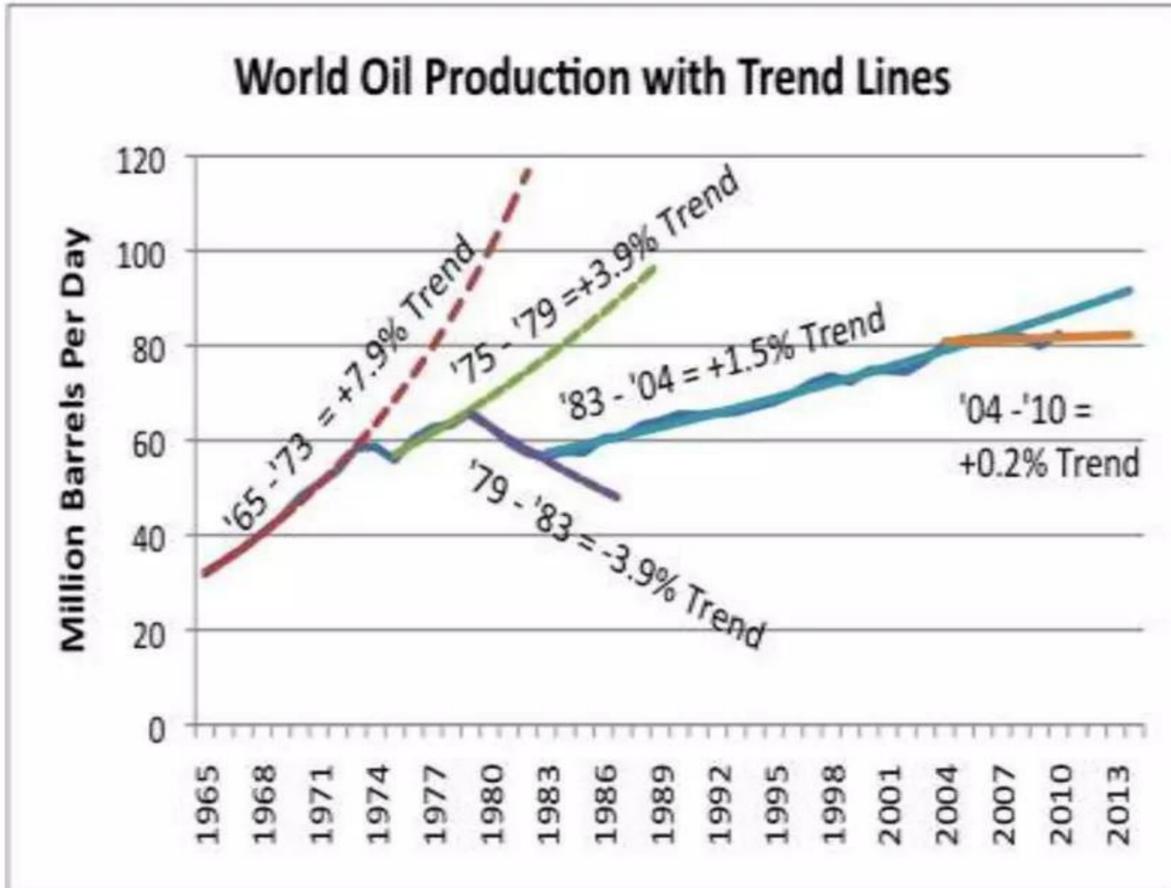
Oil declines in transportation

- Chemical transformation of hydrocarbons in new dimension

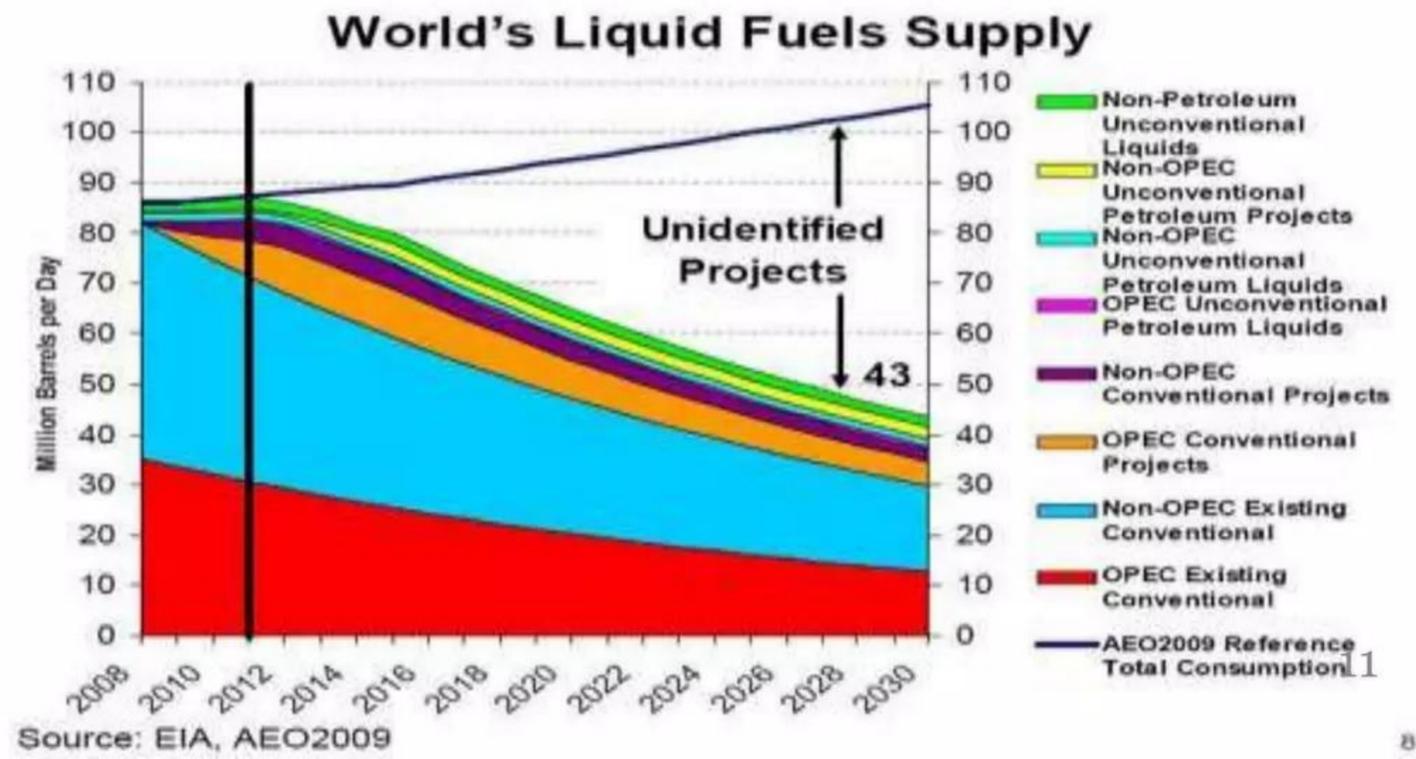
Oil will combine excess supply in the long run and shortage in the medium run. Declining rates are key variables



Reserves still strongly concentrated in areas politically unstable or with big environmental challenges



