



***CUC 2008 Workshop: "Defining Coordinated Activities
Based on the CUC for Development and Deployment of
Nuclear Power Plants for Developing Countries"***

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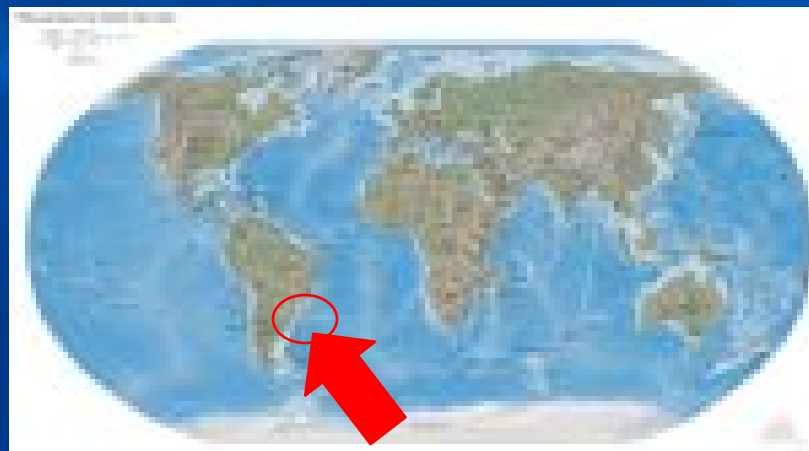
Uruguay



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DIRECCIÓN NACIONAL DE ENERGÍA Y TECNOLOGÍA NUCLEAR

SOUTH AMERICA



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Uruguay

Land area 176215 km²

Population: 3.3 million inhabitants; 0.5% growth rate/y

Life expectancy: 75 years old

Literacy: 97%

GDP: 8000 US\$ per cápita (2007); 9.5% growth rate/year

Exports (meat, wool, rice, milk byproducts, forestry products, agriculture byproducts, software): 8 billion US\$ (2007)

No major geographic extremes: no volcanos, no earthquakes, no hurricanes, no tsunamis

No oil, no coal, no natural gas



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Electric system characteristics

- 1.25 million electric customers
- Electricity coverage: 98%
- Peak demand: 1654 MW (winter 2007)
- Total installed capacity: 2400 MW
- Annual growth rate between 3% and 4% (50 to 70 MW/y)
- 1 State-owned Public Utility (UTE): generation, transmission and distribution
- Small Independent Power Producers



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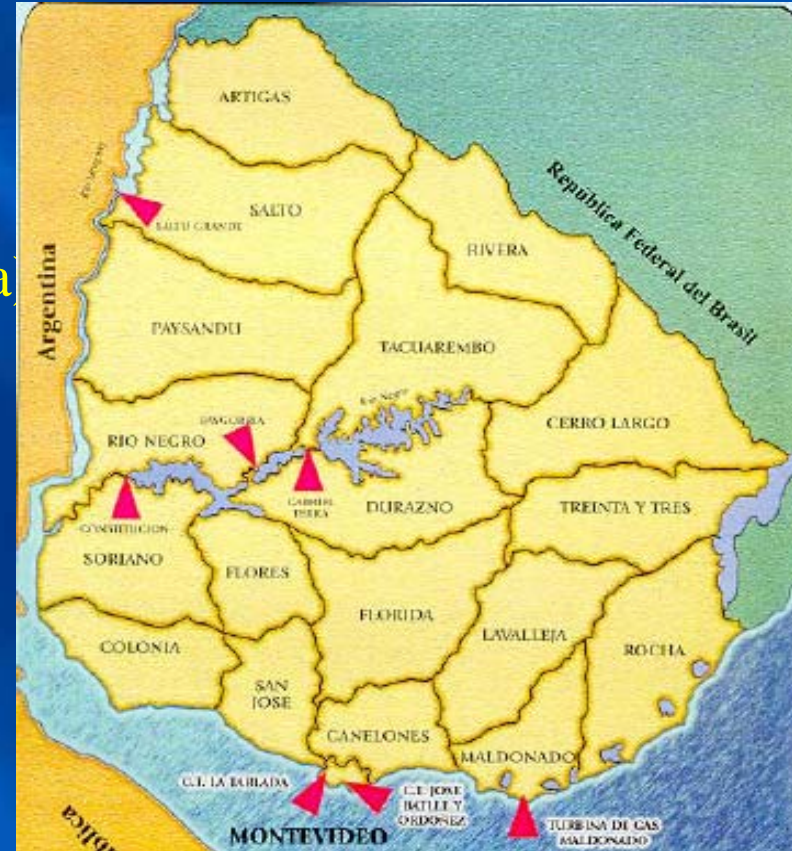
• HYDROELECTRIC POWER PLANTS:

