

Brazil gas market



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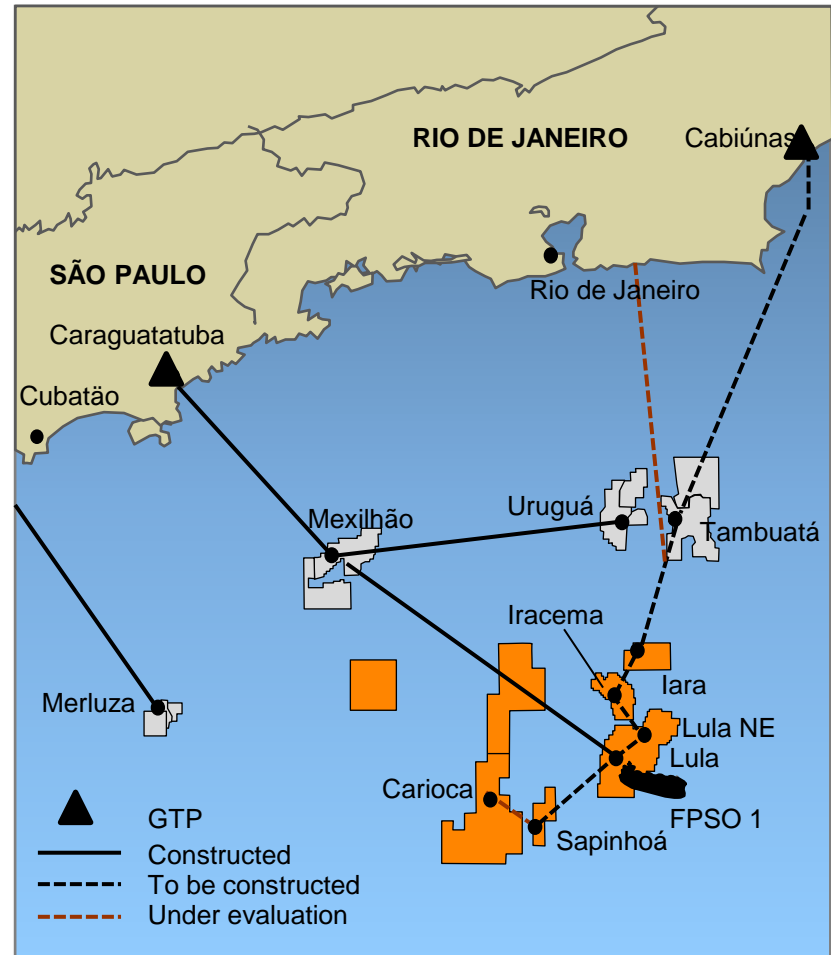
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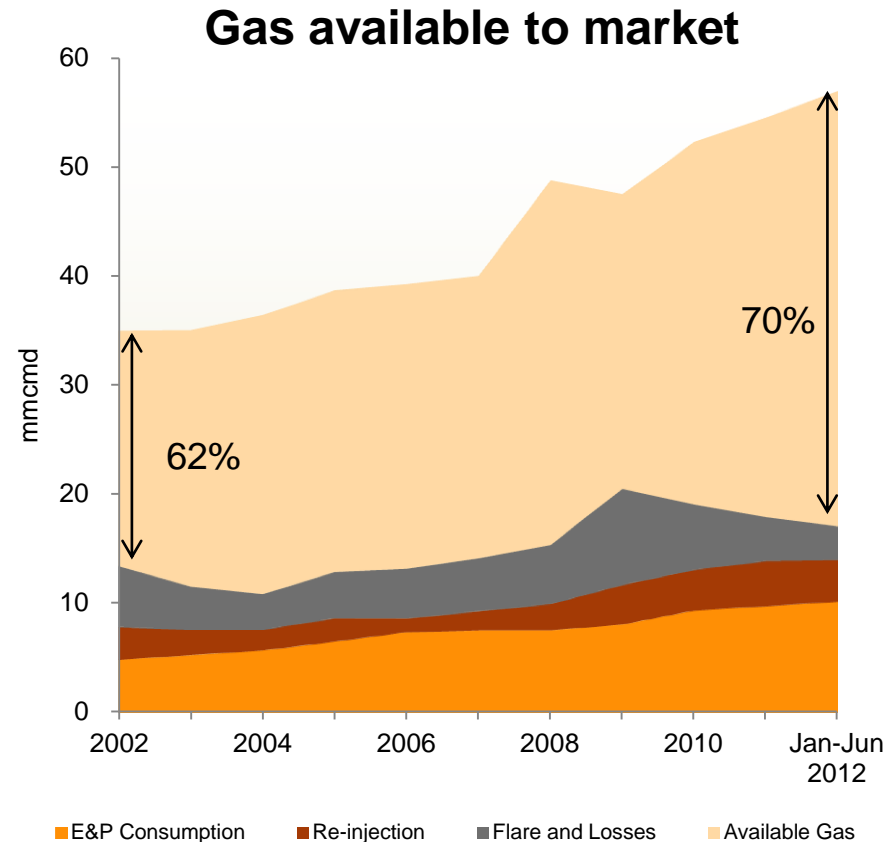
BG Group presence in Brazil