Source: <http://ourfiniteworld.com/>

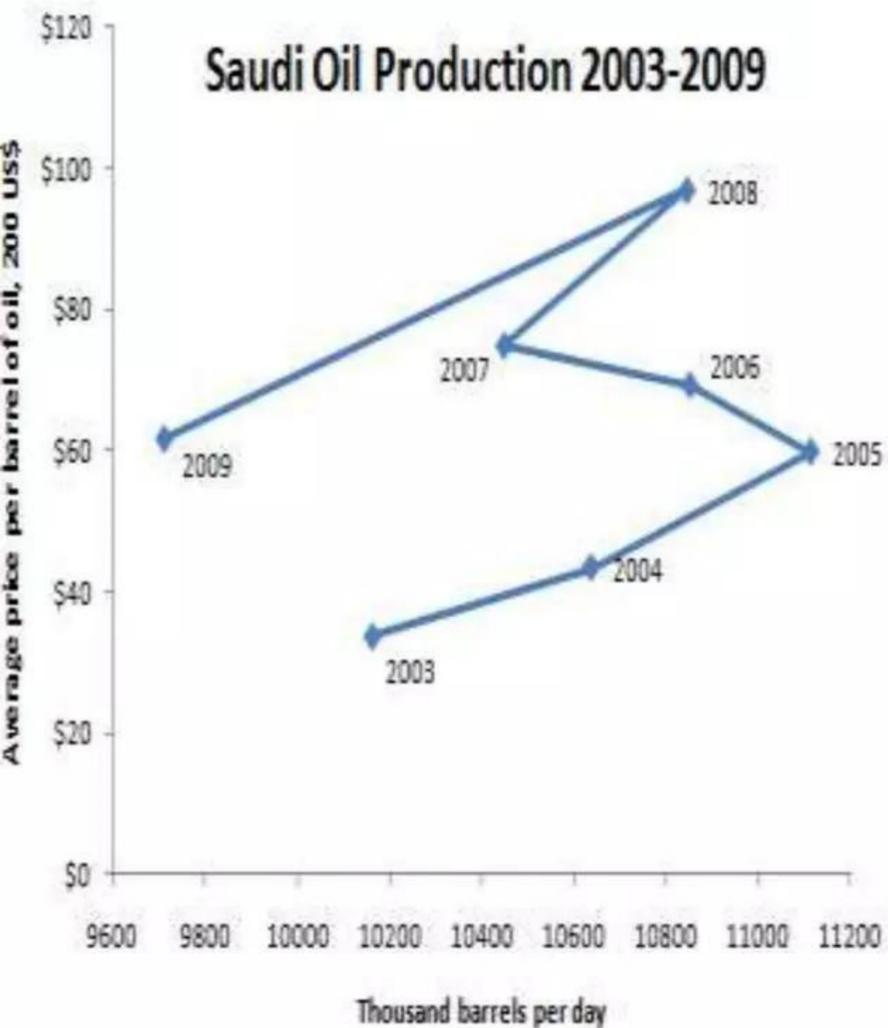


Geopolitical change of oil production

Middle East is the main provider of oil and Gas

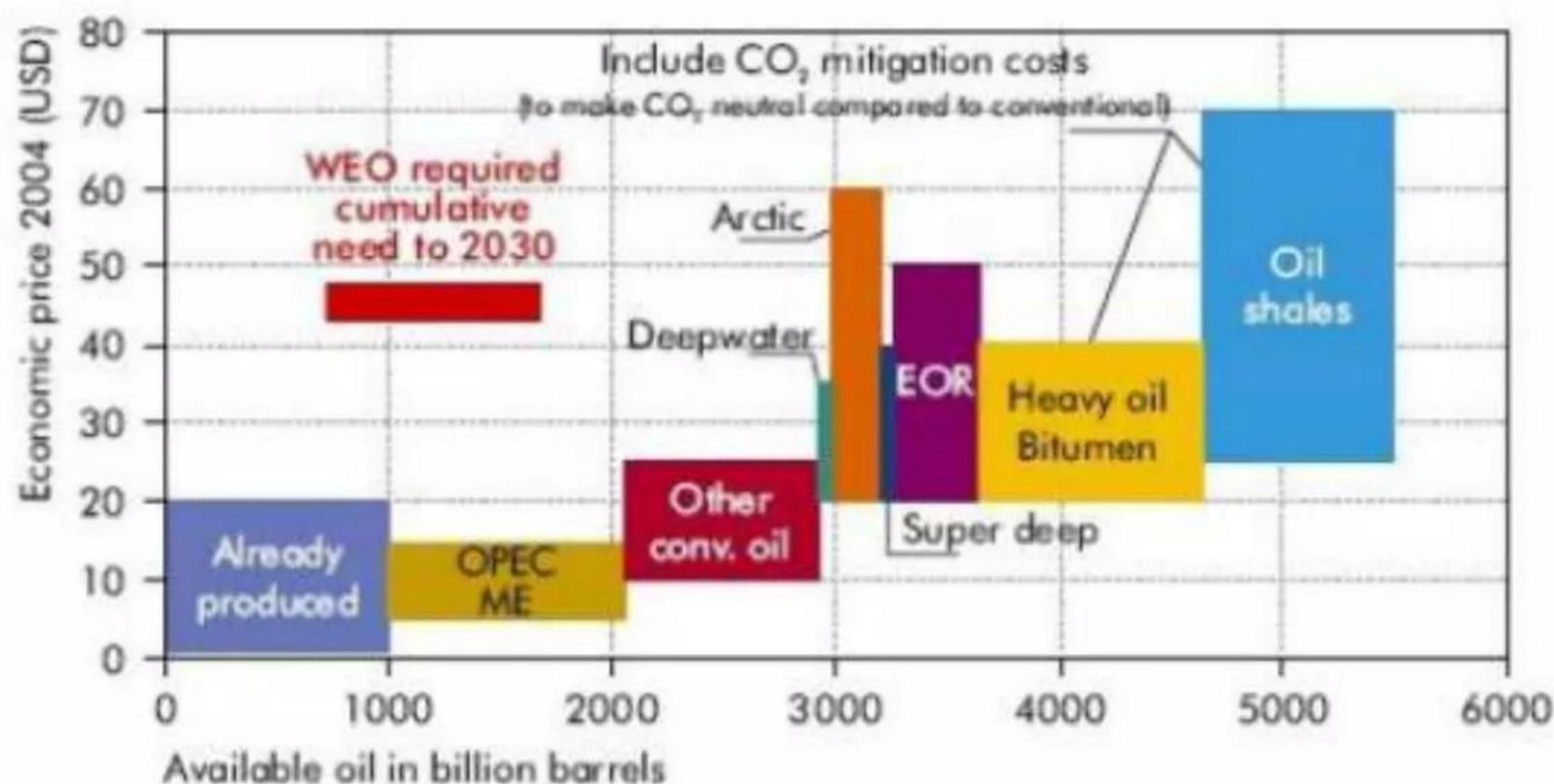
USA moves up in gas and it is the third in oil production

Offshore oil is the new frontier



The cost of the new production will determine the speed of substitution for renewables

Oil cost curve, including technological progress: availability of oil resources as a function of economic price.

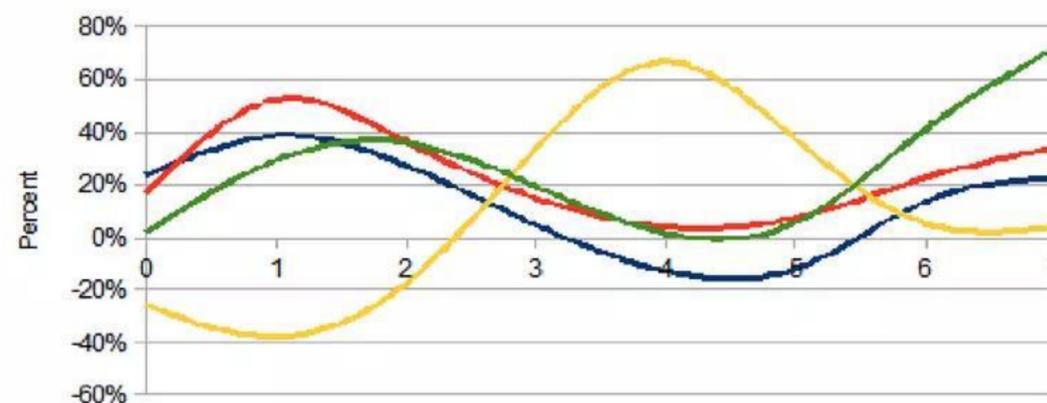


Source: IEA

World oil demand and supply respond in correlated way to price movements.
US oil supply remains lagging in response.

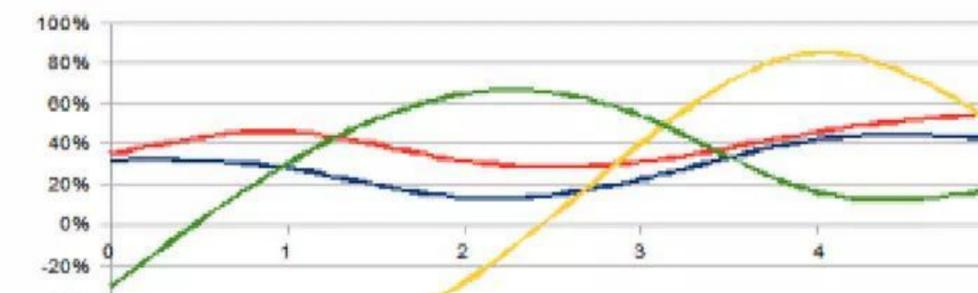
Correlation of 3 year Changes in Price to 3 yr Changes in Supply & Demand

