

# 26<sup>th</sup> World Gas Conference

1 – 5 June 2015, Paris, France



## CHALLENGES OF THE INSERTION OF NATURAL GAS IN A RENEWABLE ENERGY MIX – THE BRAZILIAN EXPERIENCE

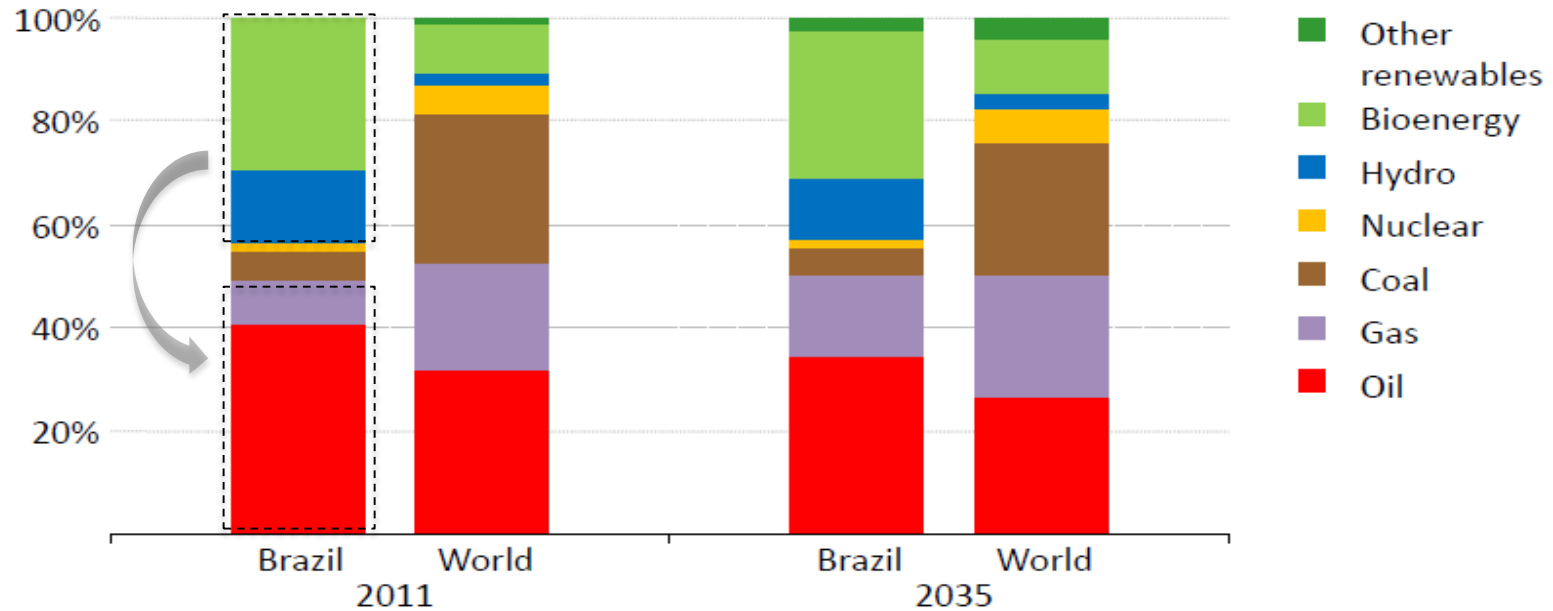
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Diogo Romeiro and Cynthia Silveira

