

# CENTENA

## A Centre for Research, Development and Innovation in the Management and Disposal of Radioactive Waste

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Comissão Nacional de Energia Nuclear - CNEN



# Present Scenario

- Two NPP in operation (Angra 1 and 2);
- Angra 3 under construction;
- R&D Institutions:
  - ✓ CRCN-CO – GO
  - ✓ CDTN and LAPOC – MG
  - ✓ CRCN-NE – PE
  - ✓ IEN and IRD – RJ
  - ✓ IPEN, CENA and CTMSP – SP;
- Three research reactors, one experimental facility;
- More than 2,100 radioactive installations;
- Brazilian Multipurpose Reactor (RMB).



Foto: Vanderlei Almeida/Getty Images)



Foto: Santiago. www.cdtn.br



REATOR MULTIPROPÓSITO BRASILEIRO - RMB  
Núcleo de Produção e Pesquisa



# Radioactive Waste Storage



CDTN /CNEN



Eletronuclear



IPEN/CNEN

# JUSTIFICATION

- CNEN is legally responsible for the radioactive waste disposal and therefore it has to provide a national repository for this material.
  - The construction and commissioning of CENTENA meets Brazilian needs for the disposal of low- and intermediate-level radioactive wastes, generated by the use of nuclear energy in different areas.
    - This Center will contribute to the sustainability of the sector, since its implementation will complete the cycle of radioactive waste management in the country. Legal, technical, social, economic and environmental aspects will be met at national and international levels.



# OBJECTIVE

The CENTENA Project aims to design, build, license and put into operation the CENTENA – Nuclear and Environmental Technological Center – for disposal of low- and intermediate-level radioactive waste, resulting from the use of nuclear energy in Brazil, as well as for RD&I activities in Radioactive Waste area.



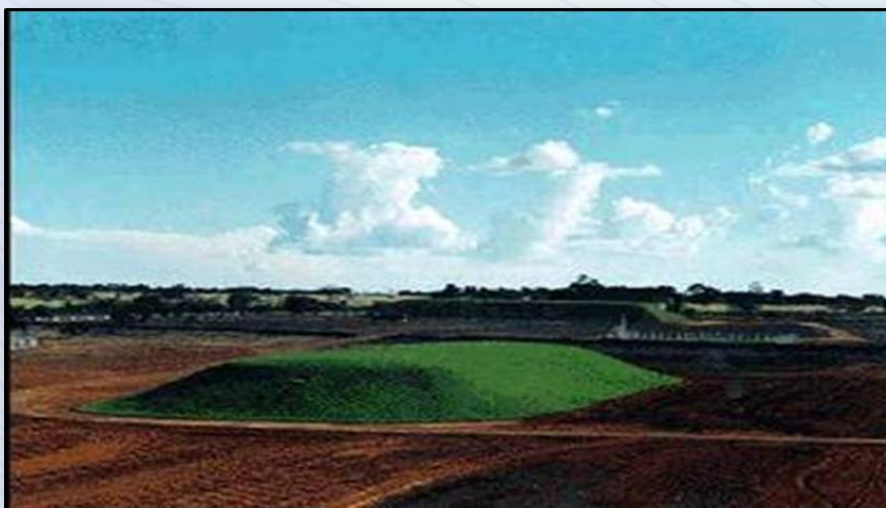
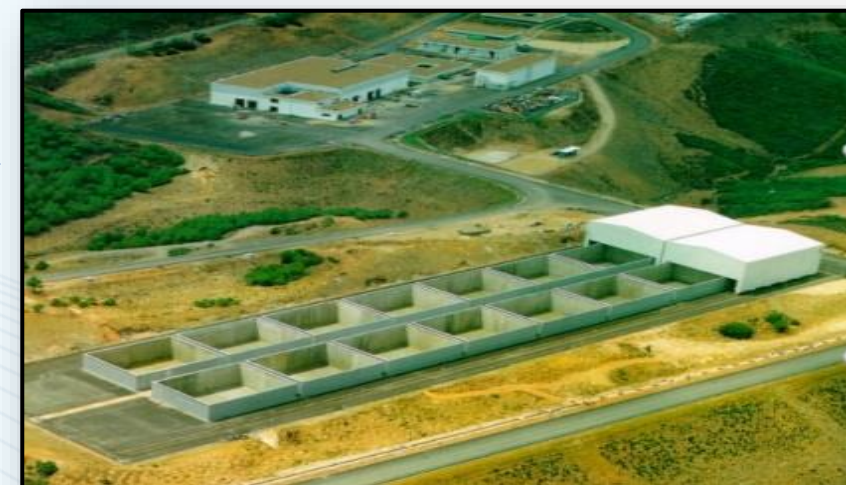


