

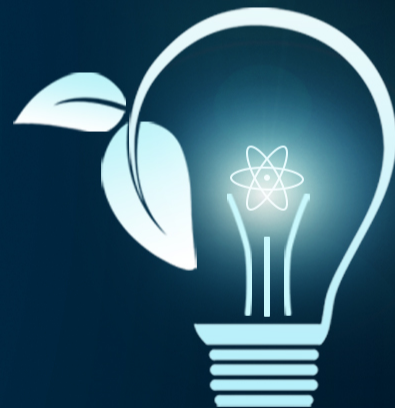
# Nuclear Energy under the Long Term Planning in Brazil

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

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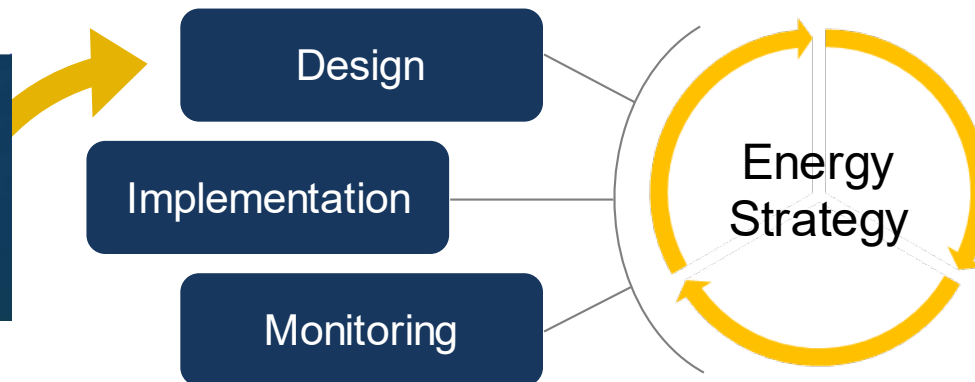
Rodolfo Zamian Danilow

Brazil, Ministry of Mines and Energy



# National Energy Plan 2050 – PNE 2050

- Brazil has abundance 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



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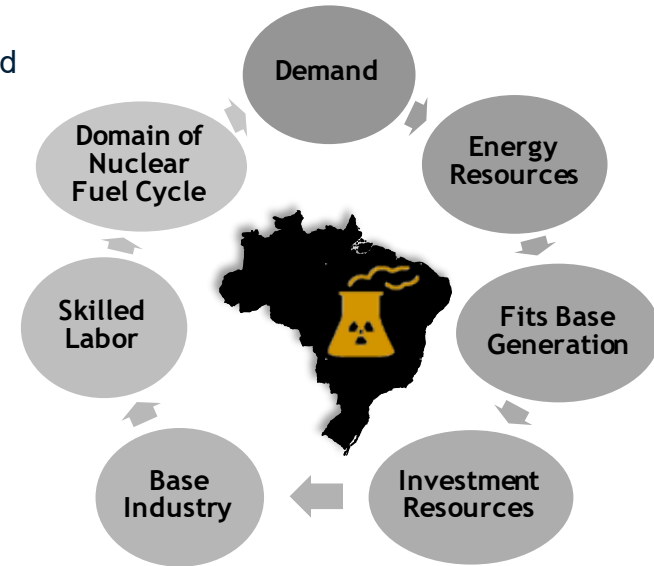


