
Interconexión Energética Regional

Oportunidades - impactos - barreras

Hugues Montmayeur

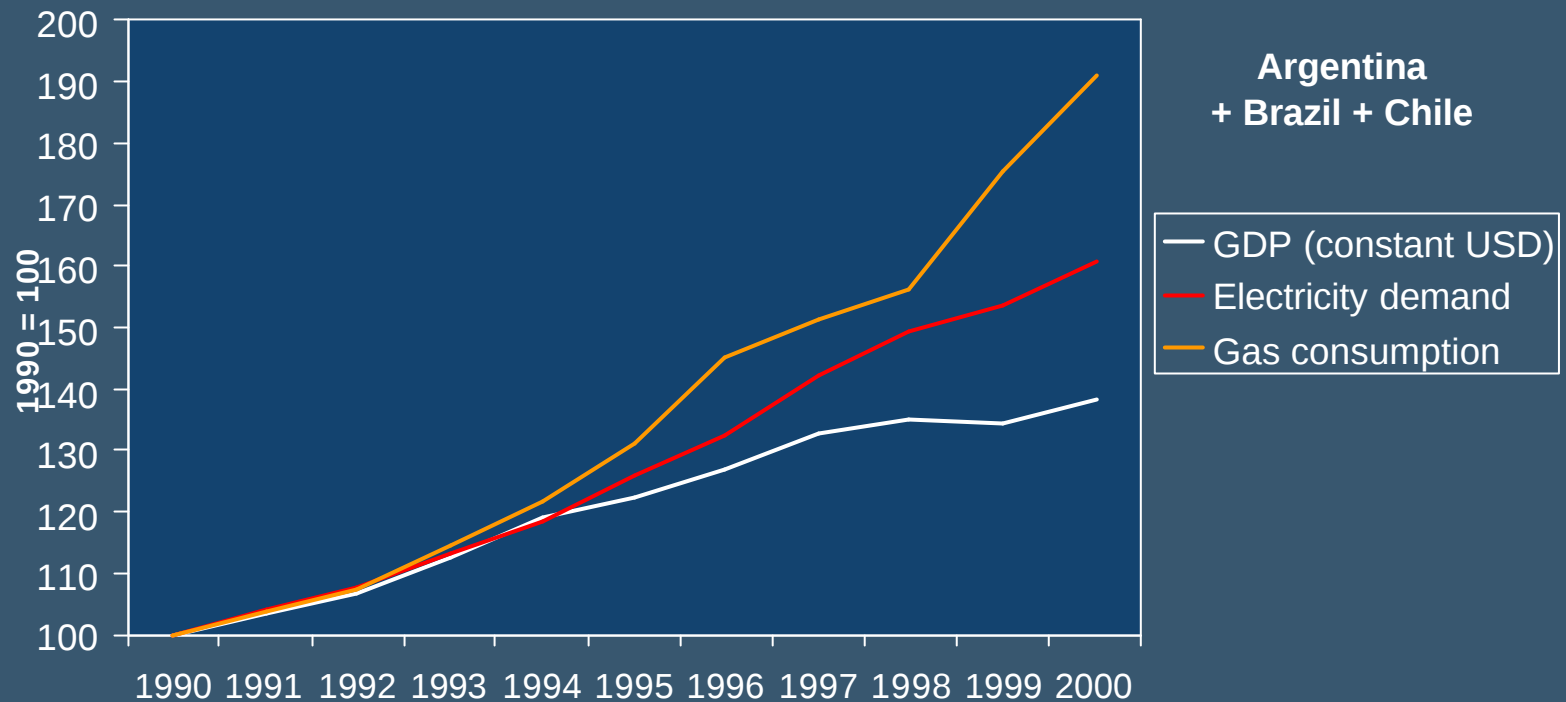
III LACGEC

Santa Cruz der la Sierra, Bolivia

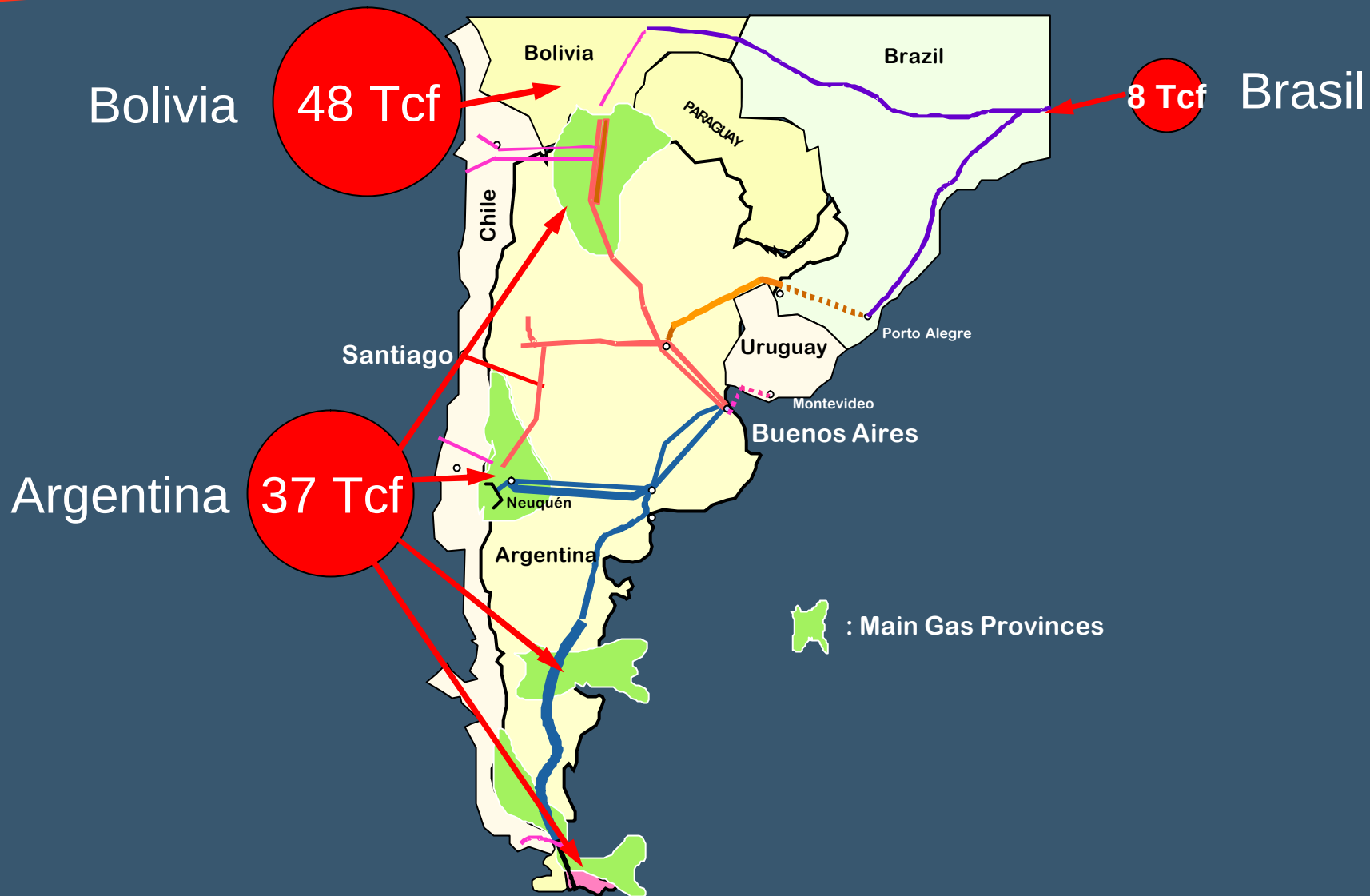
April 22-24 2002

A Promising Past ...

- GDP: average annual growth = +3,3%/year since 1990, with periods of crisis (ex:1999, 2001) followed by strong recoveries.
- Electricity demand : +5%/year since 1990, steady growth.
- Gas demand : + 6,7%/year since 1990, increasing share of gas in the energy mix.