# Repository: References



*L'AUBE  
FRANCE*

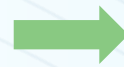
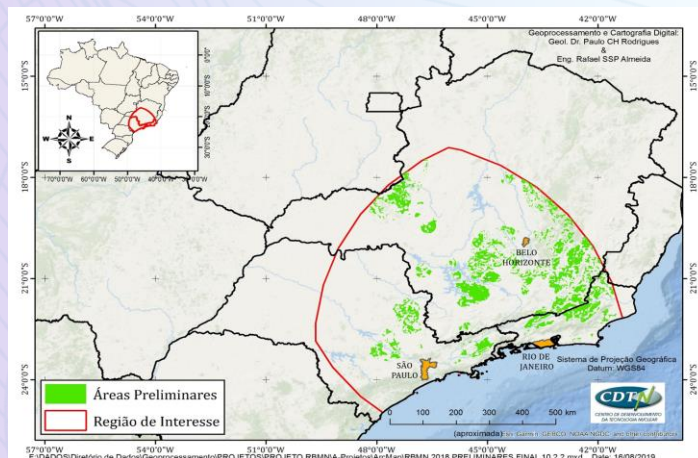
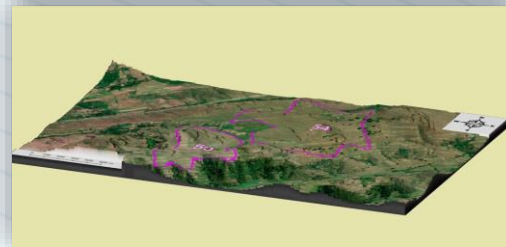
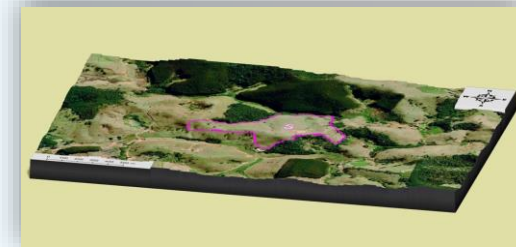
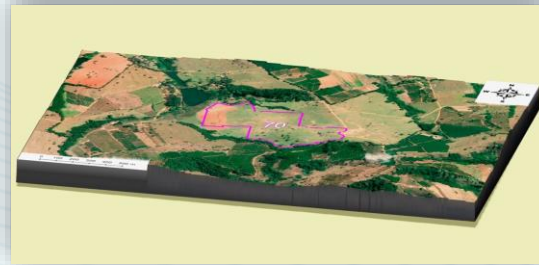
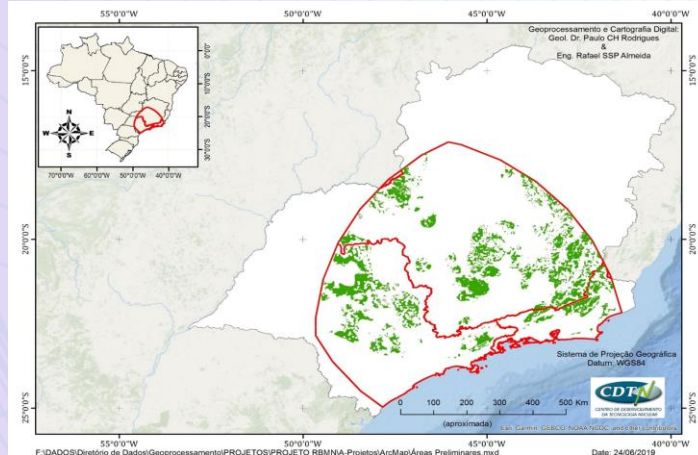
*EL CABRIL  
SPAIN*