1987-2010



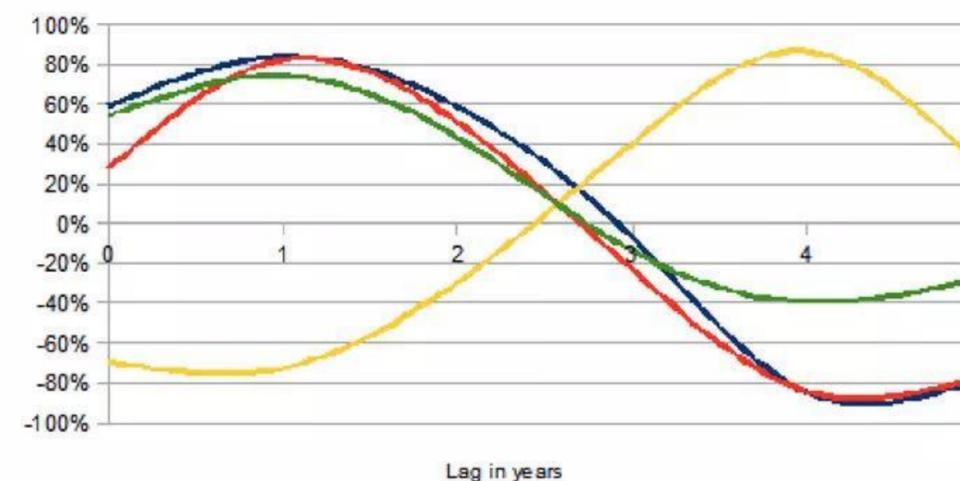
Correlation of 3 year Changes in Price to 3 yr Changes in Supply & Demand

1987-2000



Correlation of 3 year Changes in Price to 3 yr Changes in Supply & Demand

2000-2010



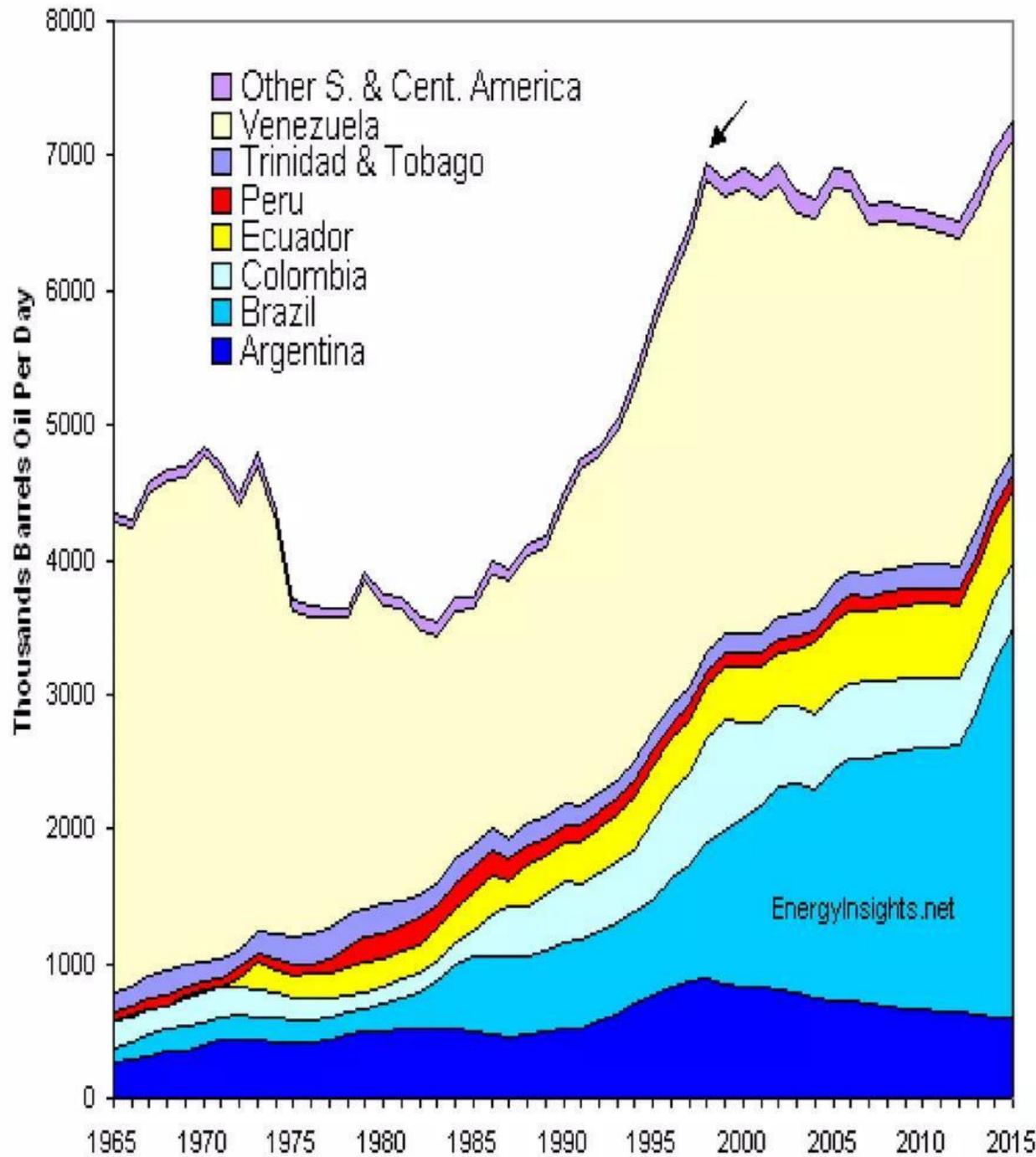
Legend:
 — World Supply to Brent — World Demand to Brent
 — US Oil supply to WTI — US Demand to WTI

Source :

<http://www.forbes.com/sites/tomkonrad/2012/01/26/the-end-of-elastic-oil/2/>

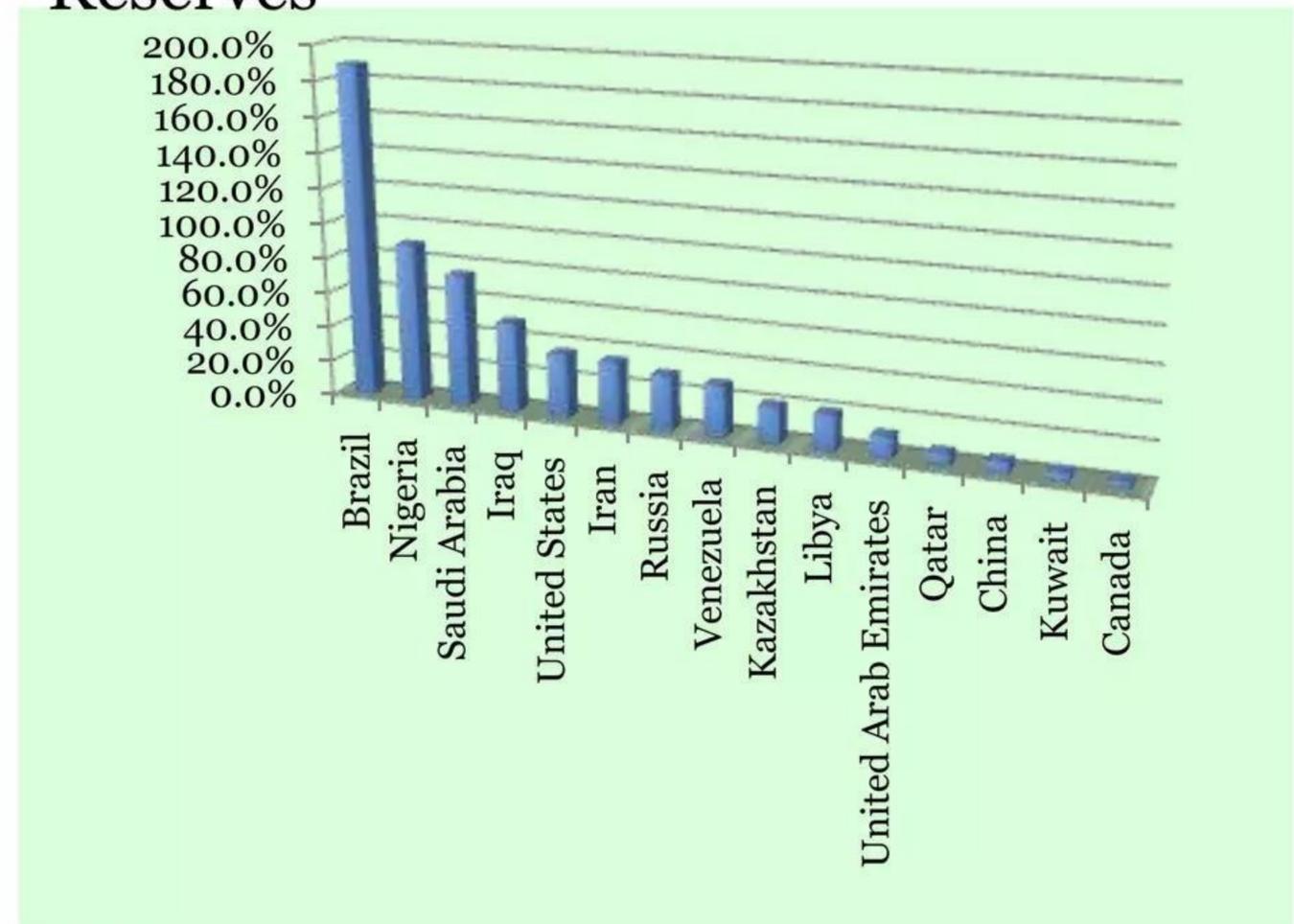
New role for South America and Brazil

Oil Production in South America since 1965 and forecast to 2015



Source: <http://energyinsights.net>

Relation between Estimated Undiscovered Resources and Proved Reserves



Source: US Congress. <http://www.fas.org/sgp/crs/misc/R40872.pdf>.
U.S. Geological Survey, World Petroleum Assessment, 2000,