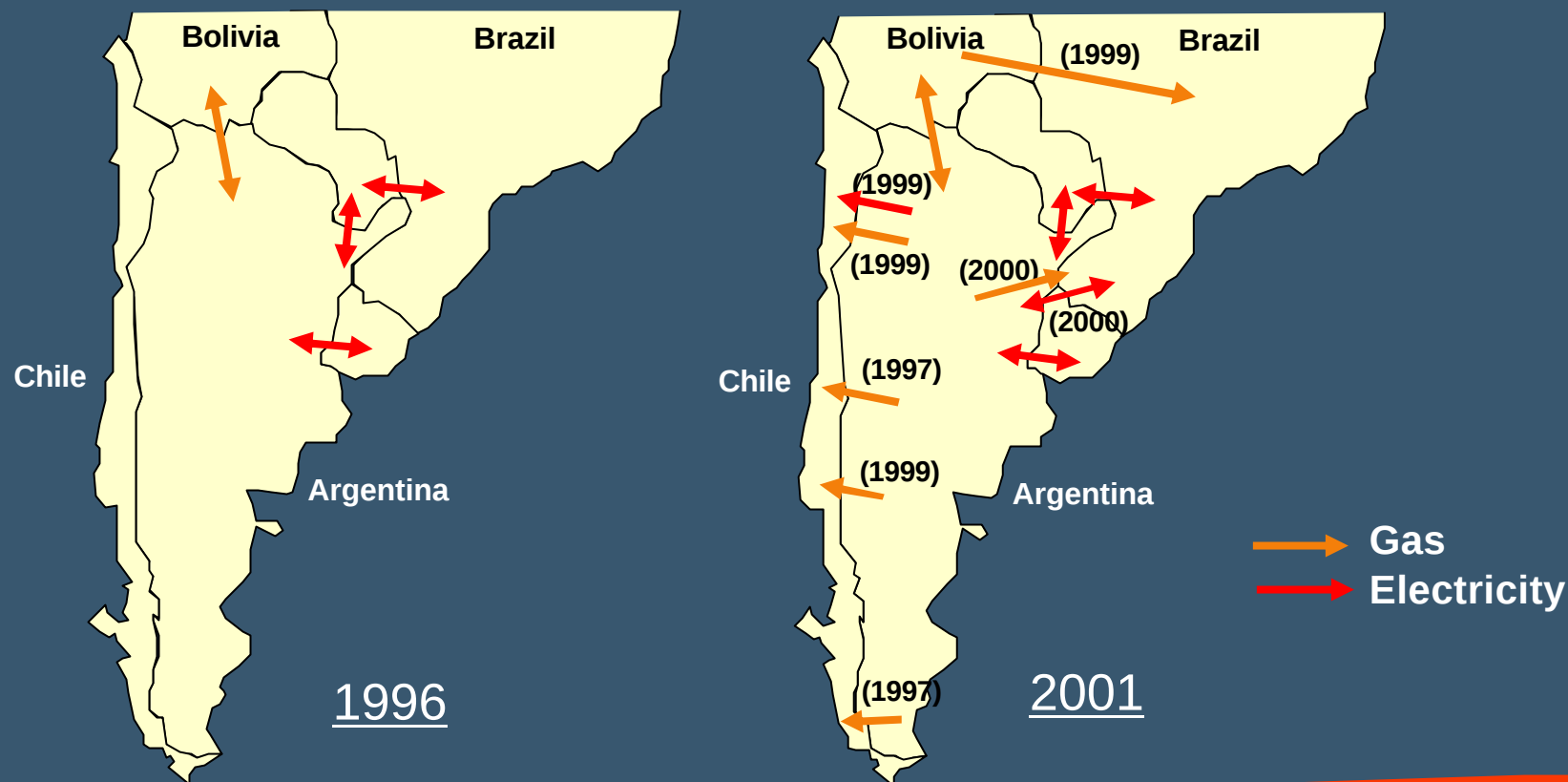
Abundant Gas Reserves



Developing Regional Energy Markets Integration

The Southern Cone becomes an integrated gas and power market, with :

- Argentina and Bolivia as the main gas suppliers ;
- Argentina as a thermal power supplier ;
- Brazil, Uruguay and Paraguay as providers of excess hydropower resources.



... and a Bright Long Term Potential ...

- Gas Demand Growth Forecast
 - Worldwide 2000-2020 : + 3.2 % p.a.
 - Central-South America : + 7.5 % p.a.
 - Electricity Demand Growth Forecast
 - Worldwide 2000-2020 : + 2.7 % p.a.
 - Central-South America : + 4.0 % p.a.
- with increasing gas share in power generation

Source : EIA-International Energy Outlook 2001

... for Electricity Demand ...

