

The Paradox of Economic Development: Petroleum and Sustainability in Brazil

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Overview

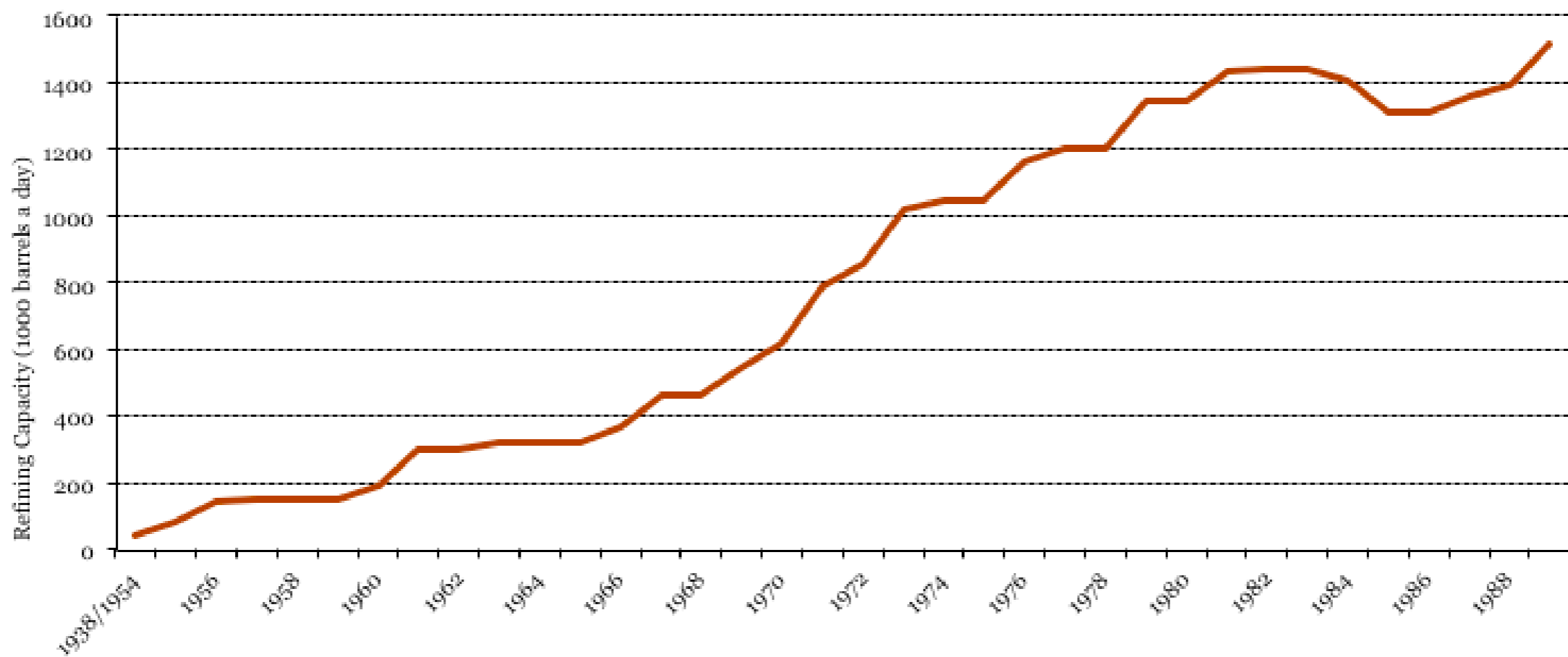
- Historical and Prospective Role of Oil in Brazilian Economic Development
- Economic Challenges
- Sustainability Challenges
- Concluding Remarks