- Gabriel Terra 152 MW
- Baygorria 108 MW
- Palmar 333 MW
- Salto Grande 945 MW (Uruguay-Argentina)
- **TOTAL HYDRO: 1538 MW (62%)**

• OTHER RENEWABLE: 170 MW (6%) (Wind and biomass)

• THERMAL POWER PLANTS:

- Batlle 313 MW (Fuel-Oil)
- CTR 226 MW (Diesel-Oil)
- Punta del Tigre 300 MW (Diesel-Oil or Natural Gas)
- **TOTAL THERMAL: 863 MW (32%)**

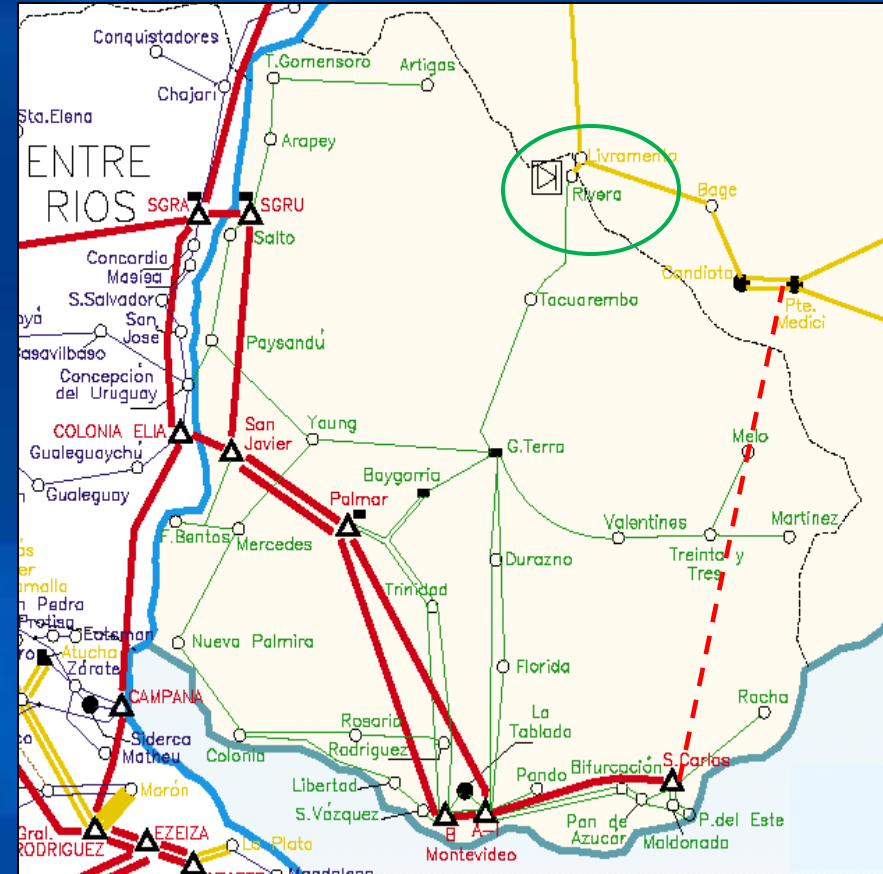


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Electric system characteristics

- 500 kV: 800 km
150 kV: 3500 km
- Strong interconnection system with Argentina:
2000 MW – 500 kV
- Interconnection with Brazil:
500 MW – 500 kV
(under construction)
- Main demand concentrated in the southern coastal area