*CRCN-CO  
ABADIA DE GOIÁS - BRAZIL  
(Cesium radiological accident in  
Goiania)*

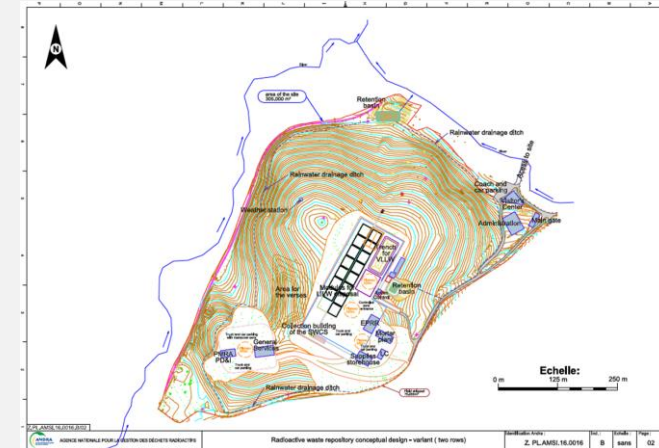
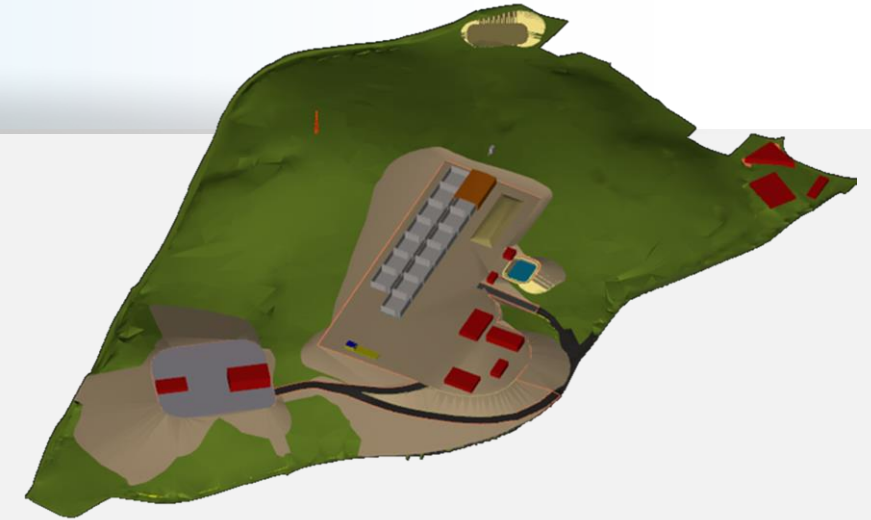


# What happens till now?



# What happened till now?

- ✓ Preliminary Conceptual Design (ANDRA);
- ✓ Preliminary Communication Plan;
- ✓ Communication material;
- ✓ Workshop with the main RW generators;
- ✓ Establishment of a work group by GSI, which objective was to define the goals and responsibilities related to the execution of CENTENA;





# What happened till now?

- ✓ Studies to define the Waste Acceptance Criteria (WAC);
- ✓ Study of the positive and negative impacts of the Repository in Abadia de Goiás – CRCN-CO;
- ✓ R&D activities to study the different barriers for the disposal system;
- ✓ Lato sensu Course - Specialization in “Radioactive waste management”;
- ✓ Preliminary Business Plan.





# What happened till now?

- ✓ Themes for RD&I activities identified;
- ✓ Establishment of partnerships;
- ✓ Risk management plan;
- ✓ Workshop “Opportunities” with different stakeholders;
- ✓ Public Communication Program.