Oil in Brazil

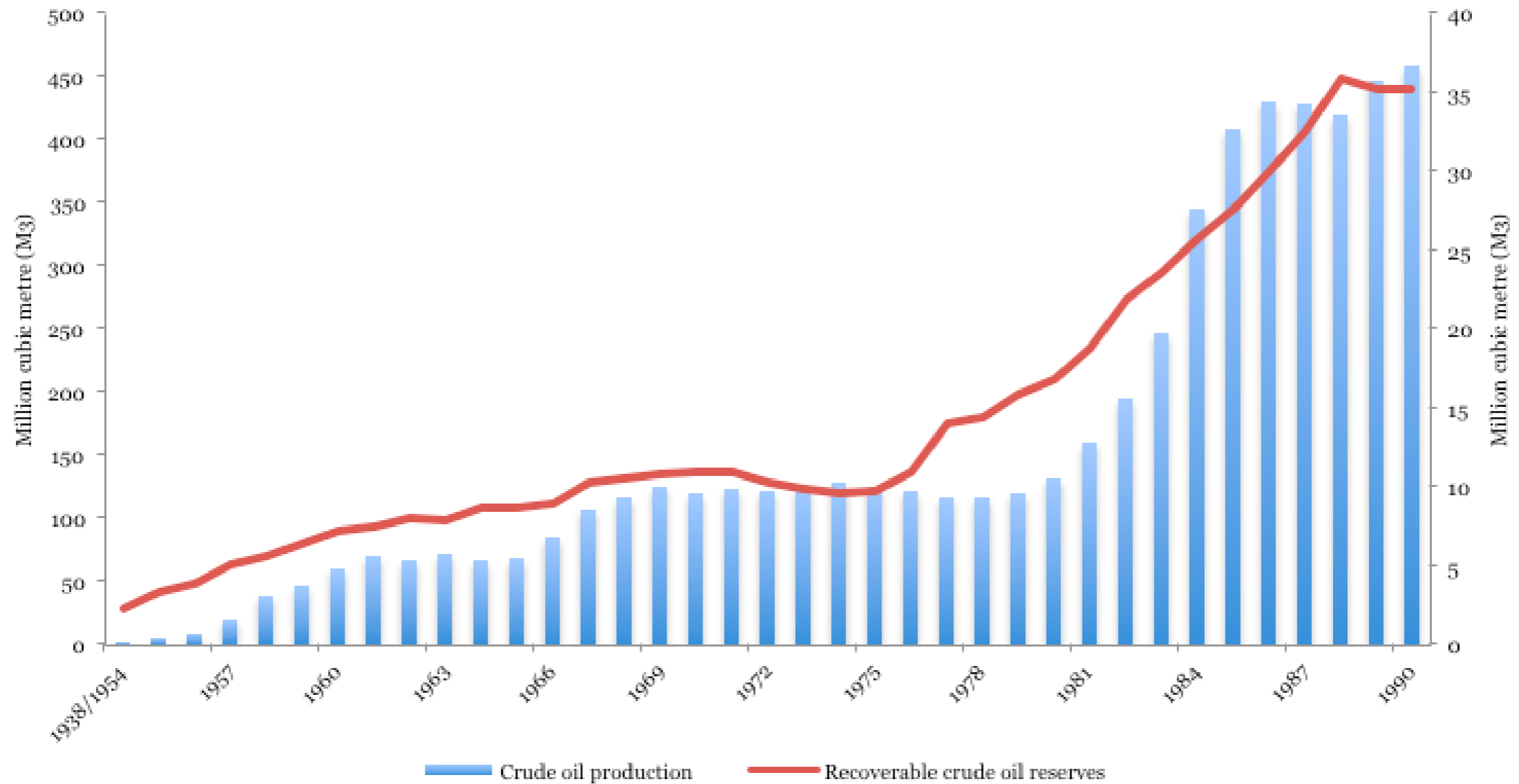
- Brazil is a resource-intensive economy but oil has not been an export commodity. In fact, Brazil only reached self sufficiency in 2006.
- Oil was linked to extraction, processing/refining, the construction of petrochemicals, and distribution sector.
- The discovery of the new oil reserves in Brazil has changed the parameters of political debates on growth, energy and sustainable development.

- Petrobras was successful in transforming the oil industry as a result of (a) domestic monopoly of the market; (b) culture of innovation; and (c) internationalisation strategy.