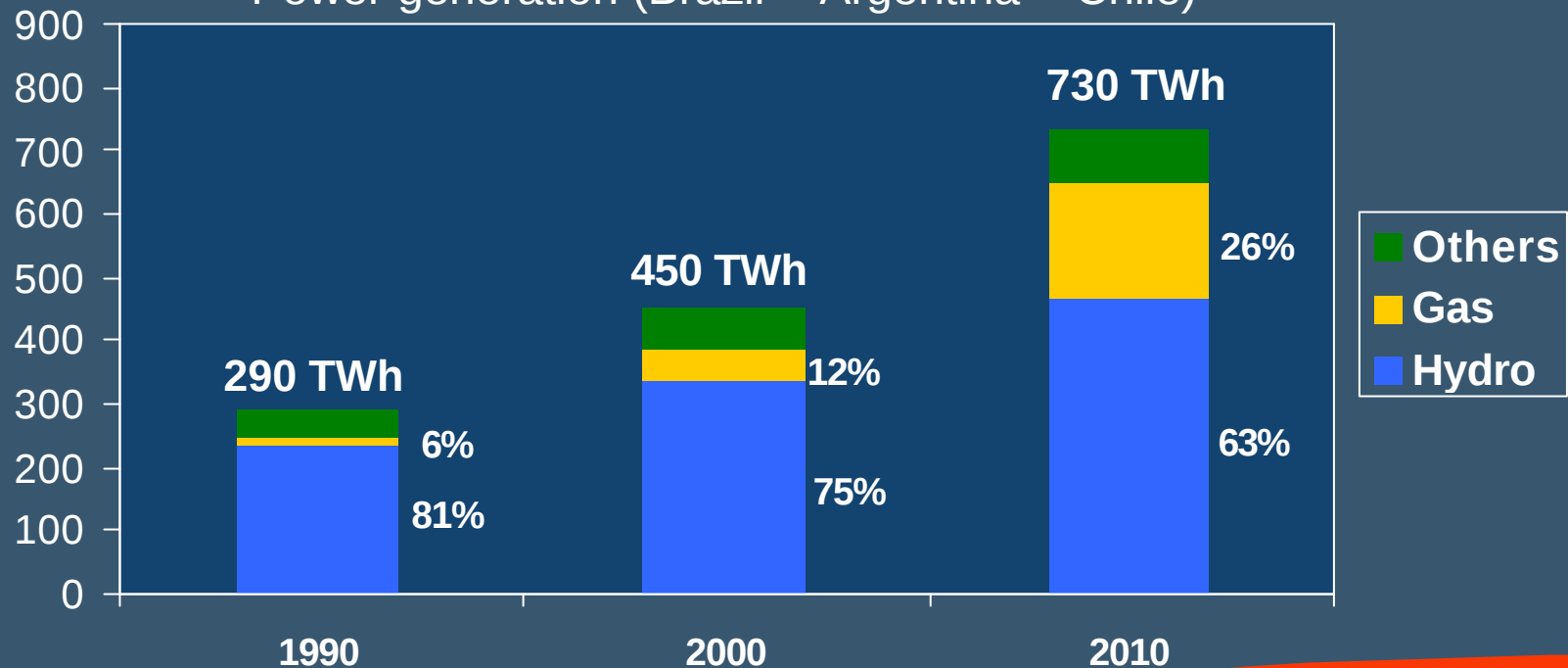
- Electricity demand is expected to grow at an average rate of 5%/year over the next decade (*similar growth rate as for the 1990-2000 period*)