IBP - Brazilian Petroleum, Gas and Biofuels Institute

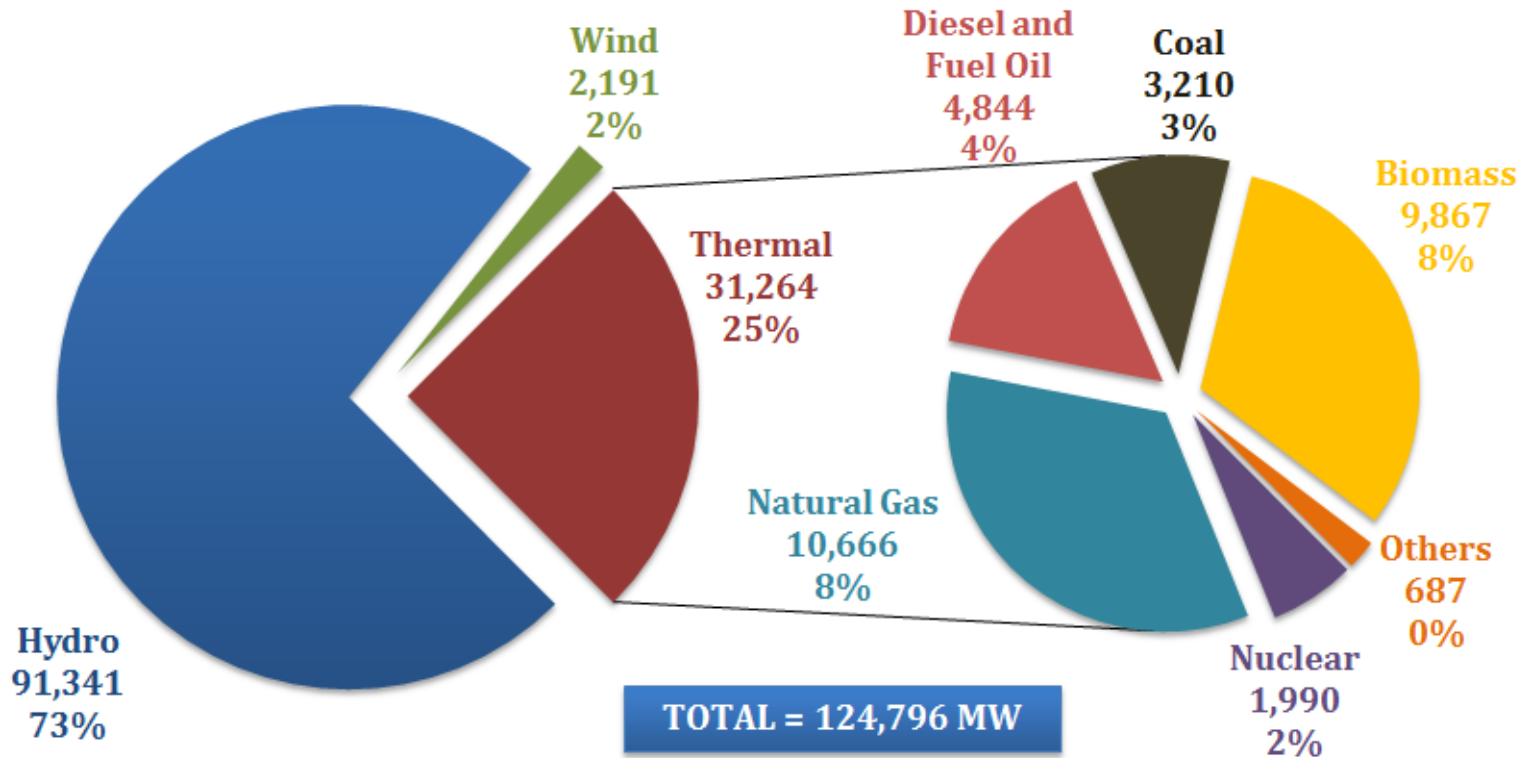


# Context: Energy Matrix – Brazil vs World