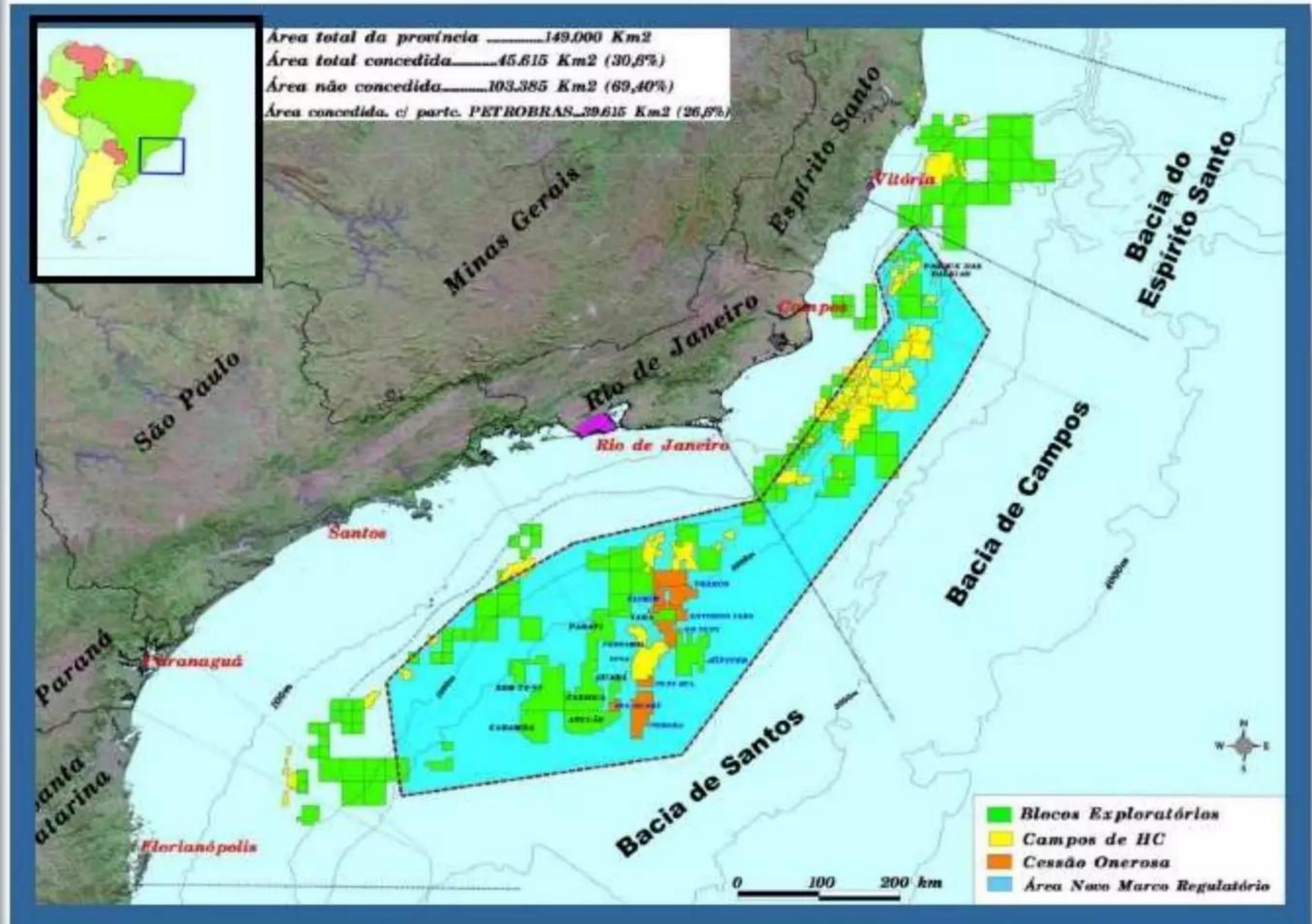
Brazilian potential is the biggest, said in 2000 the US Geological Survey

PRE-SALT

Pre-salt represents a large and relatively unexplored area

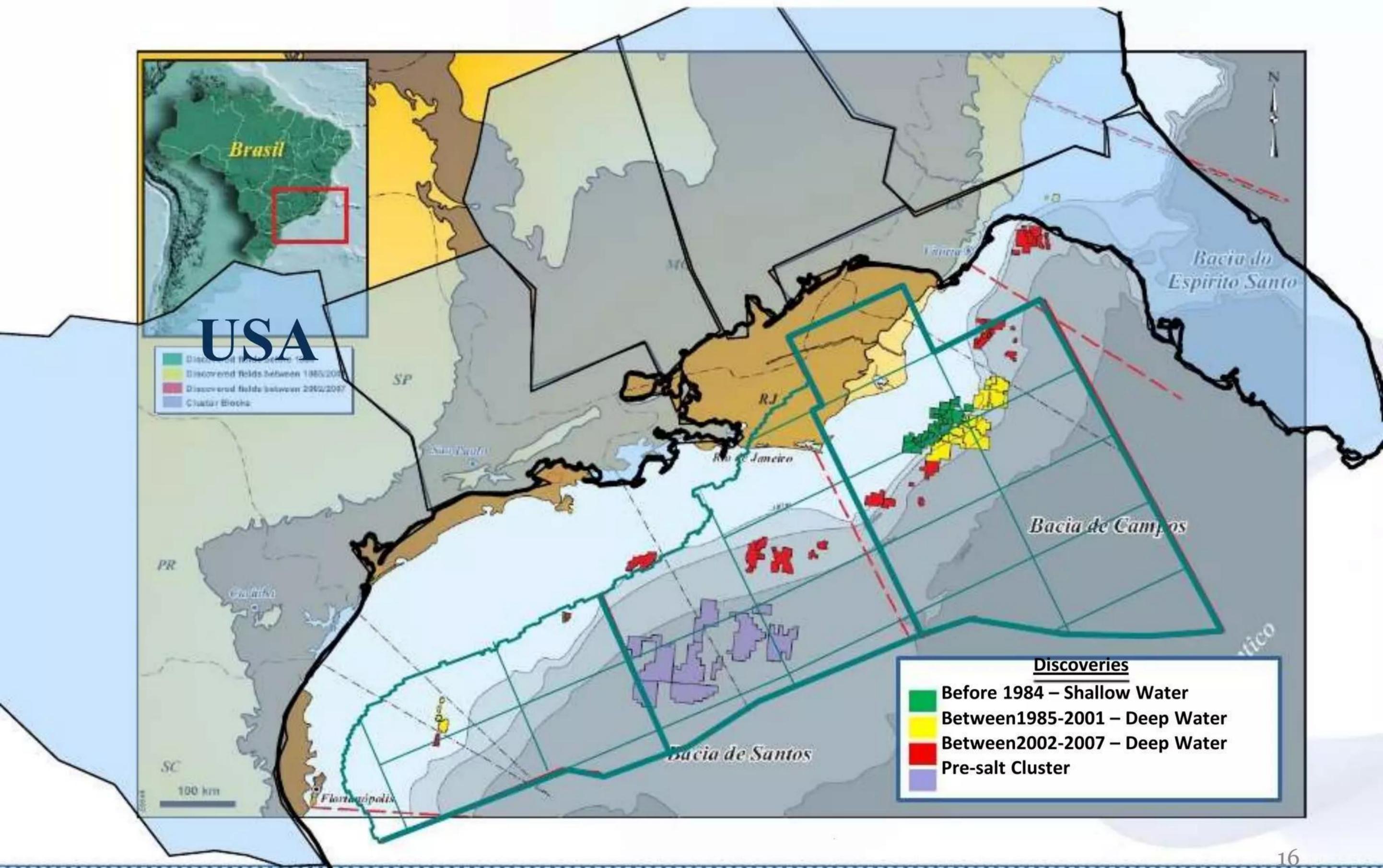


- » Reserves totalling billionsof barrels of good quality oil
- » In Dec/2011, Pre-salt represented 7% of the Company's total domestic oil production
- » The 3 producing wells in Lula Pilot rank among the 30 most productive wells in Brazil