- FPSO 1 performing better than expected
- 30 mmeobbl gross production to date
- 6th largest producing field in Brazil for both oil and gas

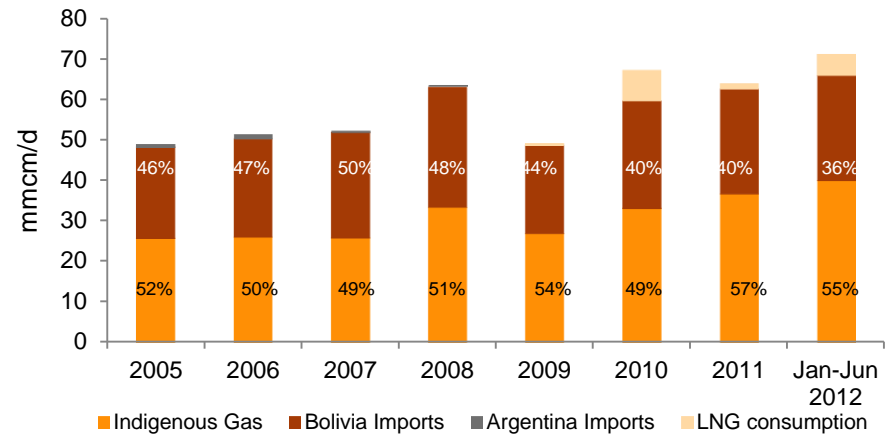
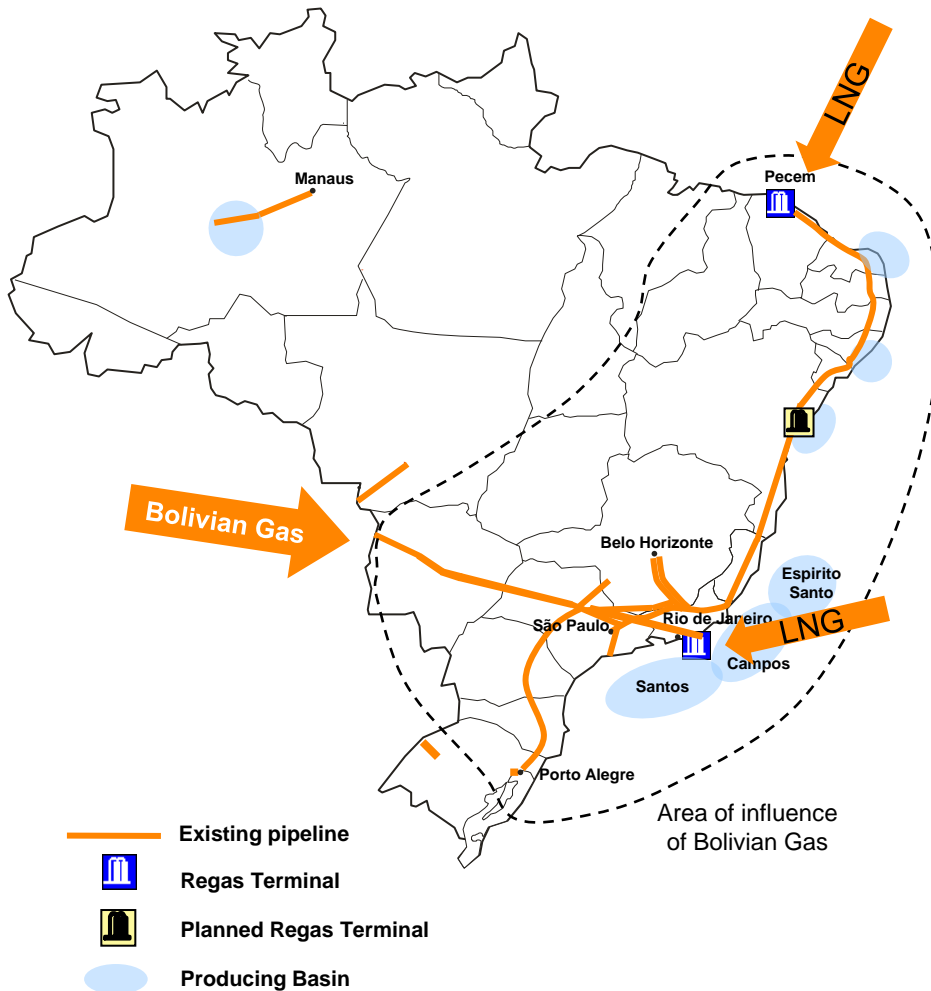