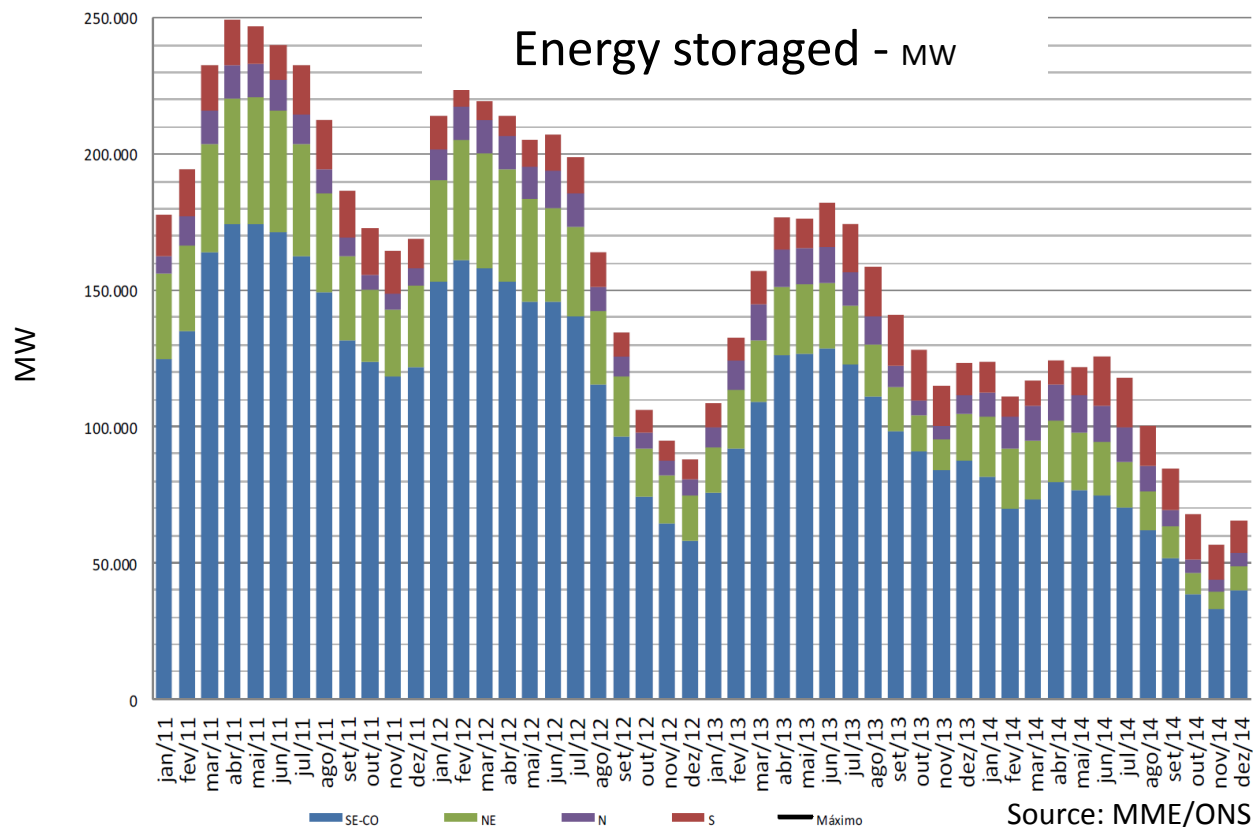


Source: IEA/WEO\_2013

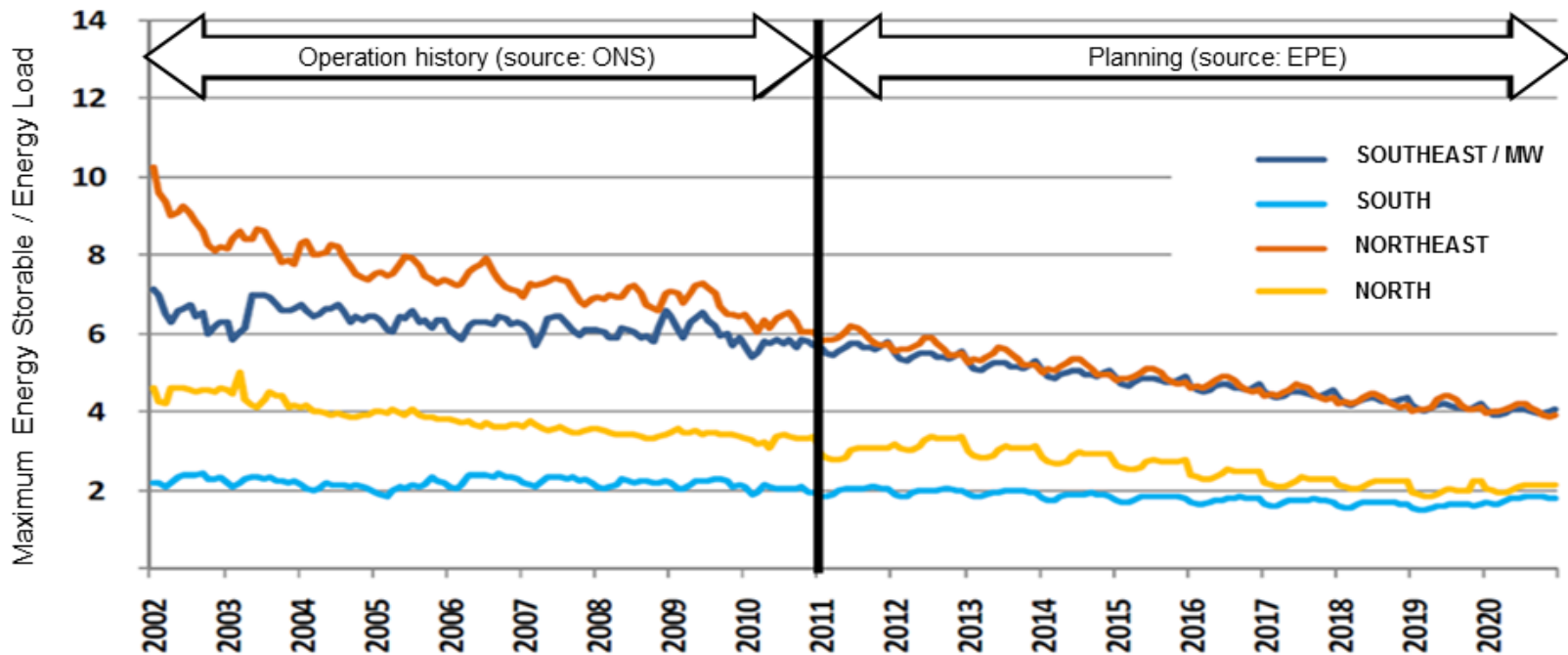
# Brazilian Electric Sector: Electrical Generation Matrix