Refining Capacity (1938-1990)

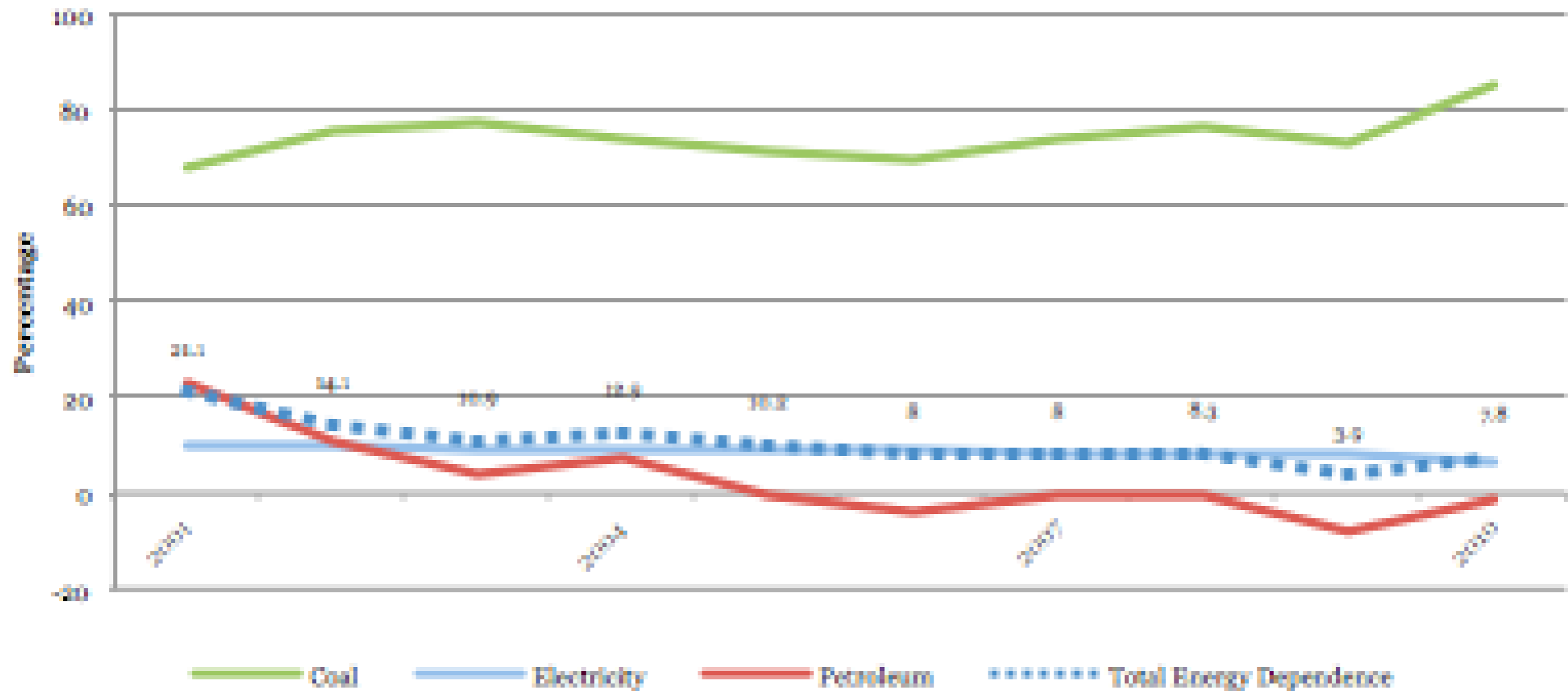


PETROBRAS performance in terms of domestic production and recoverable crude oil reserves, 1954-1990