BRAZILIAN BASINS

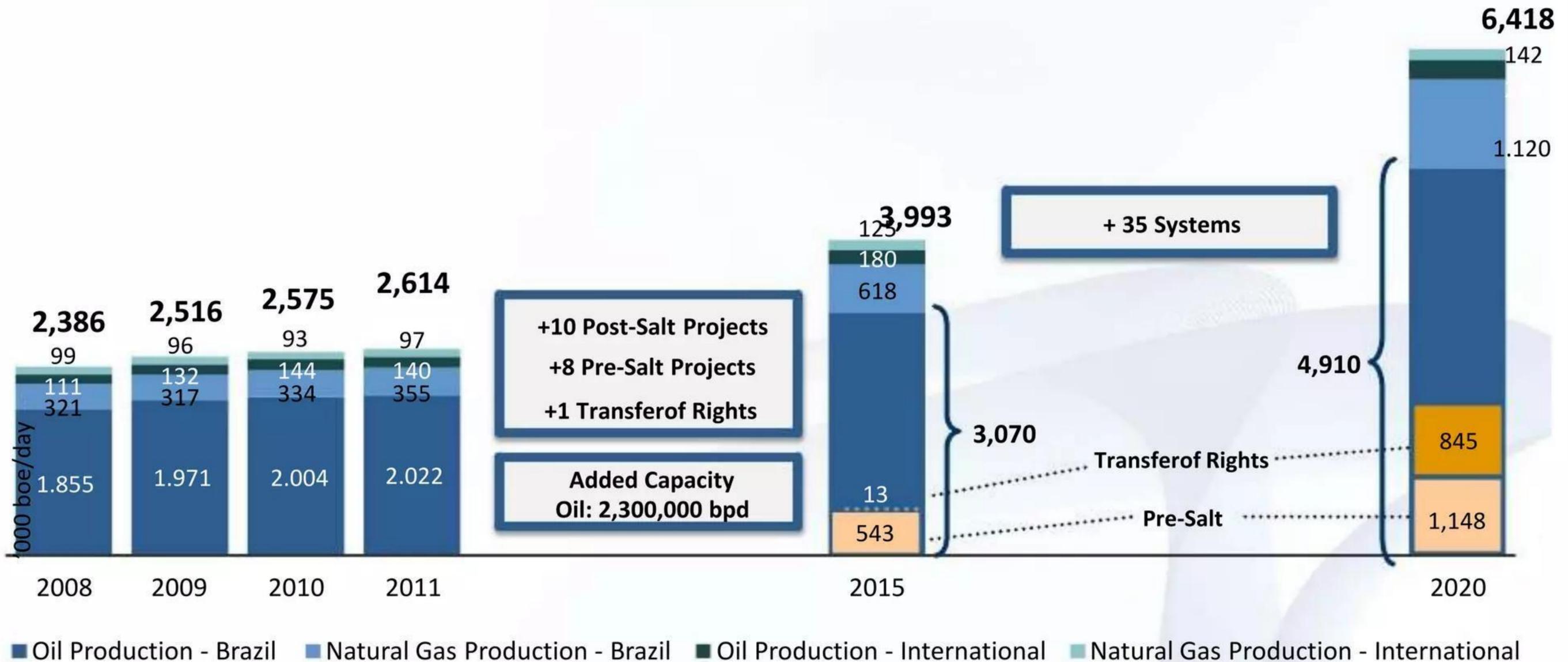
Highly productive SE basins are still under explored relatively to GoM



OIL PRODUCTION



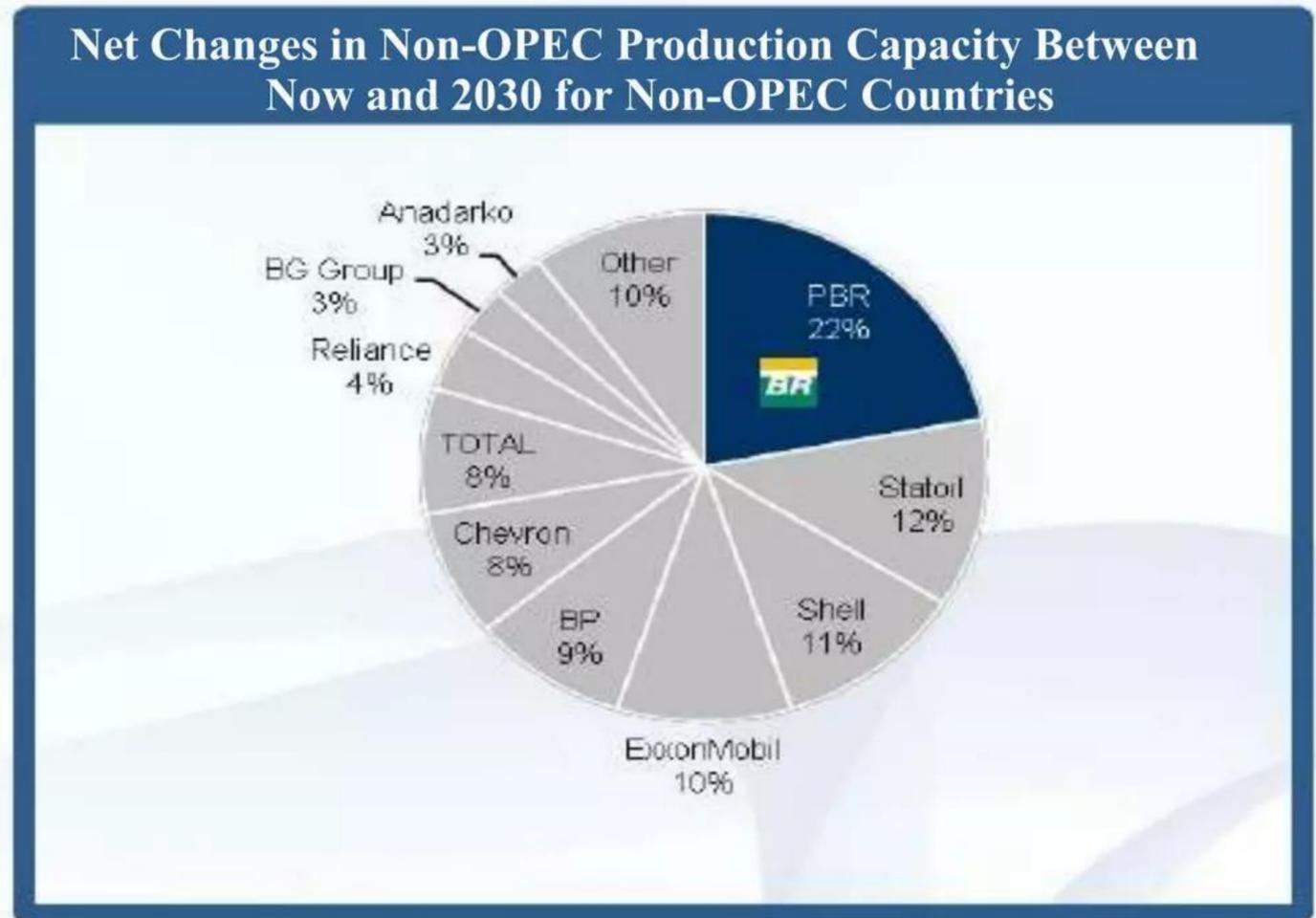
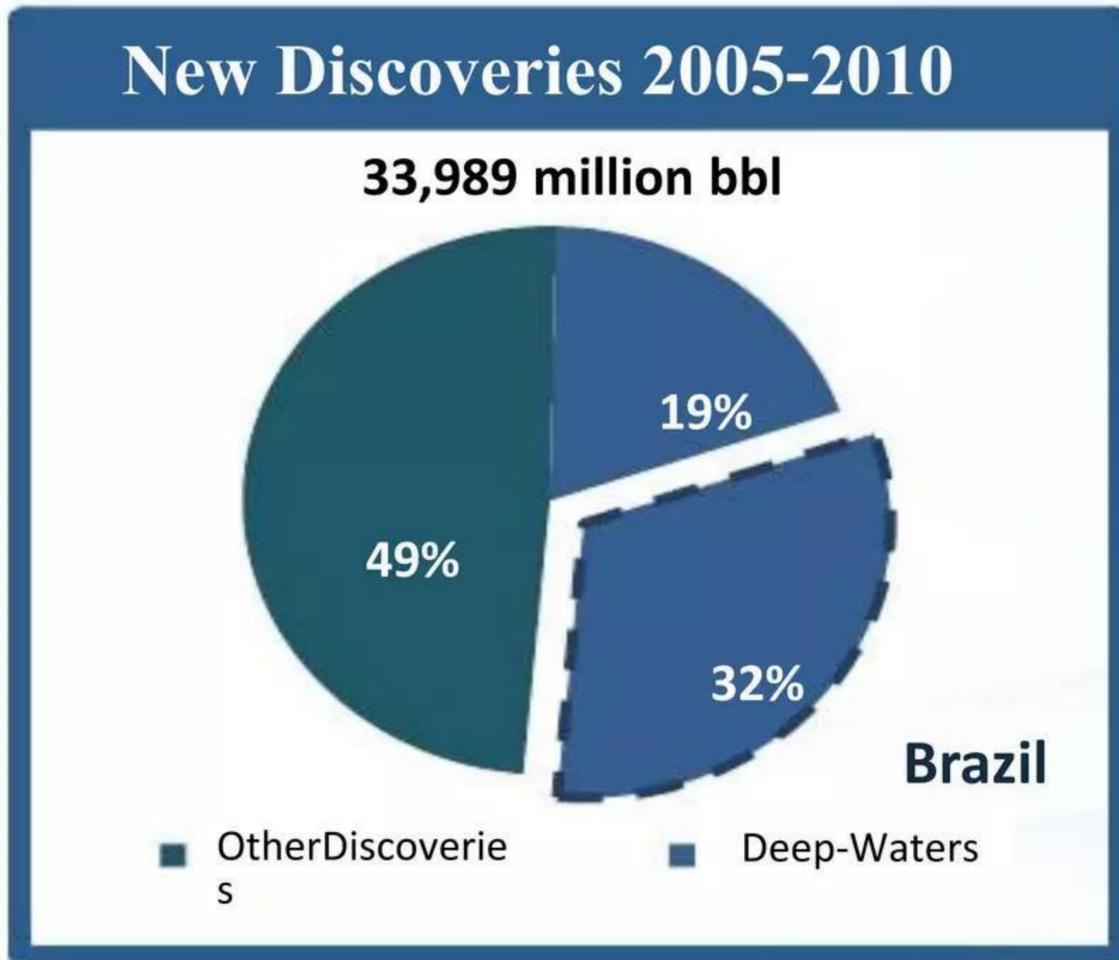
With access to abundant reserves, Petrobras can more than double its production