# Water stored

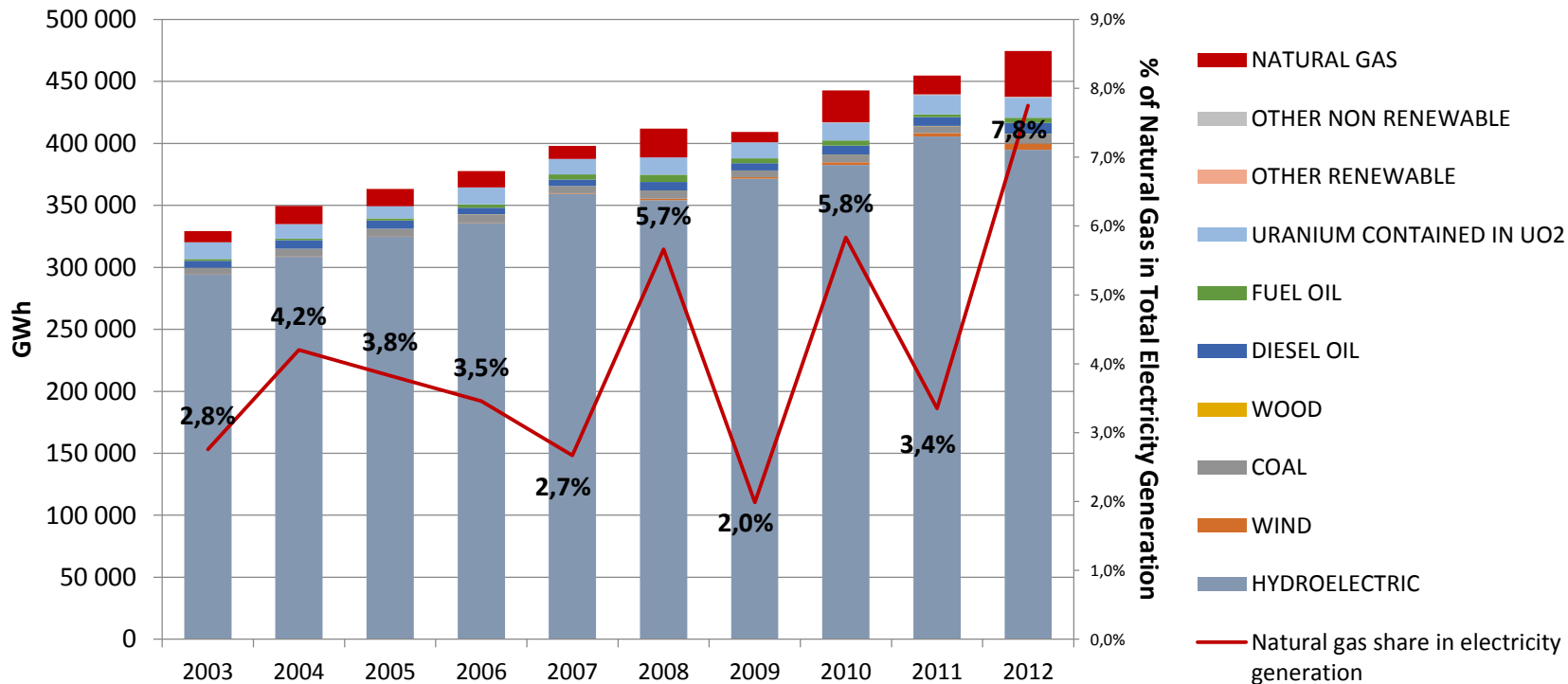


# Balance Between Power Supply and Demand



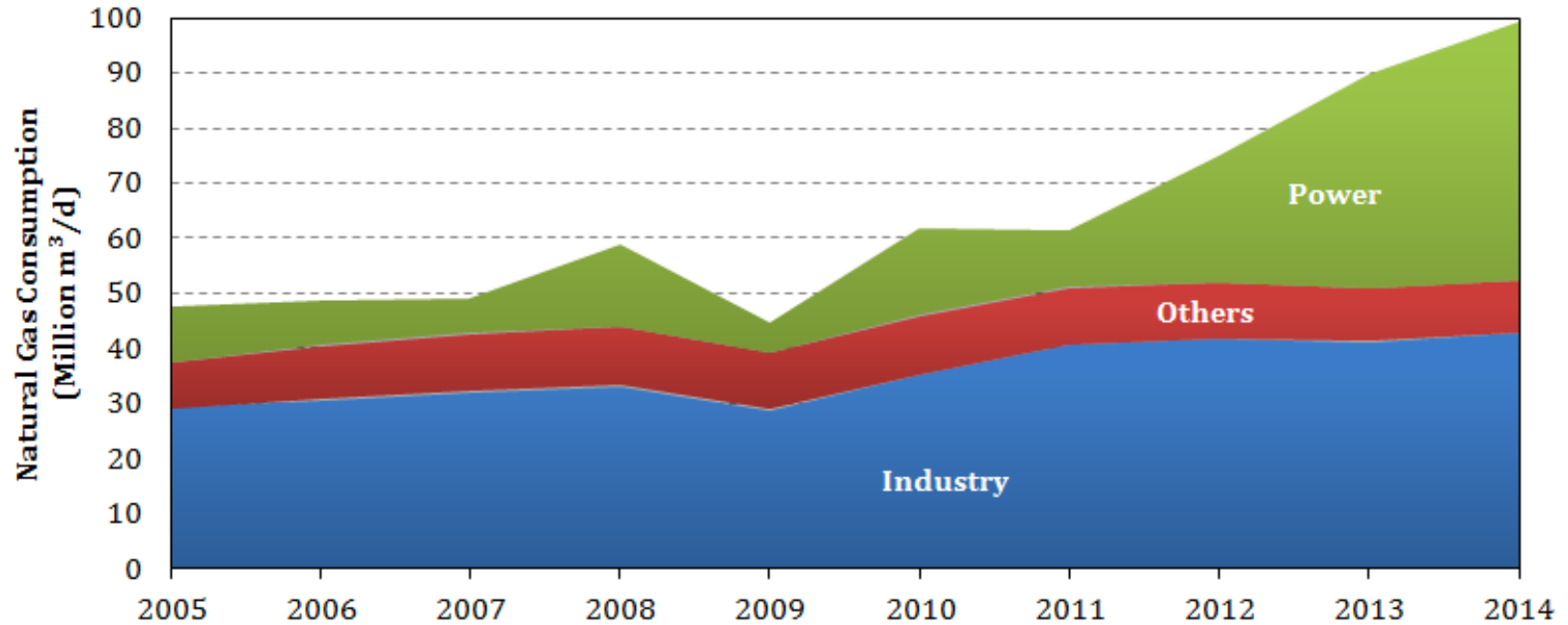
Source: PDE, elaboration IEE

# Thermal Generation History



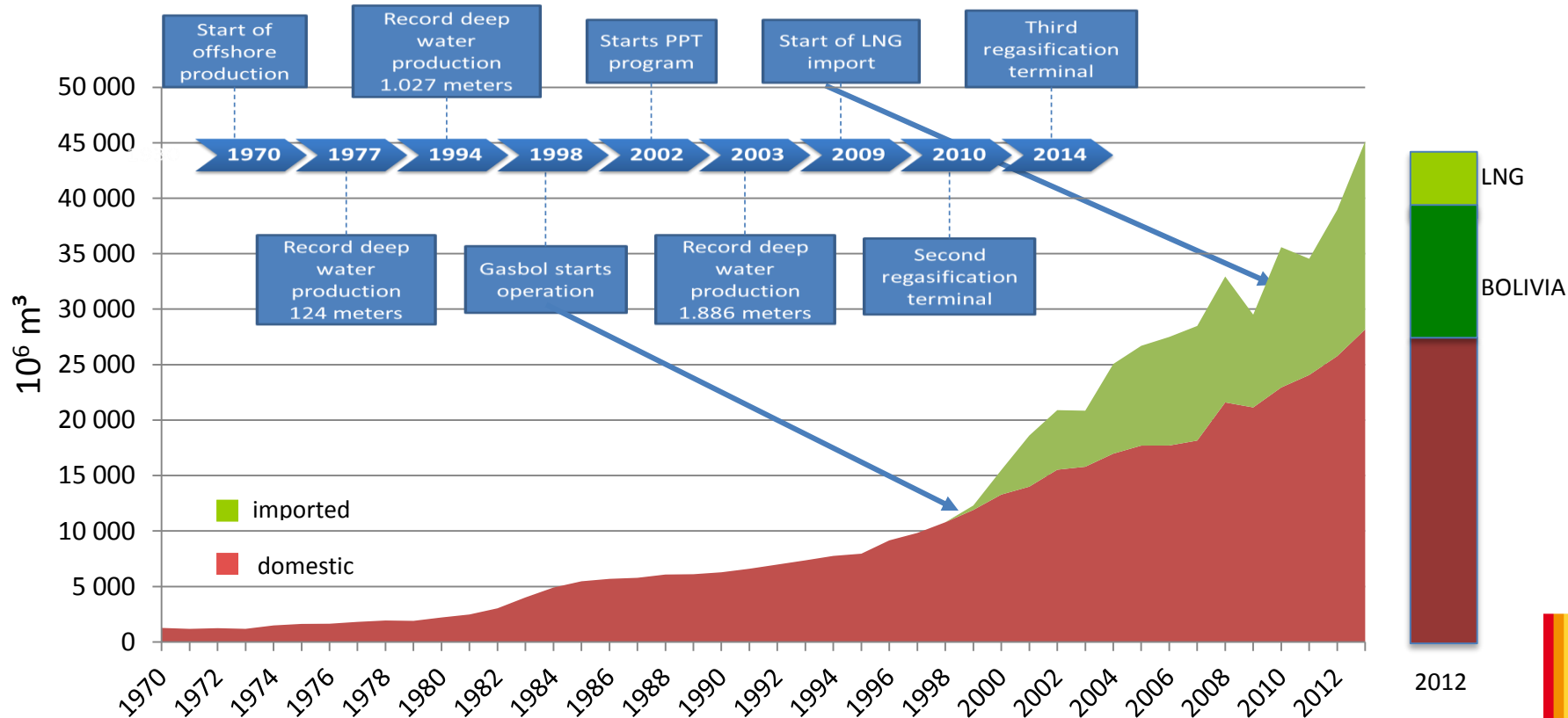