Brazilian gas profile

- Brazil is an oil play
 - Historically c. 75% of gas produced from associated fields
- Gas production is partially consumed in oil production
- Nonetheless...
 - Increase in production
 - Reduction in flaring
- Larger share of gas is being made available to market



Onshore infrastructure

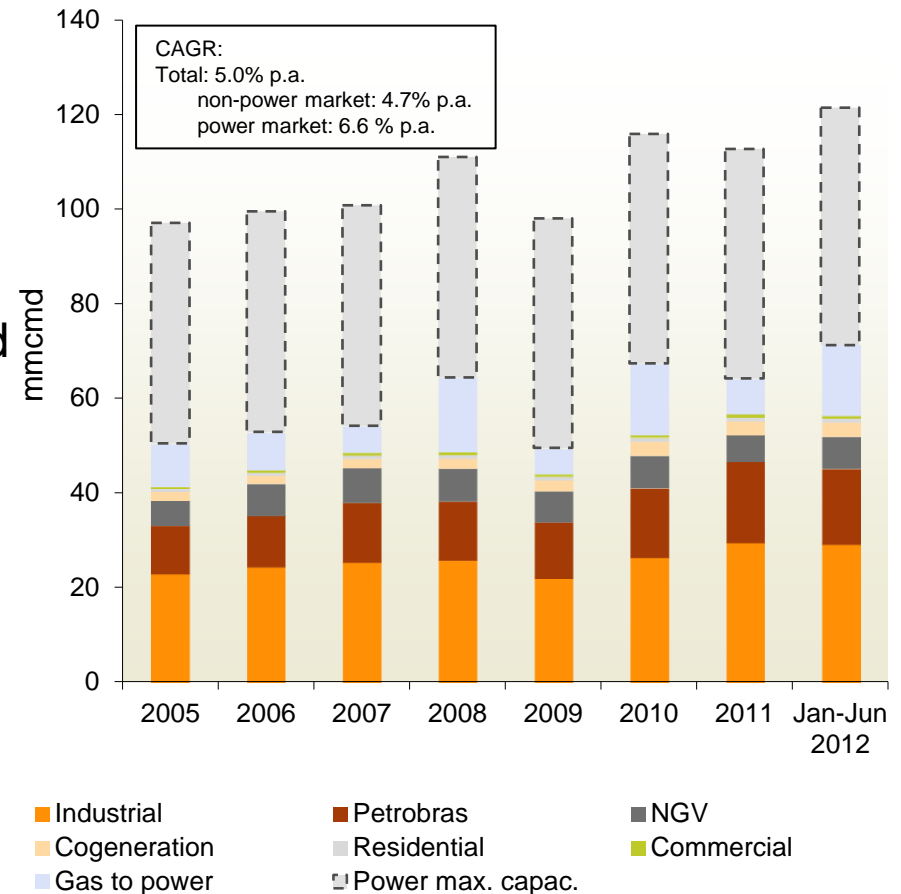


- Indigenous production supplies c. 50% of domestic market
- Balance is mainly met by imports from Bolivia
- LNG imports are driven primarily by power market

