INDÚSTRIAS NUCLEARES DO BRASIL
INB

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BRASIL GOVERNO FEDERAL

INB – Indústrias Nucleares do Brasil

Summary

- Organization of Brazil´s Nuclear Estructure

- INB

  - Profile
  - Branches
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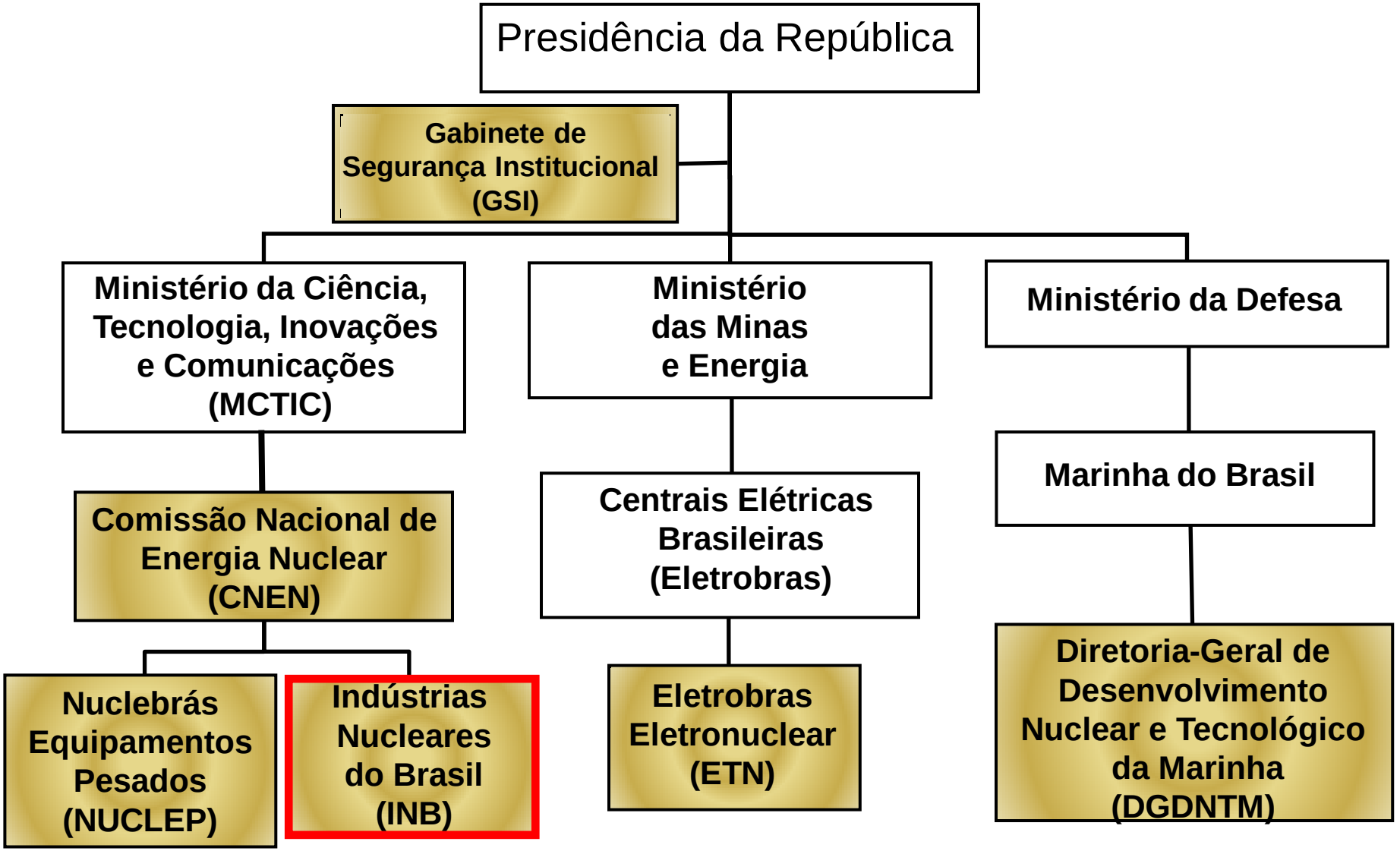
  - Isotopic Enrichment
  - Reconversion
  - UO_2 pellets production
  - Fuel assembly production
  - Fuel Services
  - International partners
  - Long term strategies
  - Vision