Source: BEN – National Energy Balance

# Natural Gas and Thermal Generation History



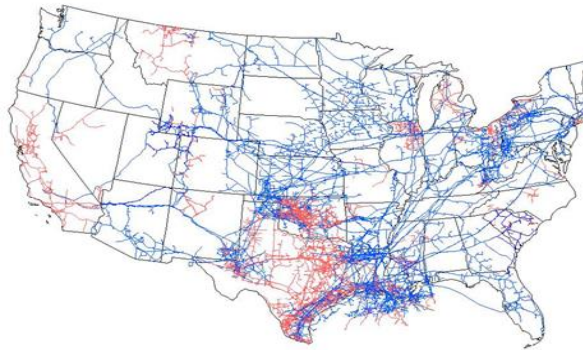
Source: MME

# Natural Gas History and Supply Evolution

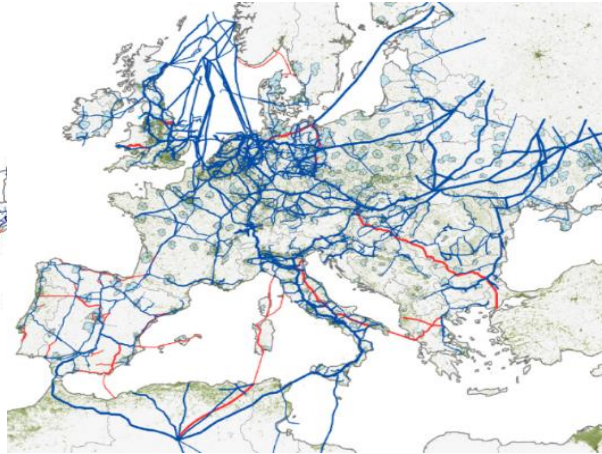