**Public Consultation**

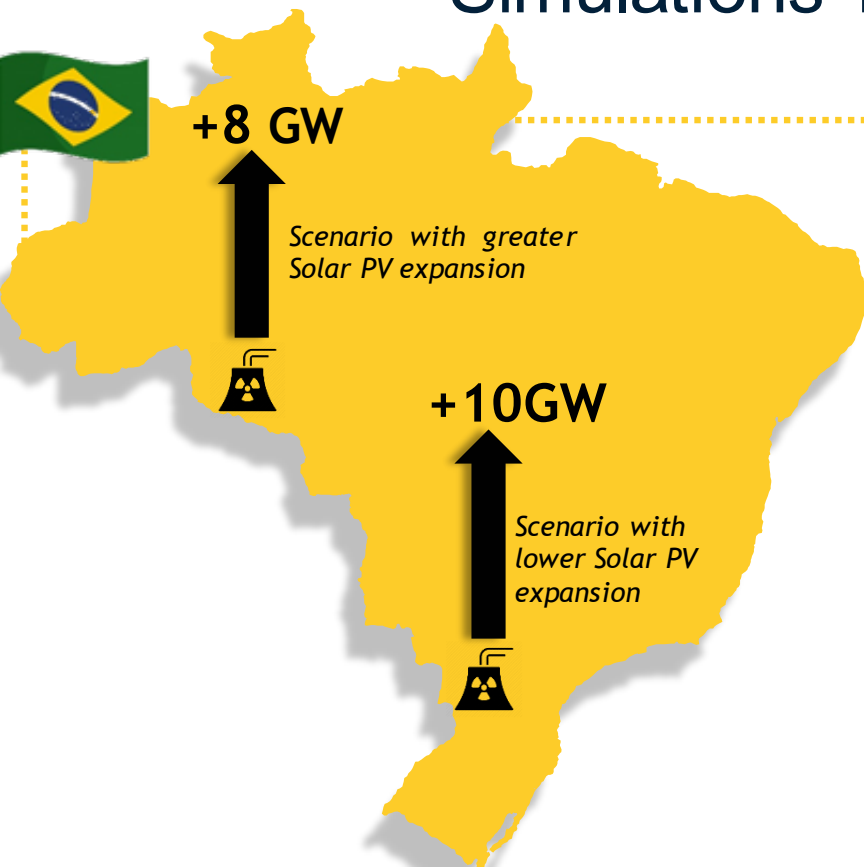
# Nuclear Energy in Brazil

## Strategic Advantages in Brazil

- One of the three countries to have uranium reserves, operating NPPs and to dominate the fuel cycle
- Uranium reserve: 7<sup>th</sup> largest, potential to become 3<sup>rd</sup>
- 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

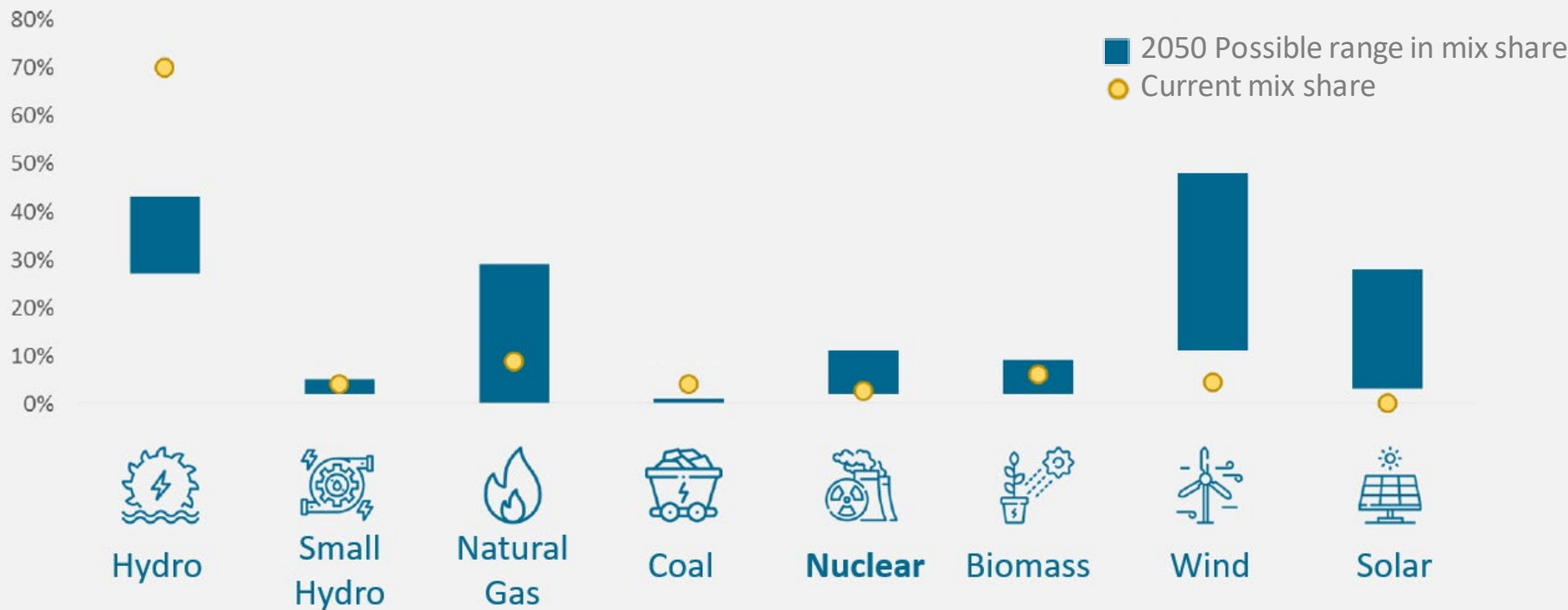
*Simulations include scenarios with 8 GW and 10 GW increase until 2050*

*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



# Challenges in the PNE 2050 Horizon

@ Communicatio 1

n

*Communicate effectively the **role of Nuclear Energy***

 Institutional 2

*Promote **institutional, legal and regulatory adjustments***

 Expansion 3

*Couple **nuclear energy** with the **Brazilian Nuclear Policy***

 Safety 4

*Ensure the **safety** of nuclear facilities and fuel fabrication*

 Lifetime 5

**Expand reactor lifetime and define decommissioning rules**

 Uranium  
Minerals 6

*Expand **knowledge on uranium mineral resources***



# Recommendations for Nuclear Energy

## @ Communication 1

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

## 👥 Institutional 2

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

## ⚡ Expansion 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



Safety

4

Maintain the guarantee of **radioactive waste management security**

Improve **nuclear safety** culture

Preserve **security in fuel supply**



Lifetime

5

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



Uranium  
Minerals

6

Resume **uranium prospecting** through the entire national **territory**

# Thank you

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