- Maintain/grow slowly traditional existing concessions, while growing from New Frontier – Pre-salt;
- Pre-Salt participation in the total production will enhance from the current 2% to 18% in 2015 and 40.5% in 2020.

BRAZIL LEADERSHIP IN RECENT DISCOVERIES

Discoveries in Brazil represent 1/3 of all discoveries in the last 5 years



- In the last 5 years, more than 50% of the new discoveries(worldwide) were made in deep waters. Brazil alone accounts for 62% of these discoveries.
- Projections indicate that as Brazil develops these newly discovered reserves, it will lead non-OPEC supply growth in the coming decades

Risks of delivering oil until 2020



Wishful Thinking

Cheaper
primary
sources of
energy

Renewables
become
economically
feasible

Energy
efficiency rises
up

Better
sustainable
world

BAHIA STATE

&

Energy and Mining



SECRETARIA DO PLANEJAMENTO

THE LAND OF ALL
Government of Bahia

1st in the Northeast and 4th in Brazil (2011)

Population: 14 million

6th economy in Brazil (2010) | 4.2%

GDP (2011): US\$ 93 billion

World Trade (2011) - Exports + Imports = US\$ 18.7 billion - 47% of Northeast and 4% of Brazil



- Enseada do Paraguaçu Shipyard
 - *Private Consortium: Odebrecht / OAS / UTC / Kawasaki*
 - *Area of 120 ha*
 - *US\$ 1.25 billion investment*
 - *In operation: Jan/2014*
 - *FPSO and drilling rigs*
 - *Large cargo and container ships*
- Petrobras will keep building modules for oil rigs at its existing facilities



Potential at 70m - 15,000 MW

- 10% of Brazil and 19,3% of Northeast

Projects being implemented

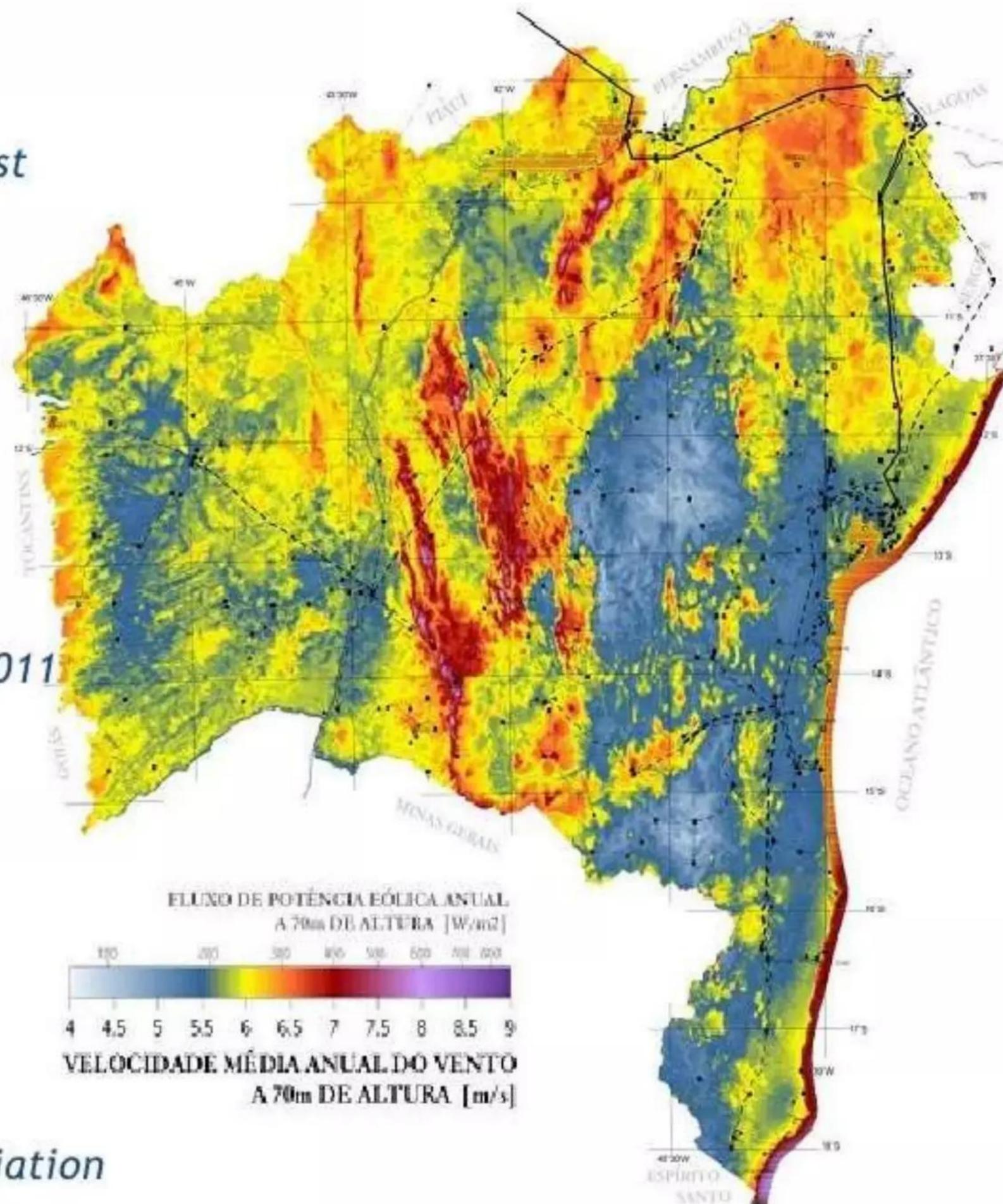
- 2009 - 390 MW;
- 2010 - 587 MW;
- 2011 - 414 MW (1st auction)
- Investments of US\$ 3.4 billion