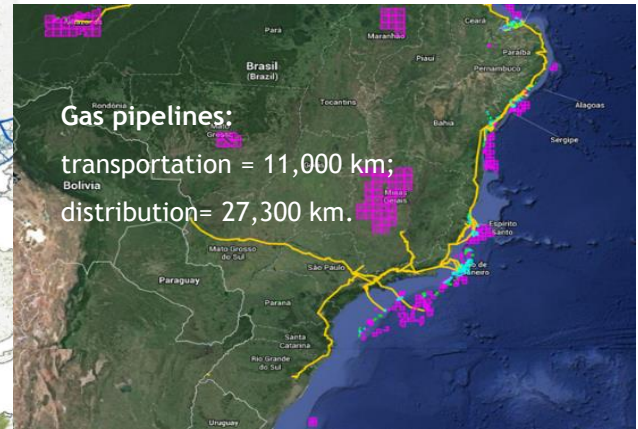
# Natural Gas Grid – USA & Europe vs Brazil



~500,000 km



~200,000 km



~38,300 km\*

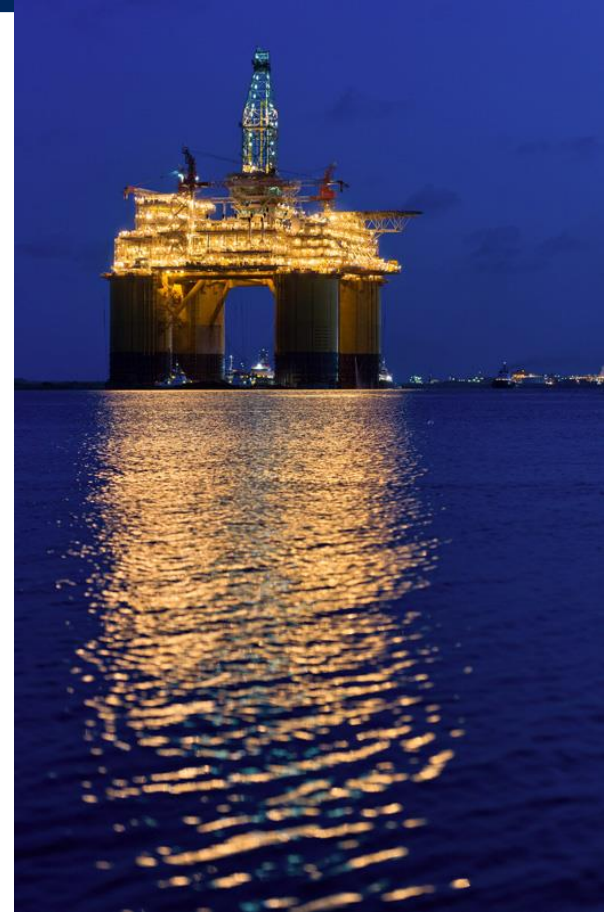
# Natural Gas Thermal Generation Challenges in Brazil

## Brazilian natural gas is:

- predominantly associated;
- produced offshore;

## The sector:

- has a modest transportation infrastructure;
- does not has a seasonal consumption;