Brazil $\Rightarrow + 2\,750$ MW/year

Argentina $\Rightarrow + 750$ MW/year

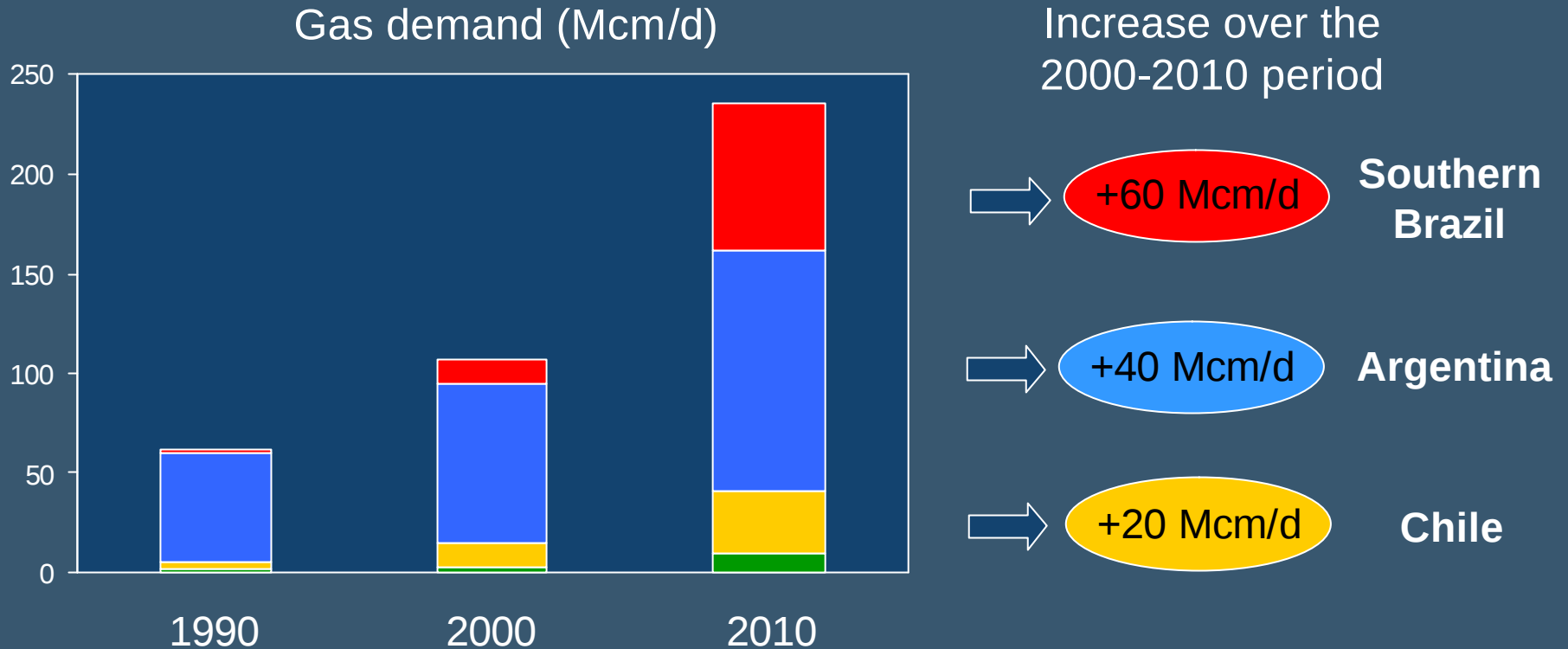
Chile $\Rightarrow + 500$ MW/year

Power generation (Brazil + Argentina + Chile)



... and for Gas Demand ...

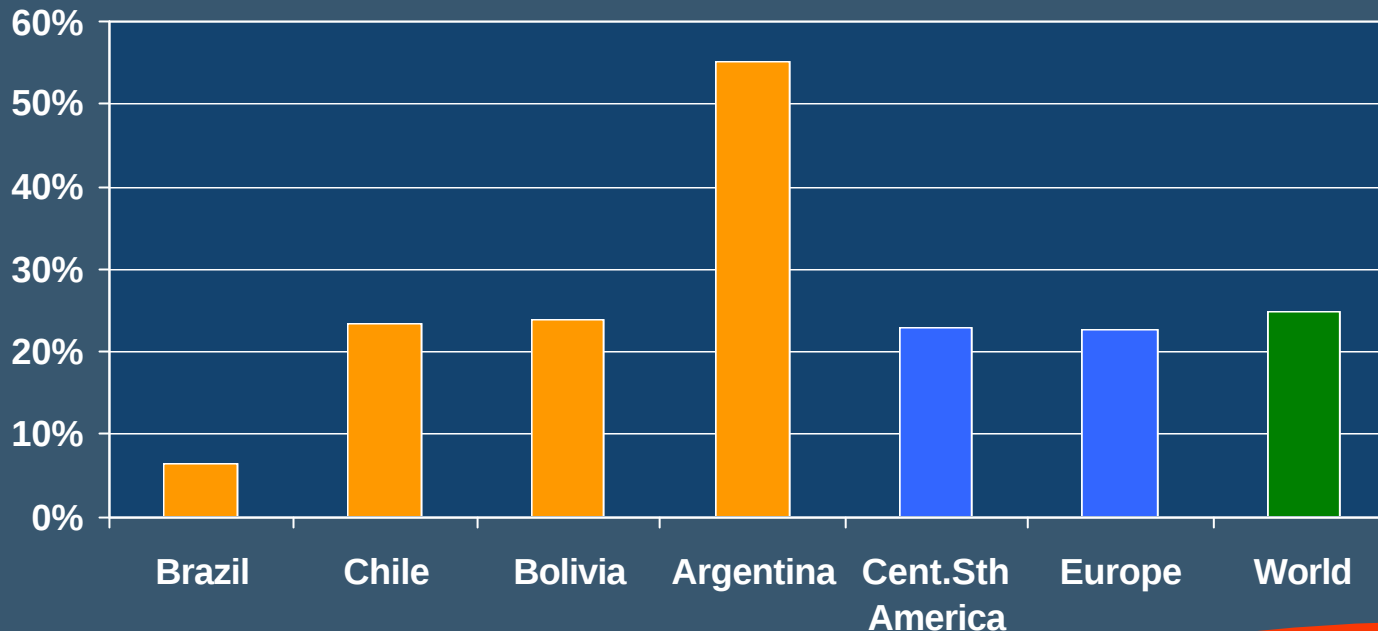
- Gas demand in the Southern Cone is expected to grow at an average rate of +8%/year between 2000 (106 Mcm/d) and 2010 (235 Mcm/d).