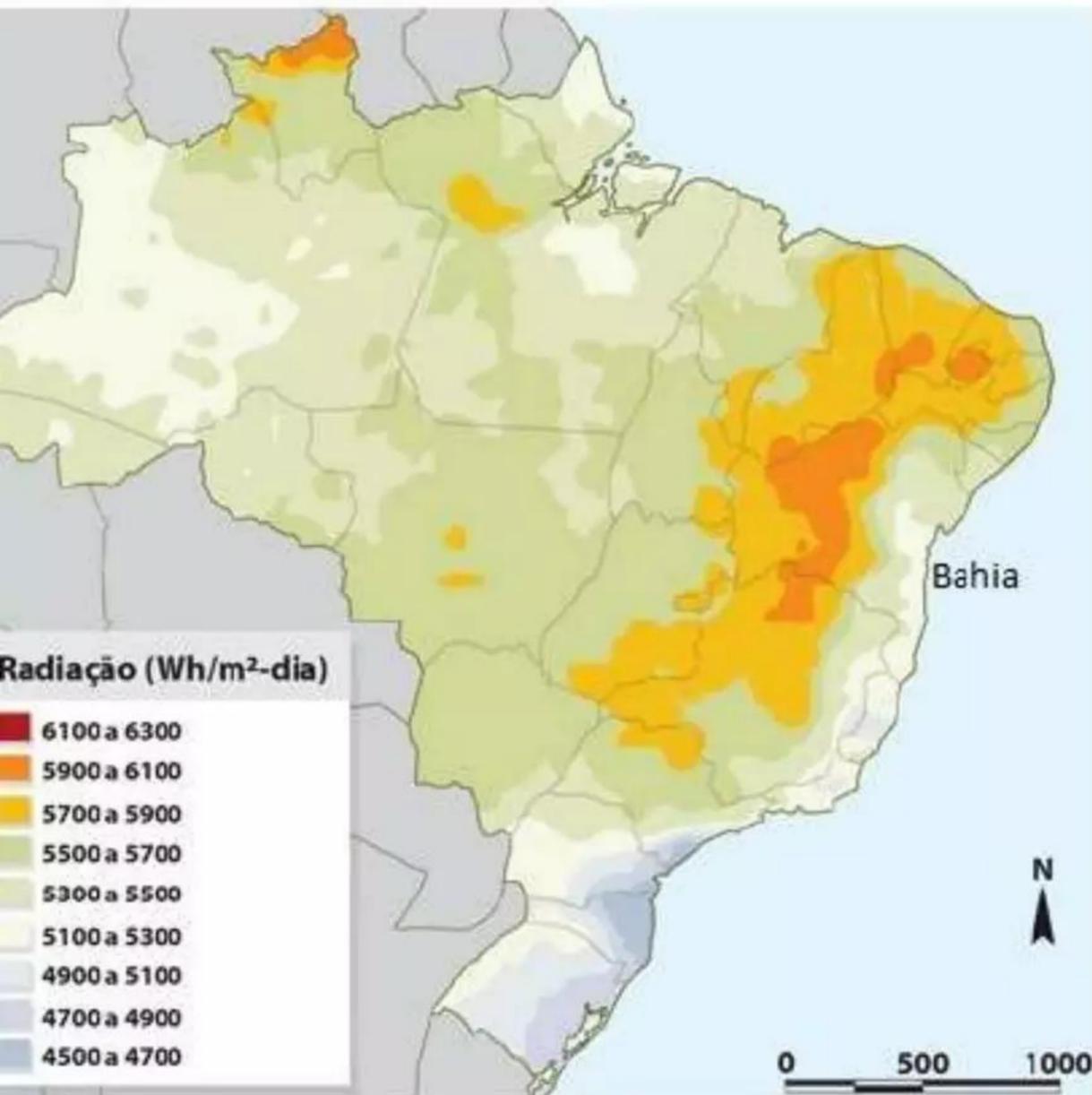
Proposed projects

- 1,500 MW awaiting 2nd auction in 2011
- 20,000 MW under development

Wind power industry

- *Manufacturers in Bahia:*
- ALSTOM
- GAMESA
- GENERAL ELECTRIC
- Other 3 world players under negotiation





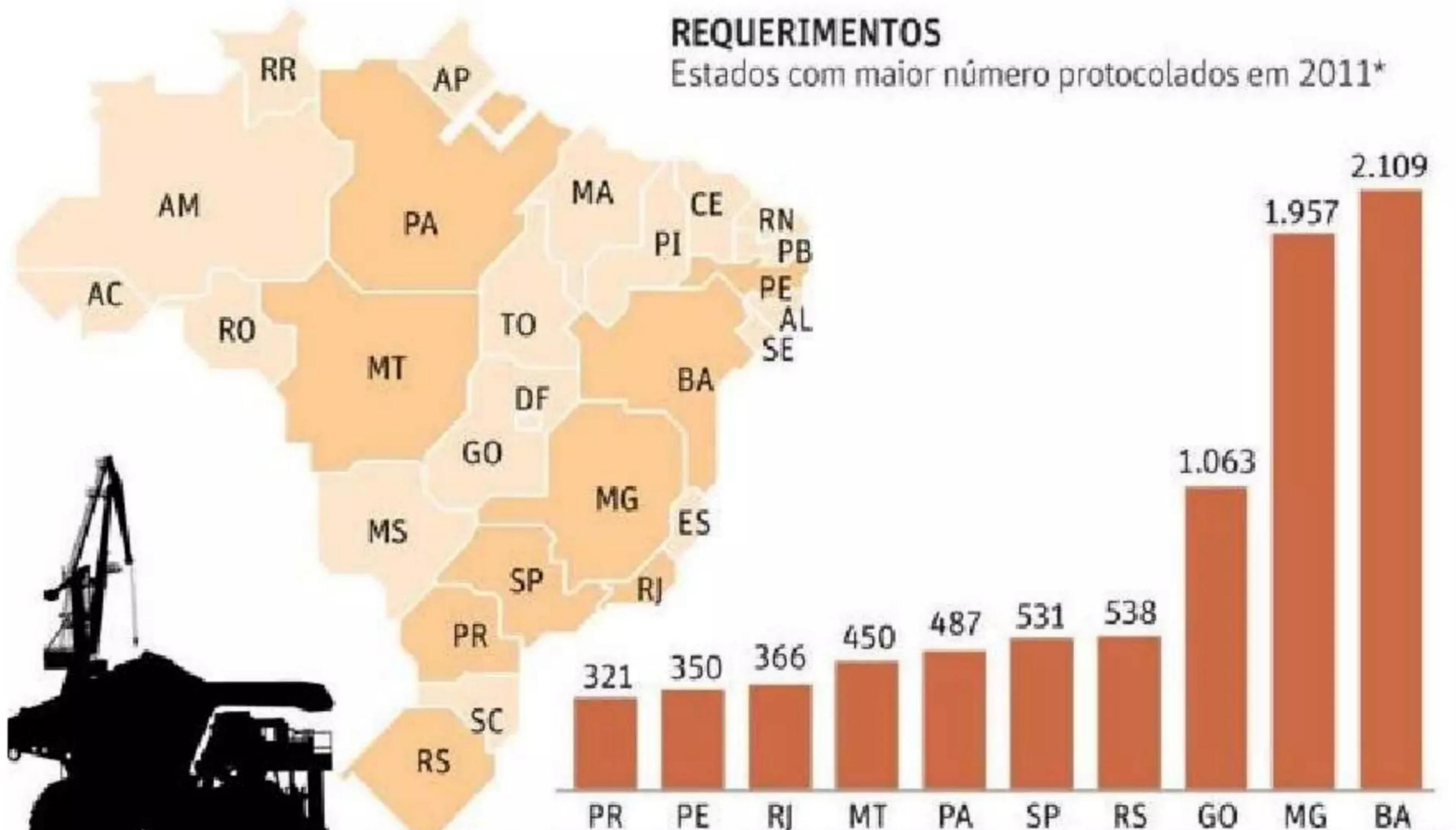
Greatest potential in Brazil

25,000 photovoltaic systems installed

Incentives to solar energy

- *Residential consumer (up to 50 kWp) will be allowed to sell energy to the concessionary*
- *Roof of the football stadium covered photovoltaic panels. Excess energy being sold to the energy concessionary.*

Greatest unexplored mining potentials in Brazil



*até maio ** Requerimentos de pesquisa, licenciamento, lavra garimpeira e de registro de extração Fonte: DNPM

Bahia has one of the greatest mining potentials in Brazil

Major projects

- *Mirabela (in operation)*
207,000 t/year of nickel concentrate
- *BAMIN (under implementation)*
25 million t/year of iron ore concentrate