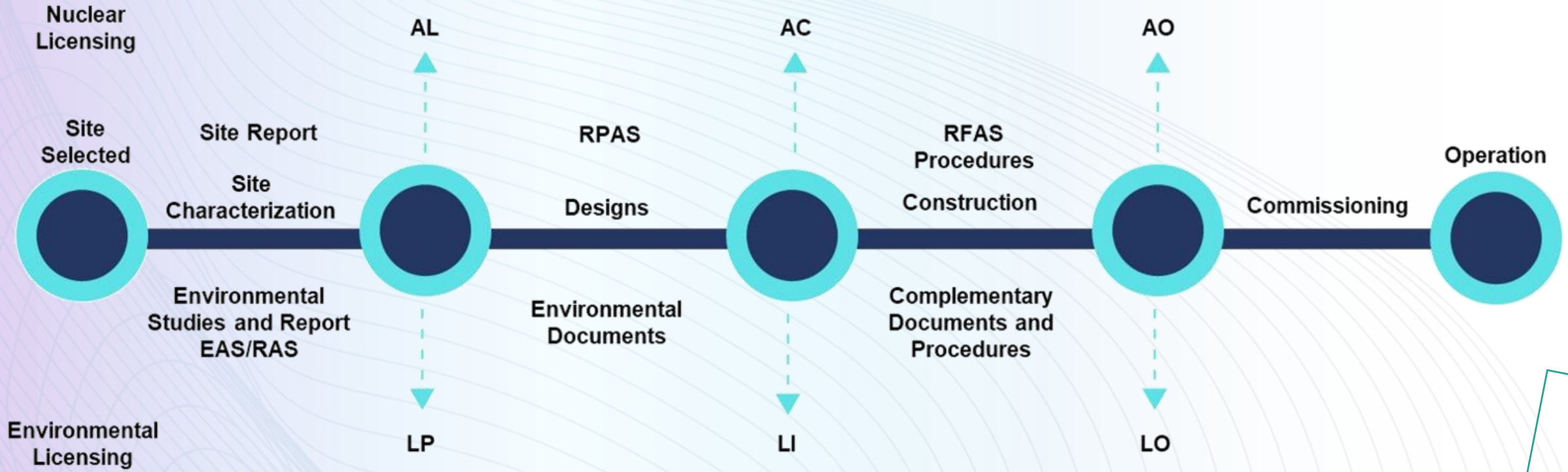


# What comes next?

- ✓ Communication Program for the region;
- ✓ Characterization of the site;
- ✓ Environmental and radiological studies;
- ✓ Site Reports for both Regulators;



# CENTENA Project Status





# Challenges

- The first repository in Brazil to be licensed for several wastes and radionuclides.
- Technical – qualified HR;
- Political – continuous compromise;
- Legal – agreement between the regulators and have acquisitions compatible with the cronogram;
- Financial – budget.

# Challenges

- ✓ The discussion with the stakeholders, especially those from the region where the repository will be installed, will require political negotiations, and certainly hearings, that can affect the schedule.
- ✓ It will be necessary optimize the resources and the time, preserving the quality, in order to give confidence to all stakeholders.





# *Sustainability of Nuclear Area*

- ✓ *The waste management is a key component for achieving the sustainability in the nuclear area.*
- ✓ *Waste life cycle – from generation to disposal.*



# Conclusion

- ✓ The CENTENA Project brings a national solution for the safe storage of radioactive waste (LILW) generated by the use of radioisotopes and nuclear energy in Brazil.
- ✓ Release of interim storage.
- ✓ Safe disposal .





# Stakeholders

- ✓ CDTN: SEGRE, SEAMA, SEENG, SELOG, SEMAV, SENAN, SETEC, SETRE, ASCOM, DIFES (PG e BIC);
- ✓ CNEN, DPD and Institutes;
- ✓ MCTI, SUV, ASPAR;
- ✓ UFMG (LabGEO da EE), FUMEC (LESC);
- ✓ CETEM, FUNDEP, IEBT, AMAZUL, UNB.
- ✓ CNEN, CAPES, CNPq, FAPEMIG - specialization scholarships





**Thanks.**