... in Contrasted Markets

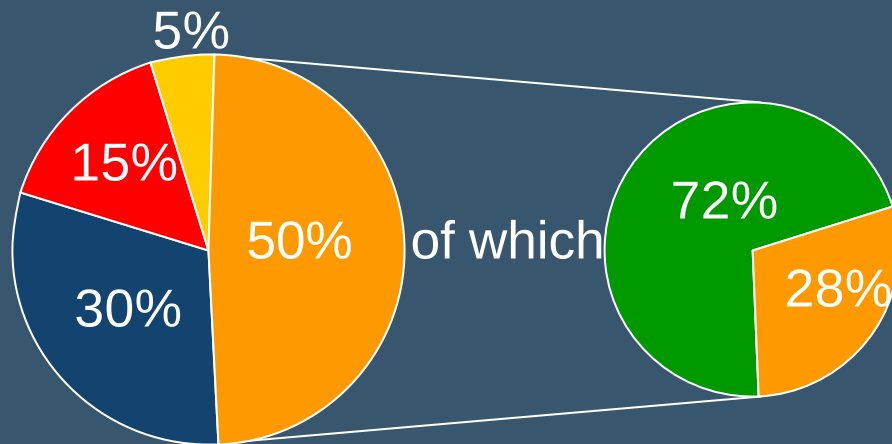
- Gas consumption in the Southern Cone = 106 Mcm/d in 2000 (Argentina accounting for 80 Mcm/d).
- Gas markets at different stages of development :
 - *Argentina* : one of the most gas-intensive countries in the world
 - *Brazil* : developing gas market, expected to grow rapidly