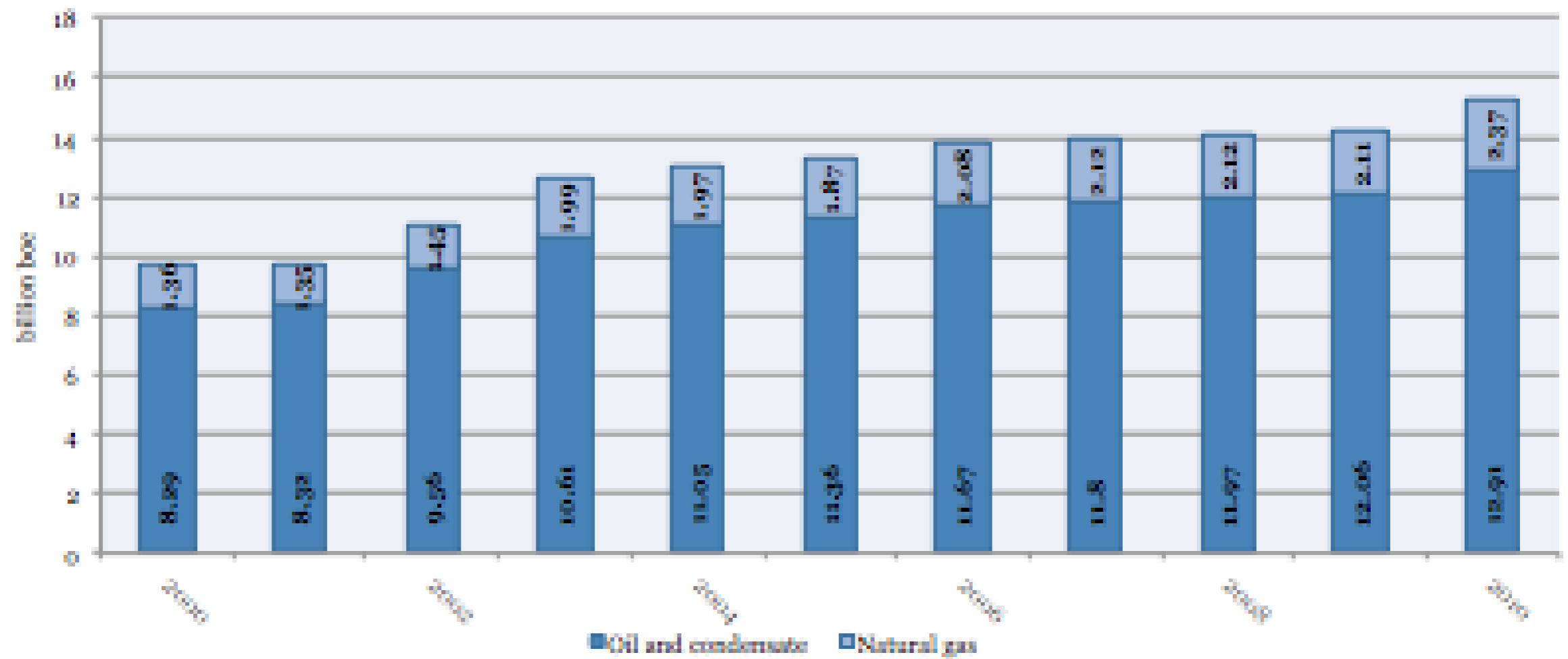
Energy Dependency

External Dependency on Energy, 2001-2010



Proven Reserves

**Proven Reserves in Brazil
(ANP/SPE Criterion)**



Petrobras Oil Concessions, 2010

	PETROBRAS as 100% Concession Owner	PETROBRAS as 50% Joint Partner	PETROBRAS as Minority Partner (1%-49%)	PETROBRAS as Majority Partner (51%-99%)	Private Capital as 100% Concession Owner
Blocks in Exploration phase	113	31	29	56	175
Percentage of the Total (404)	28.0%	7.7%	7.2%	13.9%	43.3%
Fields under Development	36	3	8	4	10
Percentage of the Total (61)	59.0%	4.9%	13.1%	6.6%	16.4%
Producing Fields	254	2	11	3	41
Percentage of the Total (311)	81.7%	0.6%	3.5%	1.0%	13.2%

Source: ANP Annual Report 2010 (Adapted), 16-27.

Note: Numbers in parenthesis represent total number of oil blocks in exploration, fields under development, and producing fields as of December 31, 2009.