Organization of Brazil´s Nuclear Structure



INB - Profile

- State owned
- Created in 1988
- Approx. **1,300** employees
- Annual budget - **US$ 310 Millions**
- Products and Services - **nuclear fuel cycle and heavy minerals processing (federal monopoly)**

NUCLEAR FUEL CYCLE

Mining → Ore extraction and U_3O_8 production

Conversion → U_3O_8 to UF_6

Isotopic Enrichment → UF_6 - Increase U_{235} isotope concentration

Reconversion → UF_6 to UO_2 powder

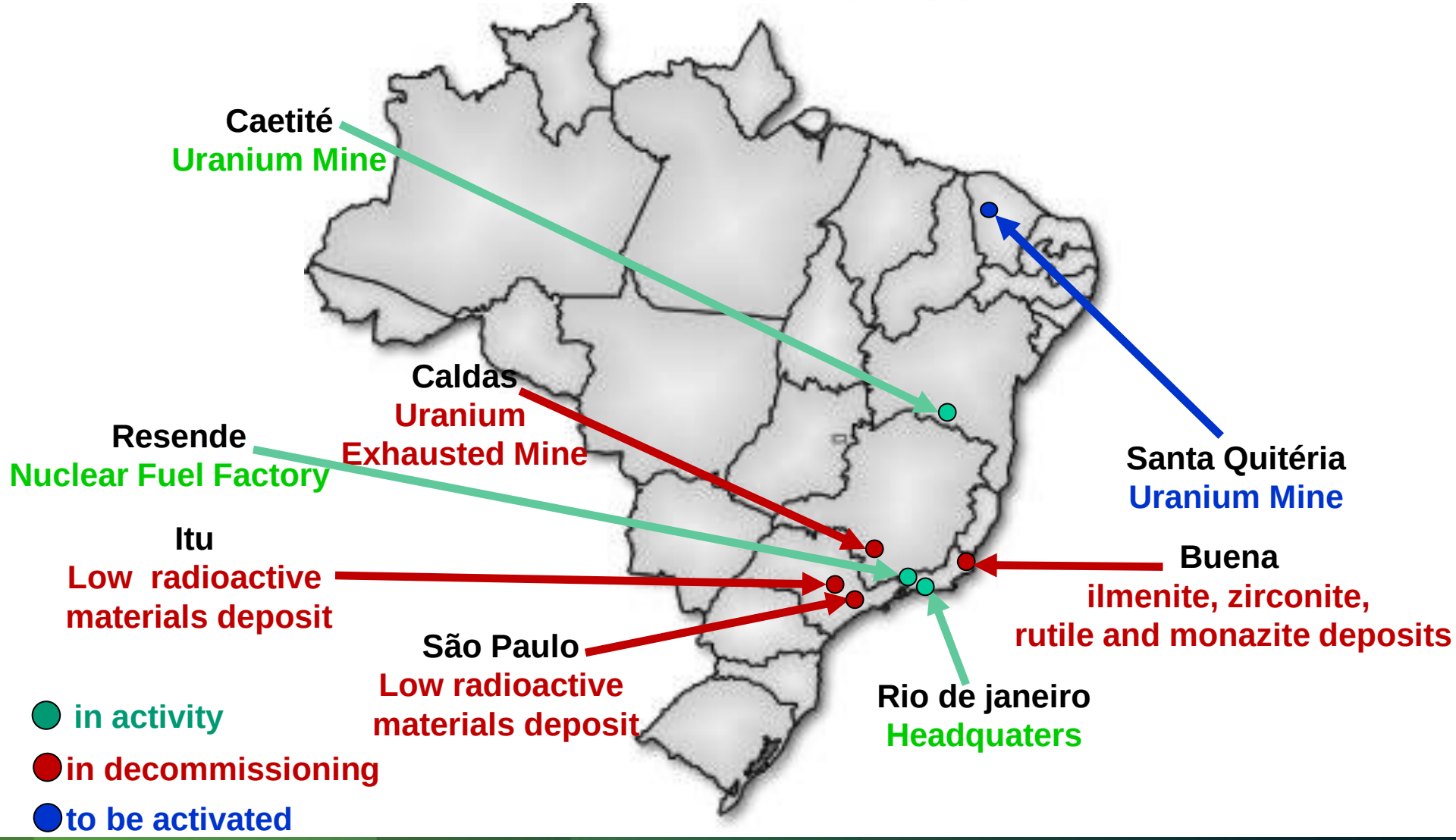
UO_2 Pellets → UO_2 pelletizing

Fuel Assemblies → Components manufacturing and fuel assembling

INB – Mission

Provide products and services associated with the nuclear fuel cycle, for electric energy generation, with safety, quality and sustainability.

INB – Branches



INB – Nuclear Fuel Factory

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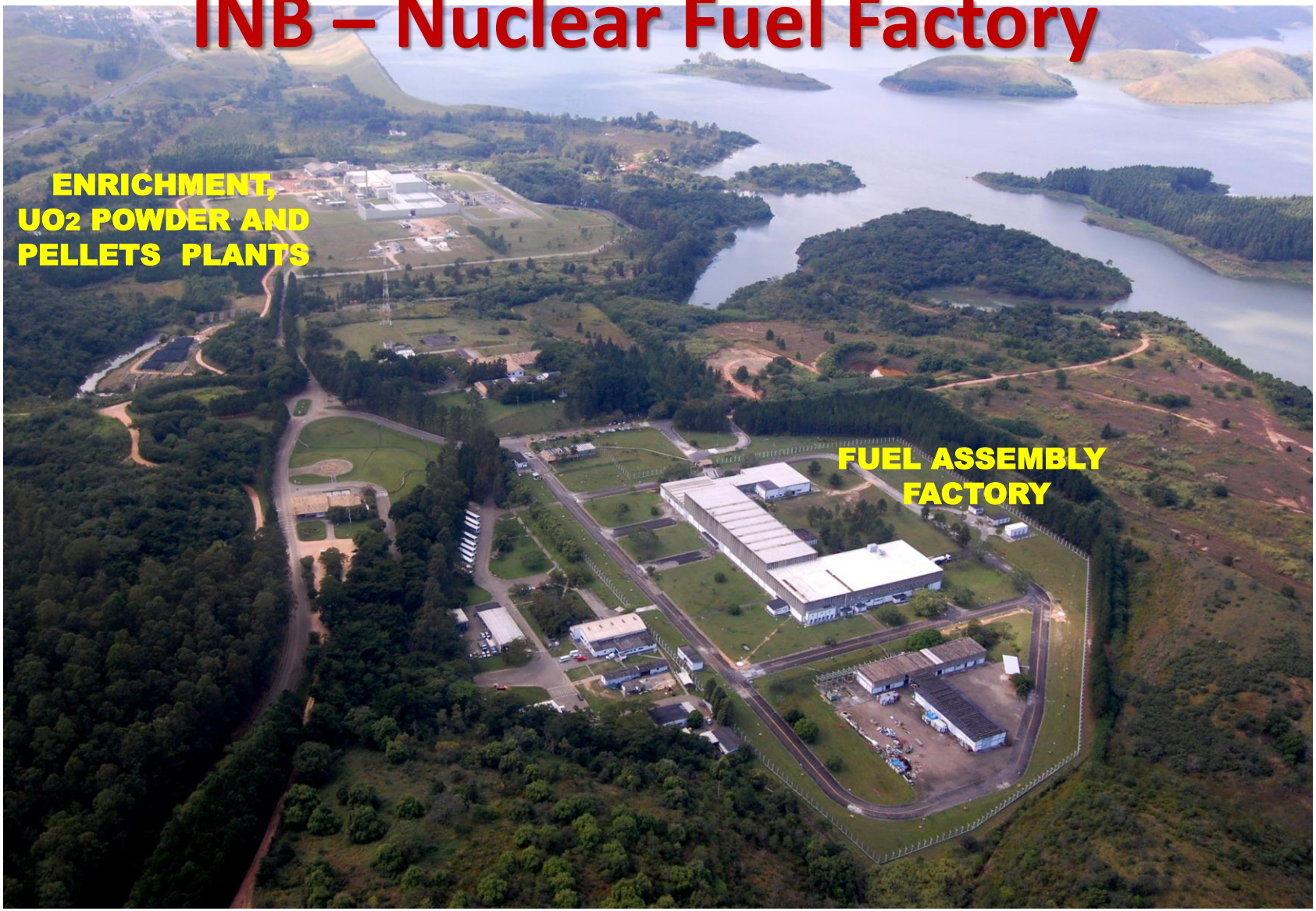