Gas share in total primary energy consumption



Growth Factors Imbalances - Gas Demand (1)

- Geographical imbalance : Brazil accounts for 50% of growth
- Market segment imbalance : significantly higher demand growth for gas in power generation



■ Argentina
■ Chile
■ Bol.-Par.-Ur.
■ Brazil-electricity
■ Brazil-other

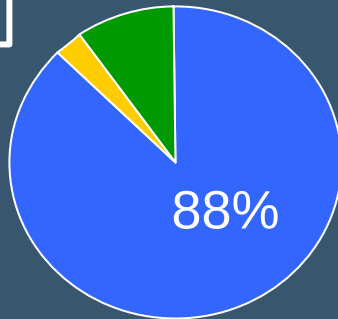
Growth Factors Imbalances : Power Generation

- Power generation in Brazil remains mostly hydro-based

BRAZIL

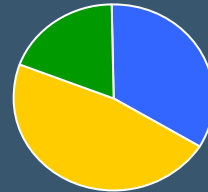
340 TWh

2000



ARGENTINA

77 TWh



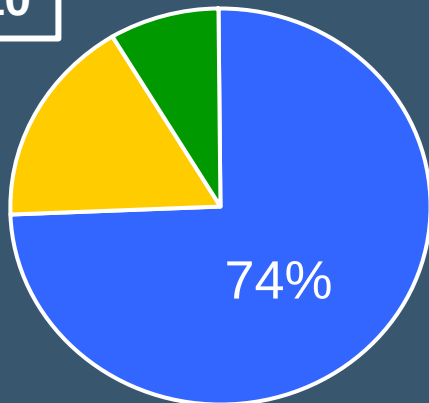
CHILE

35 TWh

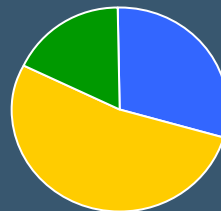


2010

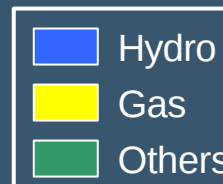
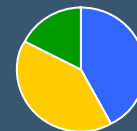
540 TWh