Source: Ministry of Mines and Energy

Brazilian gas demand

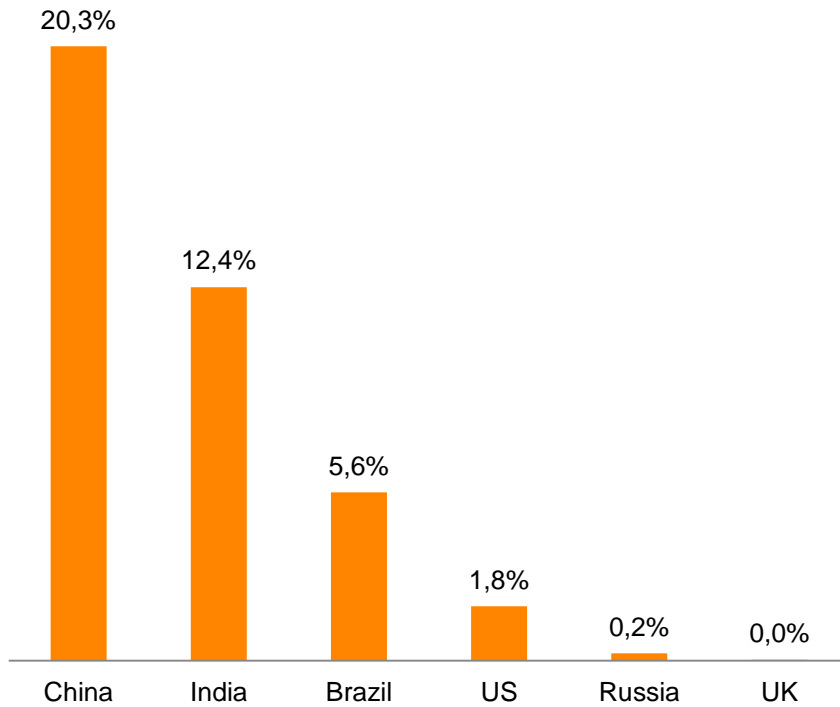
- Industries (including PB consumption) account for circa 80% of total non-power demand
- Industrial demand originally driven by FO displacement and economic growth
- NGV demand is very price sensitive and is not following overall growth profile
- Small R&C markets, as gas not required for space heating and limited distribution network
- Gas-fired generation complementary to hydro, ensuring greater system reliability



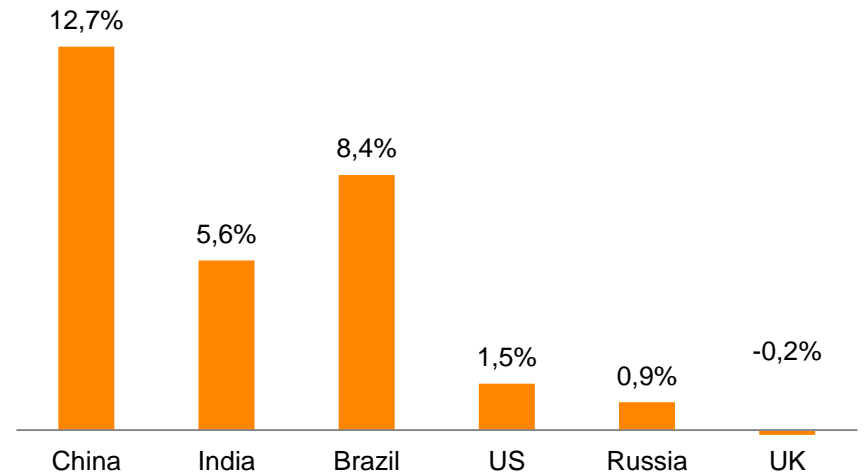
Source: Abegas, BG Brasil, National System Operator