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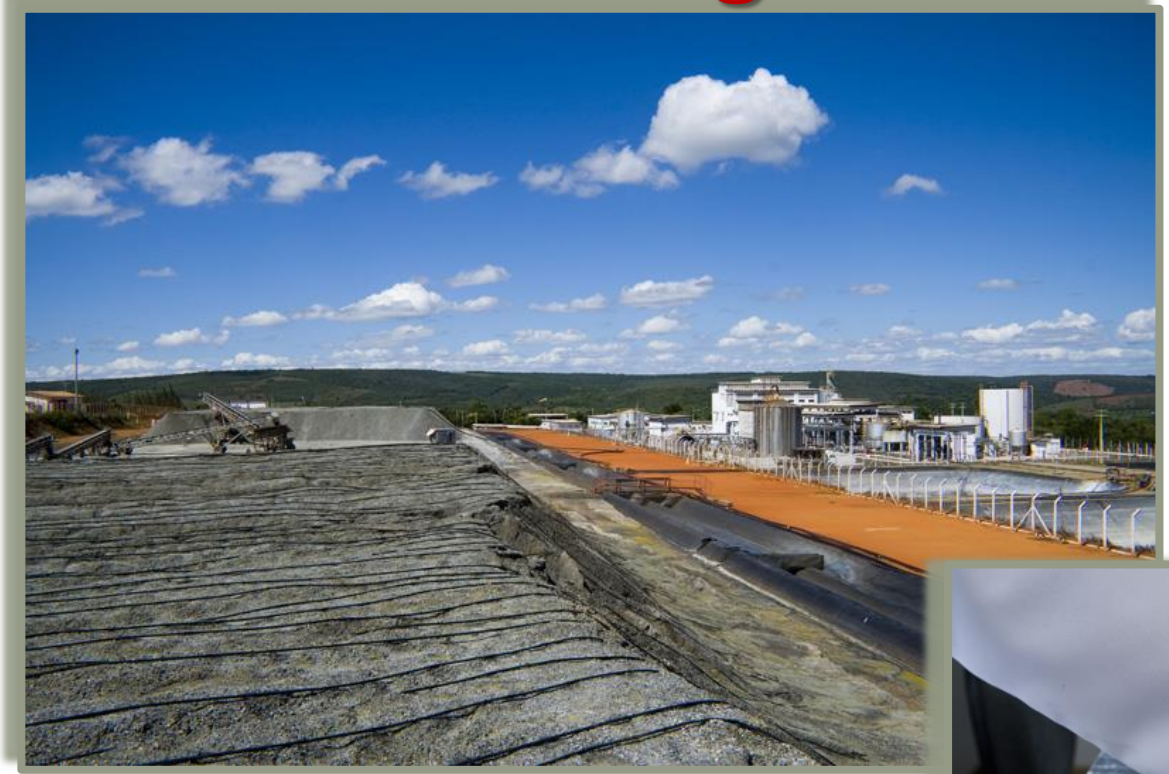
Mining and U_3O_8 Production