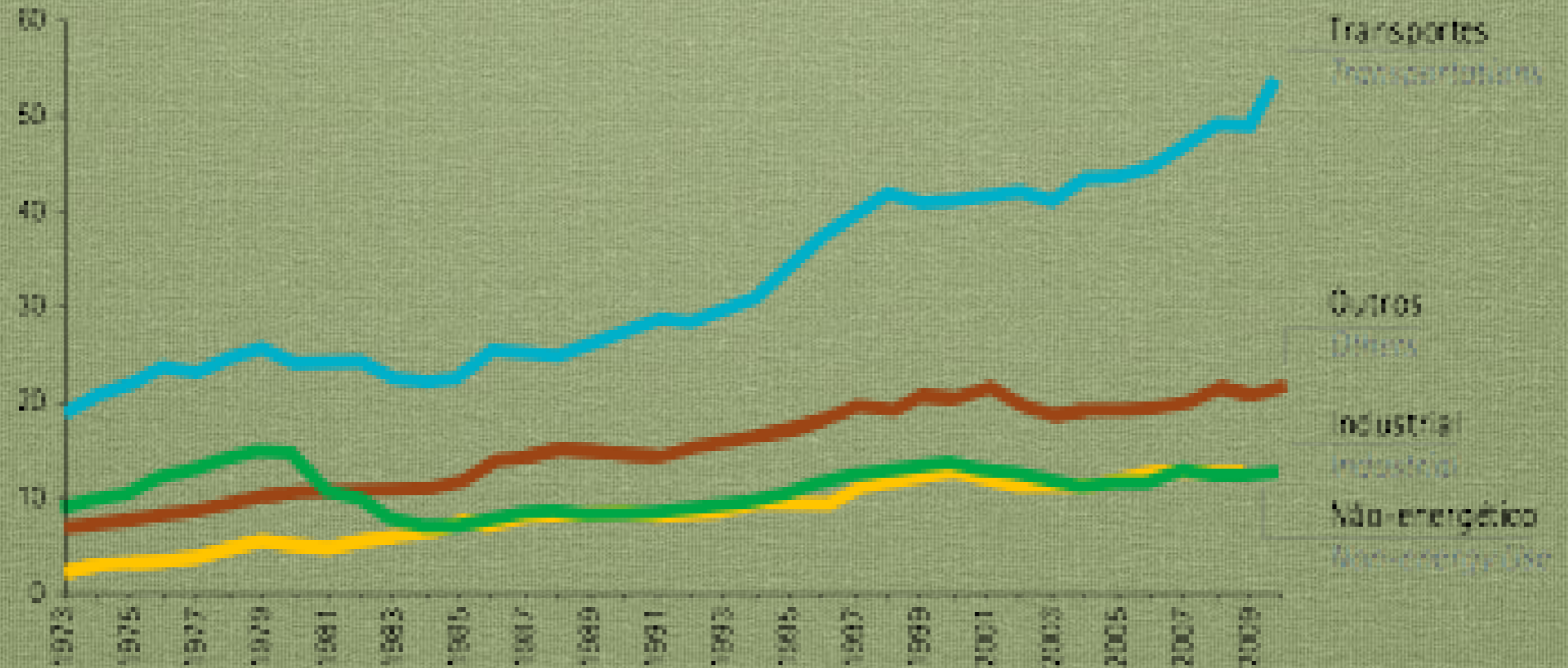
The Challenge of Pre-salt

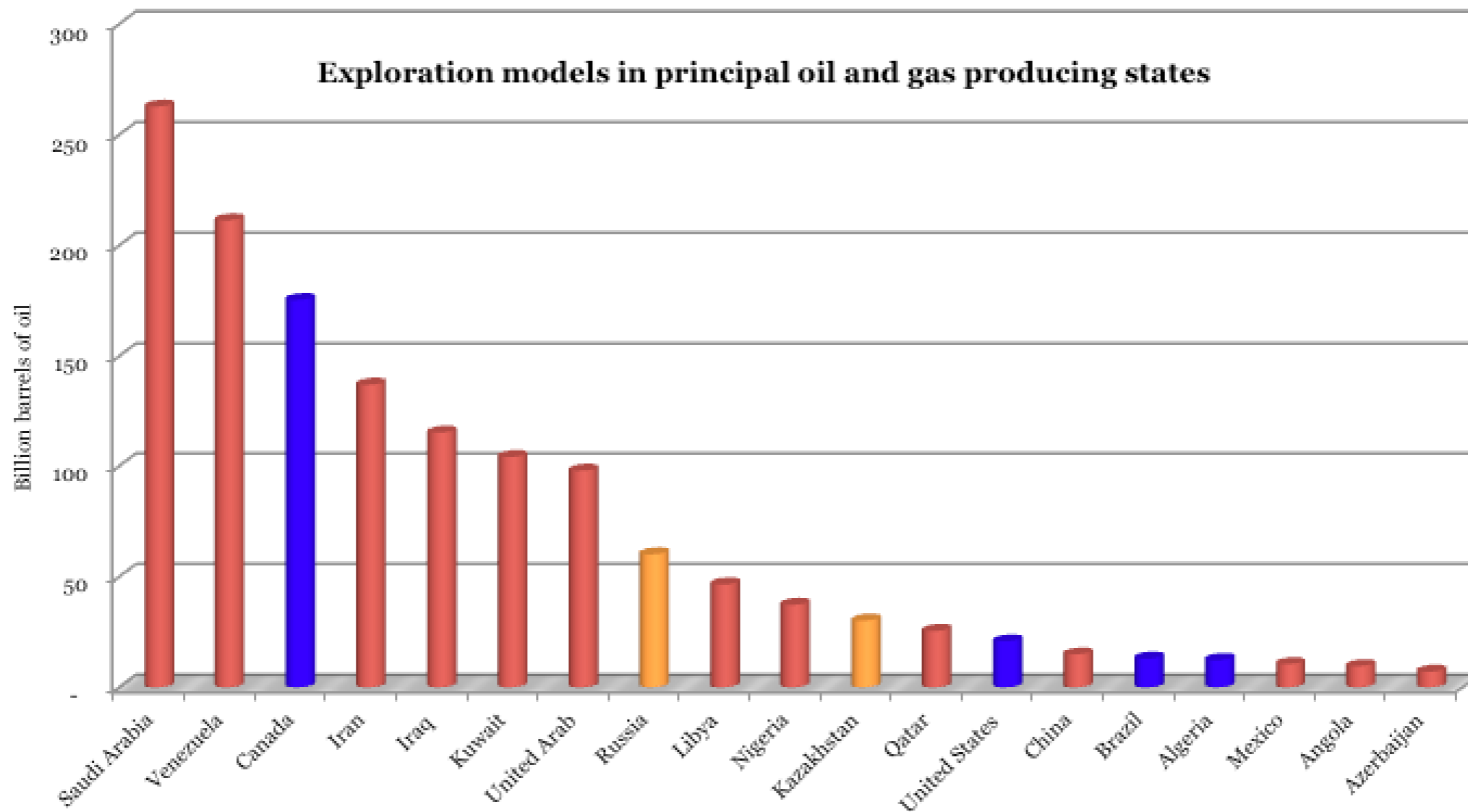
Map of Concessions in Brazil



Oil and Gas Consumption

(10⁹ tep (toe))





Red: Production-sharing arrangement or service contracts

Yellow: Pure production-sharing arrangement only

Blue: Concessions grant model

Economic Challenges

The Resource Curse

- How can Brazil benefit from oil without turning it into a 'curse' ?
 - Dutch disease effects
 - Long term planning through national industrialisation
 - 'Fair distribution' of resource rents

Sustainability Challenges

- Fair distribution of environmental 'goods and bads' - Gulf of Mexico has lead to conflicts between IOCs and Brazilian State over 'high penalty costs'
- Diversification in renewable energy alongside oil extraction through the development of a variety of energy resources - biofuels, ethanol, sugarcane, hydroelectric, solar power. start thinking what the role of oil will play apart from fuelling a carbon-intensive pathway of resource-based growth without forgetting the socio-economic

Future Research Agenda

- Are there alternative models that are emerging in terms of managing the steadily increasing oil and energy consumption in emerging market economies?
- Can Brazil commit to renewable energy if its growth model is fundamentally reliant on the continuing extraction of resources?

Thank you.

For comments and inquiries,

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