Global view

CAGR 2005-2010



CAGR 2010-2021

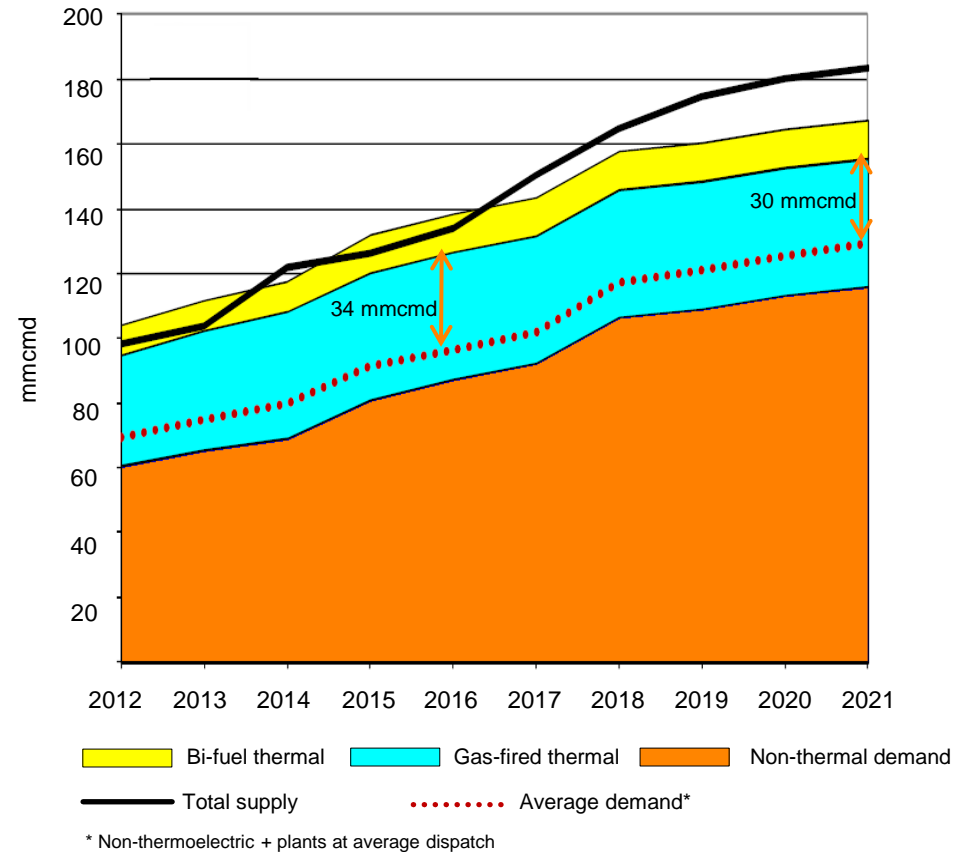


Source: Wood Mackenzie

*Brazil forecast growth according to Ministry of Mines and Energy 10 year plan

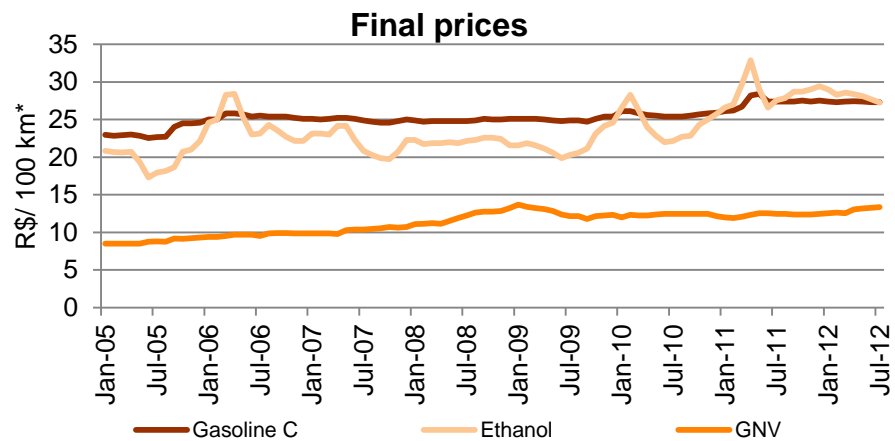
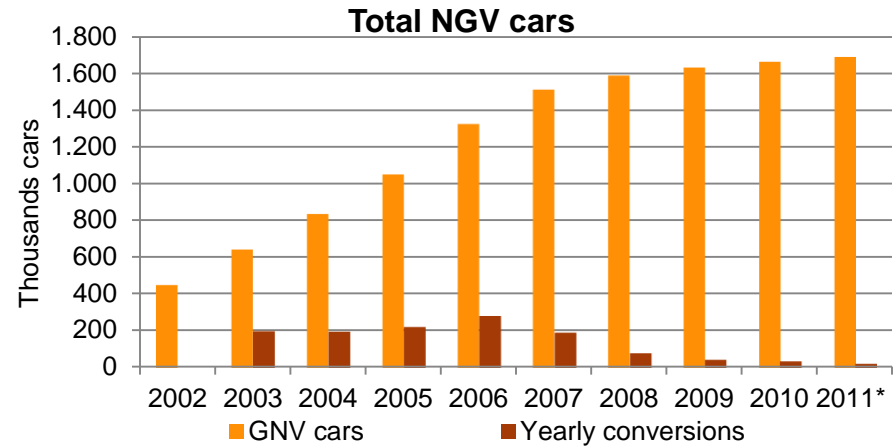