143 TWh

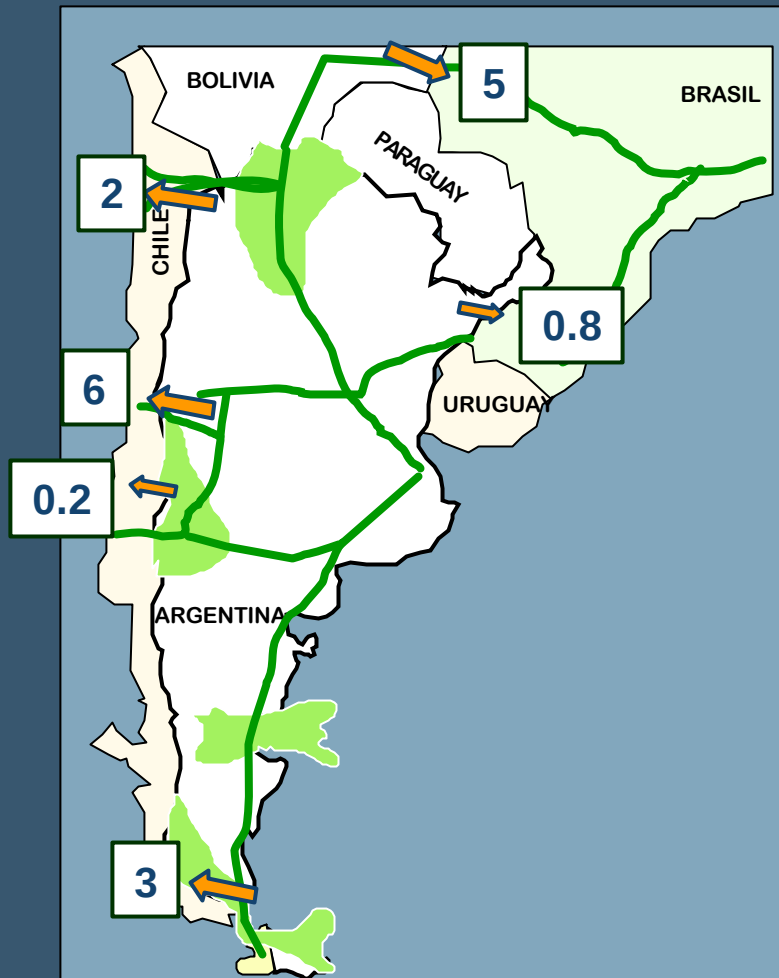


51TWh

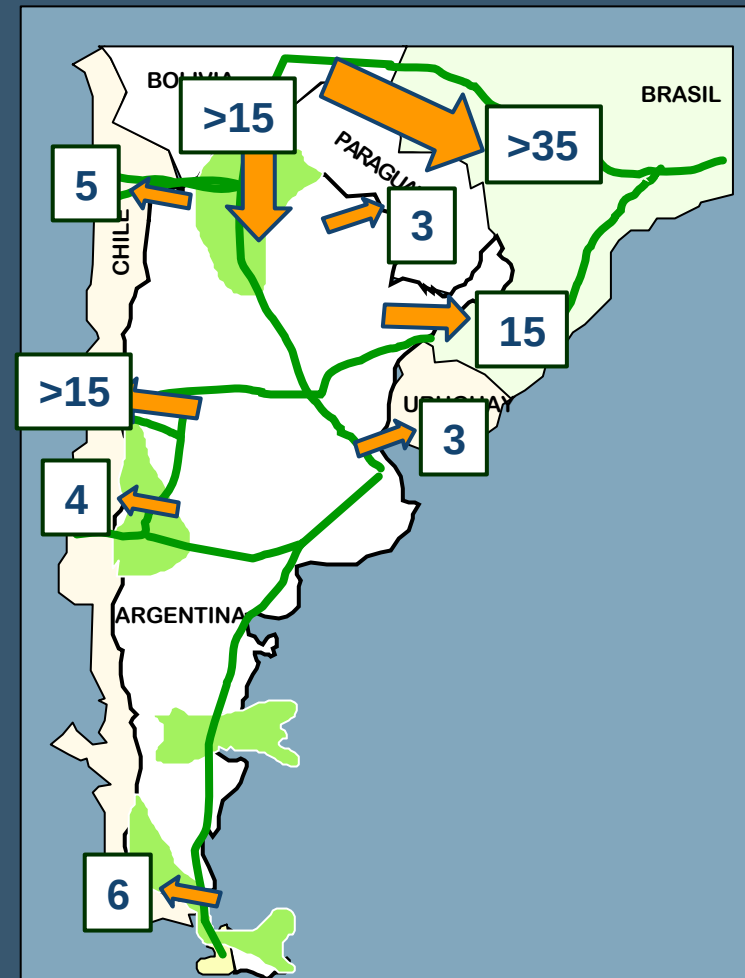


What Kind of Future for Gas Integration ?