# Government Energy Planning “Tools”

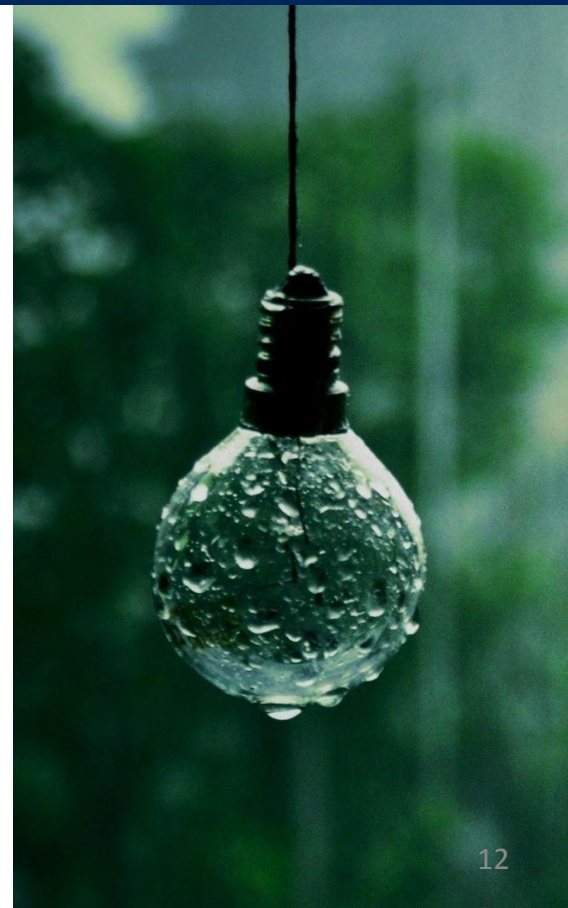
- 1) Oil and Gas Bids Rounds;
- 2) PEMAT – Ten-Year Pipeline-Road Transportation Grid Expansion Plan;
- 3) Auctions for the contracting of new power plants;
- 4) PDE – Ten-Year Energy Expansion Plan;
- 5) ONS Annual Electric Operation and Energy Operation Planning;



# Challenges to be Overcome

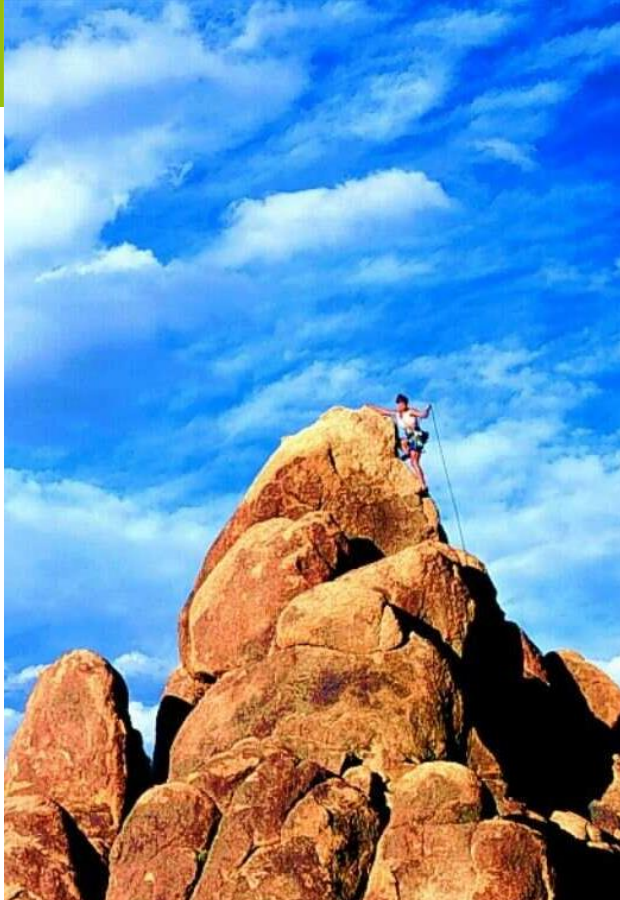
## Complexity of hydro-thermal model

- low rain precipitation years
  - high demand for gas thermal plants
- years of high rainfall → gas infrastructure remain idle
  - losses in assets remuneration;
- difficulty in determining high or low rainfall
  - complex operation for electrical and gas
  - hindering, among other, the level of purchases of LNG.





# Conclusions : Attracting gas investors to thermopower



- Base load thermopower dispatch more adapted to associated gas production;
- Long term planning aiming:
  - ✓ incentives in new domestic gas;
  - ✓ development of infrastructure;
  - ✓ gas power plants contracted in a more sustainable basis;
- Change in Energy Auction rules
- Main challenge: competitive gas price to attract investments in production and promote competitive gas power generation