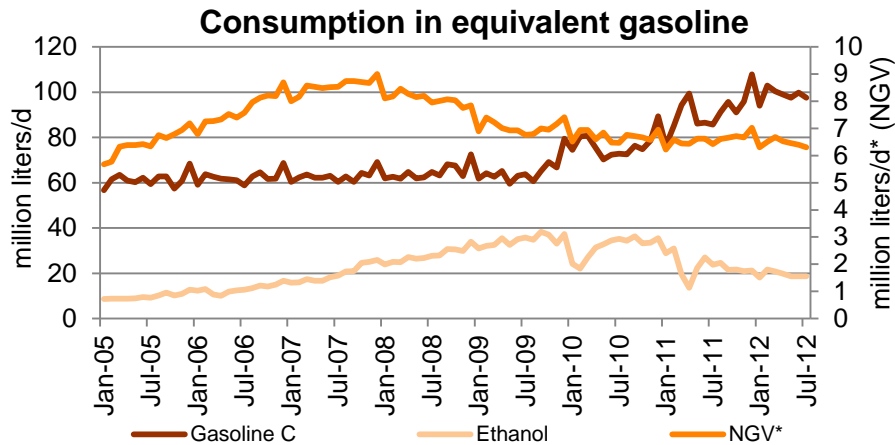
Gas supply-demand balance

- Focus on security of supply to power sector, which is strongly dominated by hydro generation
- During average rainfall years, significant volumes of natural gas exceed total demand
- In dry years, total gas demand requires LNG imports