2001 : 17 Mcm/d

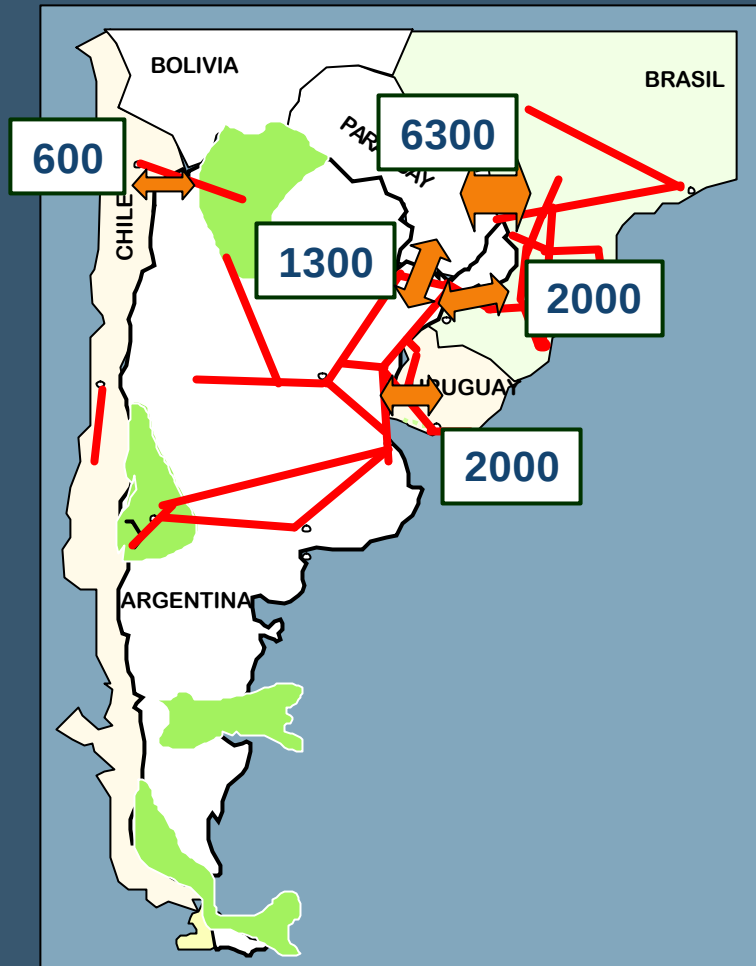


2010 : >100 Mcm/d

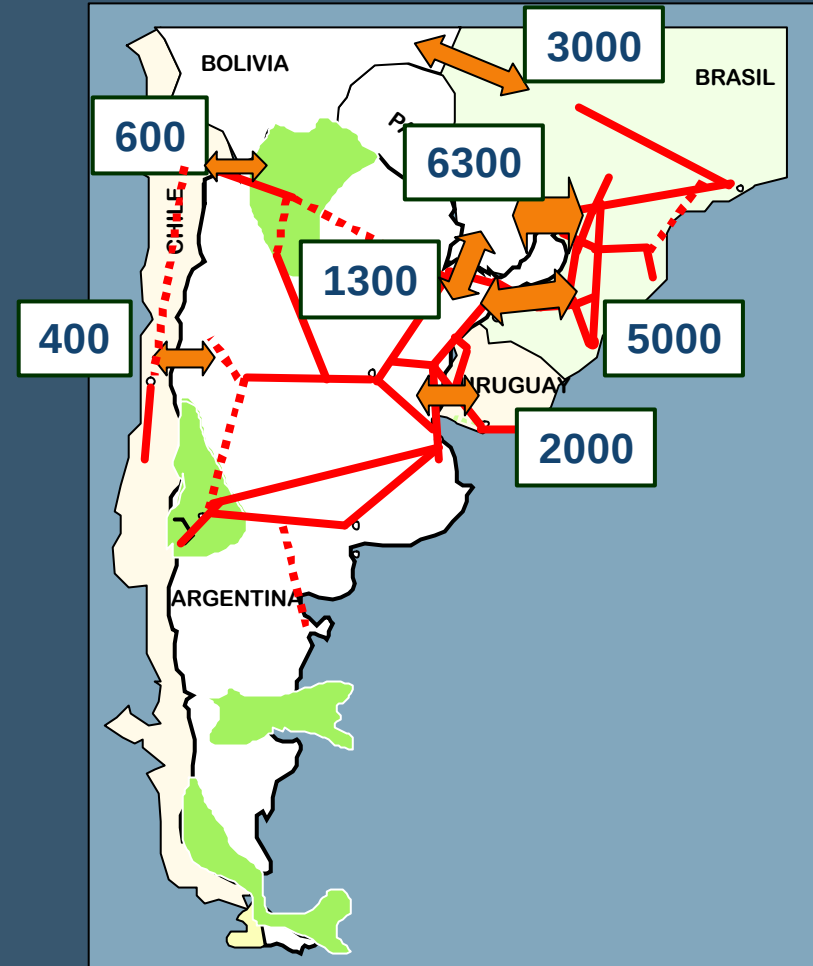


What kind of Future for Electricity Integration ?

2001 : 12200 MW



2010 : >18600 MW



Constraints : Markets

- Structuring of the Southern Cone interconnections, gas and electricity, will be driven mainly by hydro prone countries, Brazil and Chile.
- Base load or mid merit thermal plants in Brazil and Chile ?
- Thermal plants in Brazil/Chile/Uruguay or importing thermal backup from Argentina ?

Which optimization will market require, which commercial terms will prevail in interconnected markets ?

Constraints : Markets organization

- Different degree of maturity of deregulation in each country for gas and for electricity
- Different degree of maturity of deregulation from one country to another
- Insufficient degree of cross-border coordination on energy policies
- Latent risk of protective measures
- Regulations to be improved to provide long term visibility on revenues

What will be the energy policies of each country and what will be the coordination between countries ? How stable will they be ?

Constraints: Investment

- Sufficient gas reserves for thermal plants but important development cost of new production and power plants
- Sites available for hydropower development but important development cost and environmental issues
- Capital intensive gas pipelines and power lines
- Currency management through the gas & power chain

Investor requires visibility for the long term investments and for access to financing.

Conclusion

- Demand and distribution of resources in the Southern Cone shape a bright potential for future gas and electricity interconnections
- Current crises complicate investment risk assessment:
 - Reforms of electricity market in Brazil
 - Argentine crisis and its implications
- Outcome of Brazilian reform and of Argentine crisis will , or not, allow the transformation of this potential into projects and investments.