Nuclear Energy under the Long Term Planning in Brazil

How nuclear energy can contribute to maintain a clean power mix in Brazil – The National Energy Plan 2050

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National Energy Plan 2050 – PNE 2050

- Brazil has abundancy of energy resources
  - Non-emitting sources → nuclear, biofuels, wind, solar
- Challenges will be different and more complex
- PNE 2050 → Models the impacts of energy policies, supporting decision making
National Energy Plan 2050 – PNE 2050

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Public Consultation
Nuclear Energy in Brazil

Strategic Advantages in Brazil

• One of the three countries to have uranium reserves, operating NPPs and to dominate the fuel cycle
• Uranium reserve: 7th largest, potential to become 3rd
• 2 operating NPPs, and 1 under construction
• Power demand will increase 3.3 times until 2050
• Proximity to the load center
• Nuclear technology spillovers
Simulations for Nuclear Energy

Expected Expansion

Simulations include scenarios with 8 GW and 10 GW increase until 2050
NPP cost reduction can lead to installed capacity of up to 24 GW

Considering the availability of Uranium reserves (recoverable portion), the potential for nuclear power generation is estimated to be 10 GW over 60 years.
Range of Energy Generation Participation in 2015 and 2050 Scenarios

- Hydro
- Small Hydro
- Natural Gas
- Coal
- Nuclear
- Biomass
- Wind
- Solar
Challenges in the PNE 2050 Horizon

1. Communicate effectively the role of Nuclear Energy
2. Promote institutional, legal and regulatory adjustments
3. Couple nuclear energy with the Brazilian Nuclear Policy
4. Ensure the safety of nuclear facilities and fuel fabrication
5. Expand reactor lifetime and define decommissioning rules
6. Expand knowledge on uranium mineral resources
Recommendations for Nuclear Energy

1. Expand communication with society, especially in candidates areas for mining, NPP and waste deposit.

2. Improve Nuclear Energy regulatory framework (e.g. lessen the State monopoly, regulatory agency).

3. Establish methodology to correlate thermonuclear capacity expansion with gains in economy of scope associated with the National Nuclear Policy.

   Establish greater projects standardization to allow cost reduction with economy of scale and learning curve.

   Articulate nuclear, foreign trade, STI, and HR training policies.
Recommendations for Nuclear Energy

Maintain the guarantee of radioactive waste management security

Improve nuclear safety culture

Preserve security in fuel supply

Assess the implications of existing NPP lifetime extension in regulatory and commercial terms, as well as the decommissioning preparations

Resume uranium prospecting through the entire national territory
Thank you

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