Source: Ministry of Mines and Energy 10 year expansion plan

Total NGV market

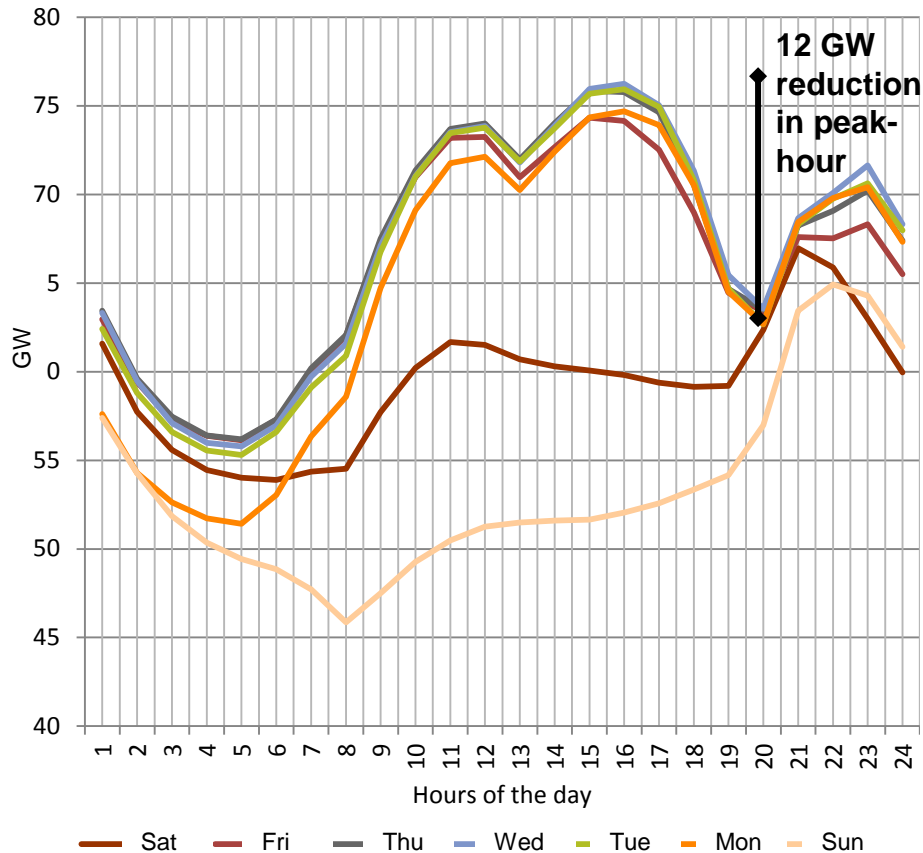


- NGV market has reduced since 2007
- Increased participation of bi-fuel (ethanol/gasoline) vehicles: 97% of cars sales in 2007
- Less cars adapted to run on NGV

*Gasoline= 10km/l; GNV=13km/m3; Ethanol= 7 km/l
 Source: National Petroleum Agency and Abegas

Power daily demand profile

February 2012



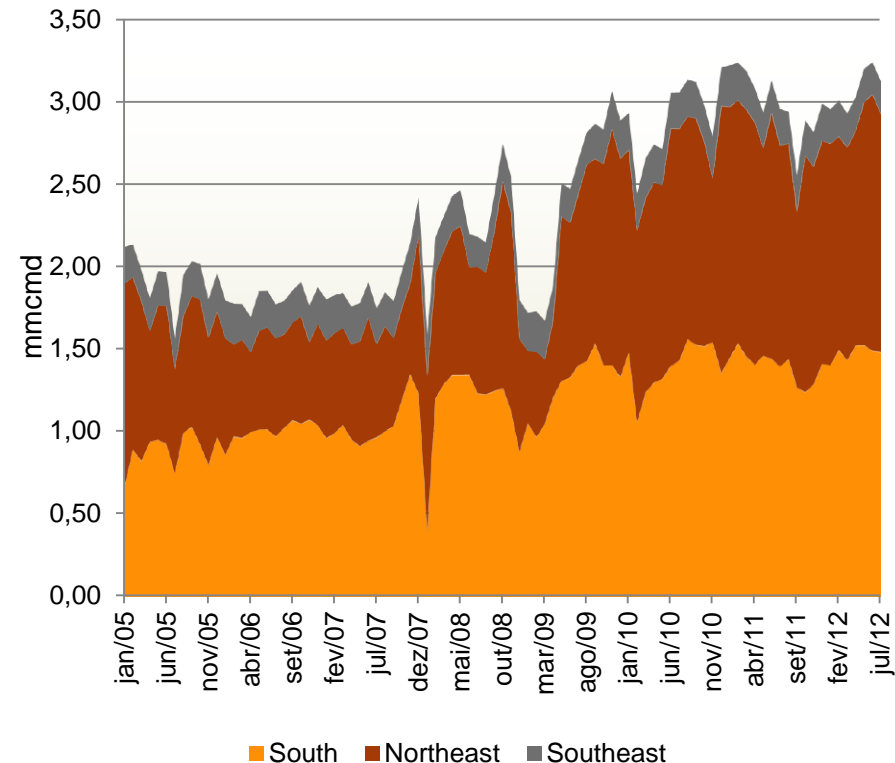
- Peak-hour (6pm – 9pm) electricity demand reduced in 12 GW last summer
- This reduction is probably partially met by the substitution by small diesel-fueled generation:
 - Lower costs compared to peak-hour tariffs
 - Security of supply
- The installed capacity of diesel-fueled generation is not known
- Industrial and commercial segments have access to differentiated electricity tariffs

Source: National Institute for Energy Efficiency, Aug 2012

Barriers for cogeneration

- Limited gas distribution infrastructure
- Need for high investments, as equipment is imported (motors and turbines)
- Restrictions on electricity exports to the power grid
- Projects focus on reliability of supply instead of maximizing electricity-vapour relationship

Cogeneration by region



Conclusions

- Gas penetration in Brazil is low and its main usage is in the industrial sector
- Greatest challenge is posed by uncertainties in power segment
- Smaller segments also bring opportunities for development: small scale generation and NGV

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