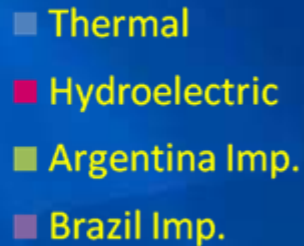
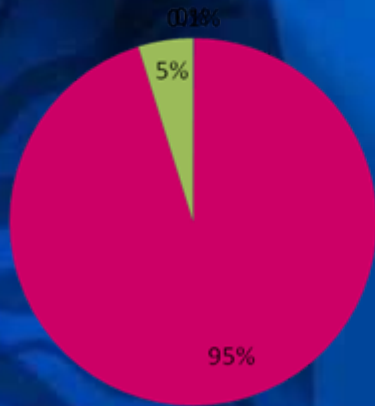


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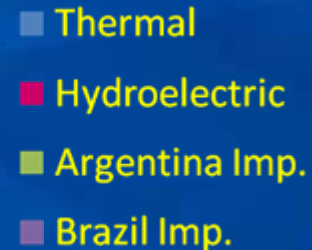
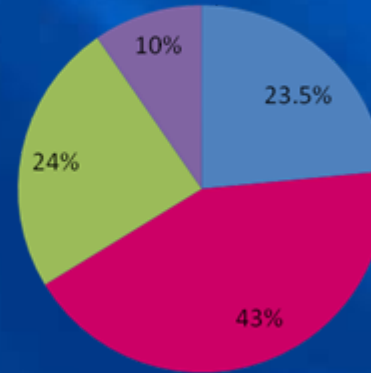
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Electricity supply structure

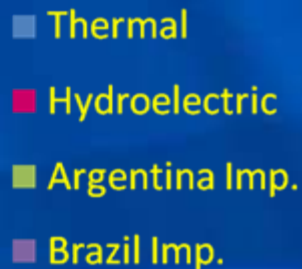
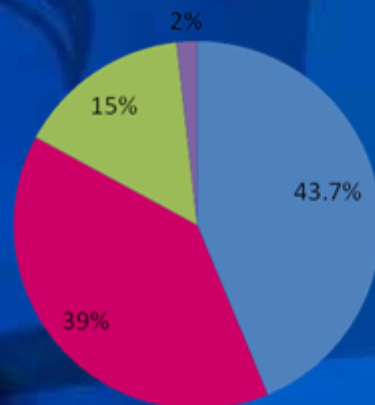
2002



2006



2008 (so far)



Strong dependence on
- local hydrologic conditions
- energetic situation in the region



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Availability of energy sources

- Hydroelectric potential almost exhausted
- Lack of fossil fuel local resources
- No availability of natural gas in the region
- Energy instability in the region
- Good capacity for wind projects (at least same as hydro capacity, with cf's of 35% - 40%)
- Biomass byproducts related with agricultural and forest industry



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Strategic Energy Plan (2025)

(vision: energy independence and sustainability, with **diversification** of the country's energy mix)

- Reduce dependence from oil
- Increase the participation of indigenous resources (target: 500 MW wind + biomass in 2015)
- Introduce LNG regasification capacities (2011)
- Promote energy efficiency in all sectors
- Study new energy source options:
 - coal (imported, GHG increasing restrictions)
 - *nuclear option*



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Activities Regarding the Nuclear Option Consideration

- Regional TC Project in Energy Planning (MAED-MESSAGE)
- Participation in Workshops and Seminars (CUC, Energy Planning, Nuclear Option in countries with small grids)
- Technical visits and planned local workshop
- Steering Committee to overview the nuclear option and recommend following steps (final report within a month)
- President about to make announcement to launch NEPIO (IAEA “Milestones” document)



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BUT ...

- With a 10%-system-capacity rule, only a 300 MW NPP would be reasonable (2800-3000 MW demand in 2025)
- Proven technology?
- Larger NPP size should require long term commitment with neighbours
- No reliable information about costs!
- Small scale to manage spent fuel disposal
- An uruguayan NEPIO should need cooperation with IAEA



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Thank you very much!

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