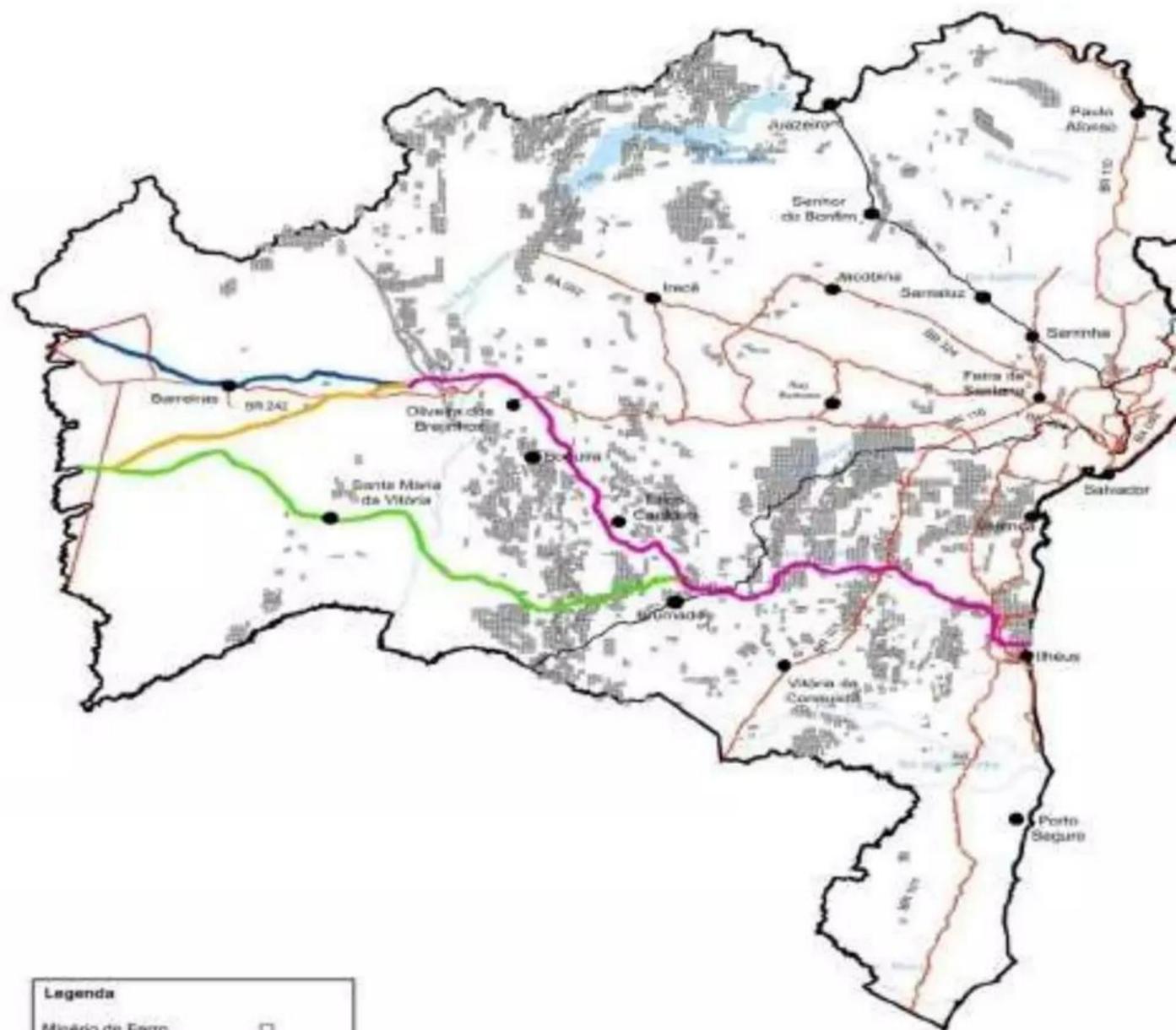
40 mining companies
generated revenues of:

- *US\$ 0,7 billion (2009)*
- *US\$ 1,0 billion (2010)*

Most important minerals

- *Iron; Gold; Copper;*
- *Chromium; Nickel;*
- *Gems; and many more...*

MAPA MINERAÇÃO INFLUÊNCIA DE (FERRO) FERROVIA OESTE - LE



Legenda	
Minério de Ferro	□
Trecho comum entre as alternativas	—
Alternativa A	—
Alternativa B	—
Alternativa C	—
Cidades	●
Drenagem	—
Ferrovia Existente	—
Rodovia	—

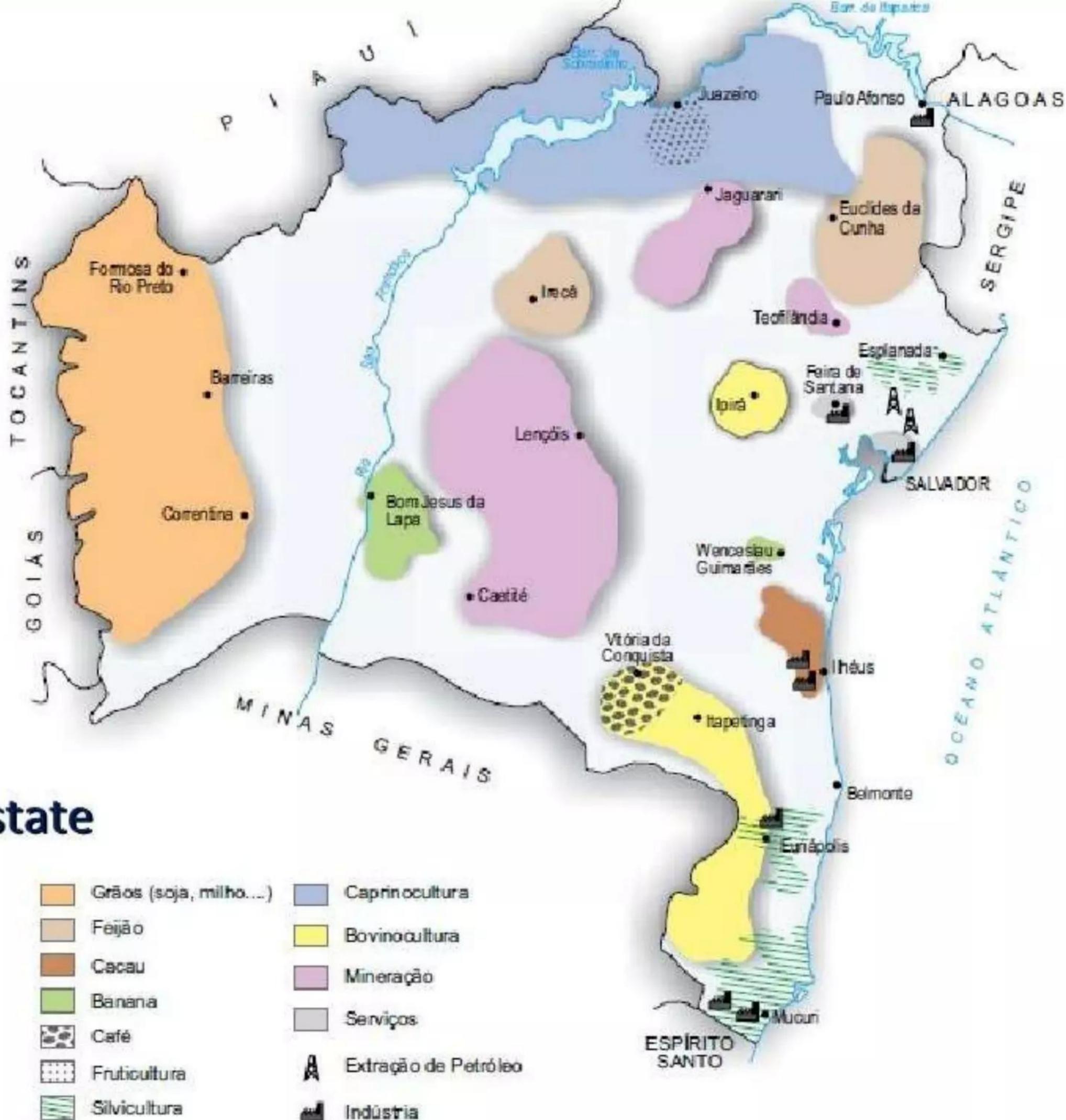
GOVERNO DO ESTADO DA BAHIA
SEPLAN - SECRETARIA DE PLANEJAMENTO
FONTES: DNPM, IBGE
SETEMBRO / 2008

Elaboração: Locus Planejamento e Assessoria Ltda

Economic Activities

Spatial Distribution

Five Biomes in one state



Thank You!

Arigatou Gozaimashita!

BAHIA STATE PLANNING SECRETARY

www.seplan.ba.gov.br

www.youtube.com/tvseplan

Phone: +55 71 3115 3550