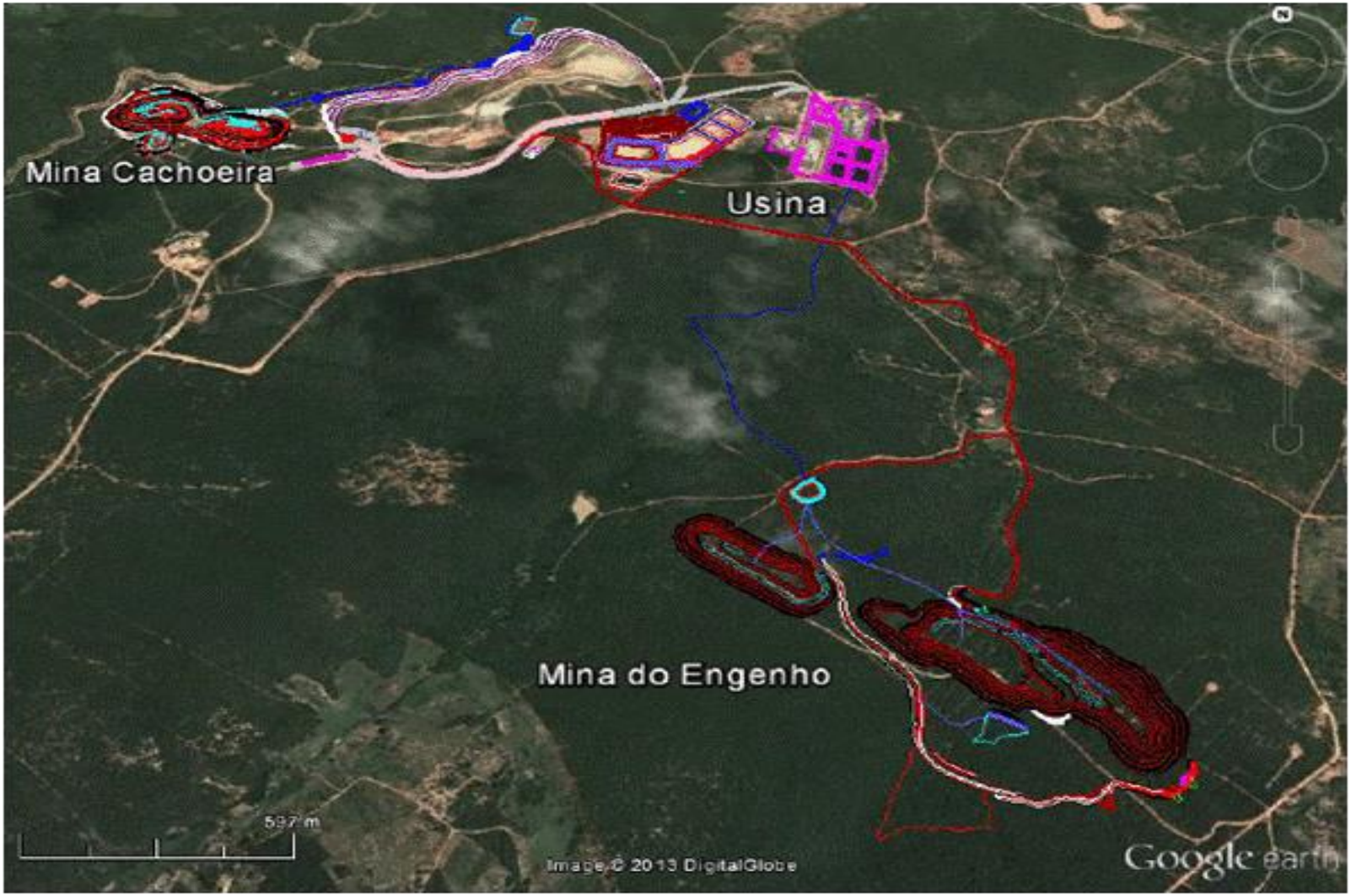
INB – Mining and U_3O_8 production



Capacity - 400 t/yr U_3O_8

Enough to supply Angra 1 and 2

Caetité – Site Overview



Mining Projects

- ✓ Uranium Concentrate Production – Caetité-BA:
  - starting **Engenho Mine** (open sky)
  - starting **Cachoeira Mine** (under ground)
  - increasing the chemical plant capacity up to **800 t** of U_3O_8/yr
- ✓ Santa Quitéria - CE:
  - starting production until 2023 (consortium with a private phosphate producer)
- ✓ researching and prospecting new deposits: **Caetité, Rio Cristalino, Pitinga and Rio Preto**
- ✓ starting associations to allow **funding operations**

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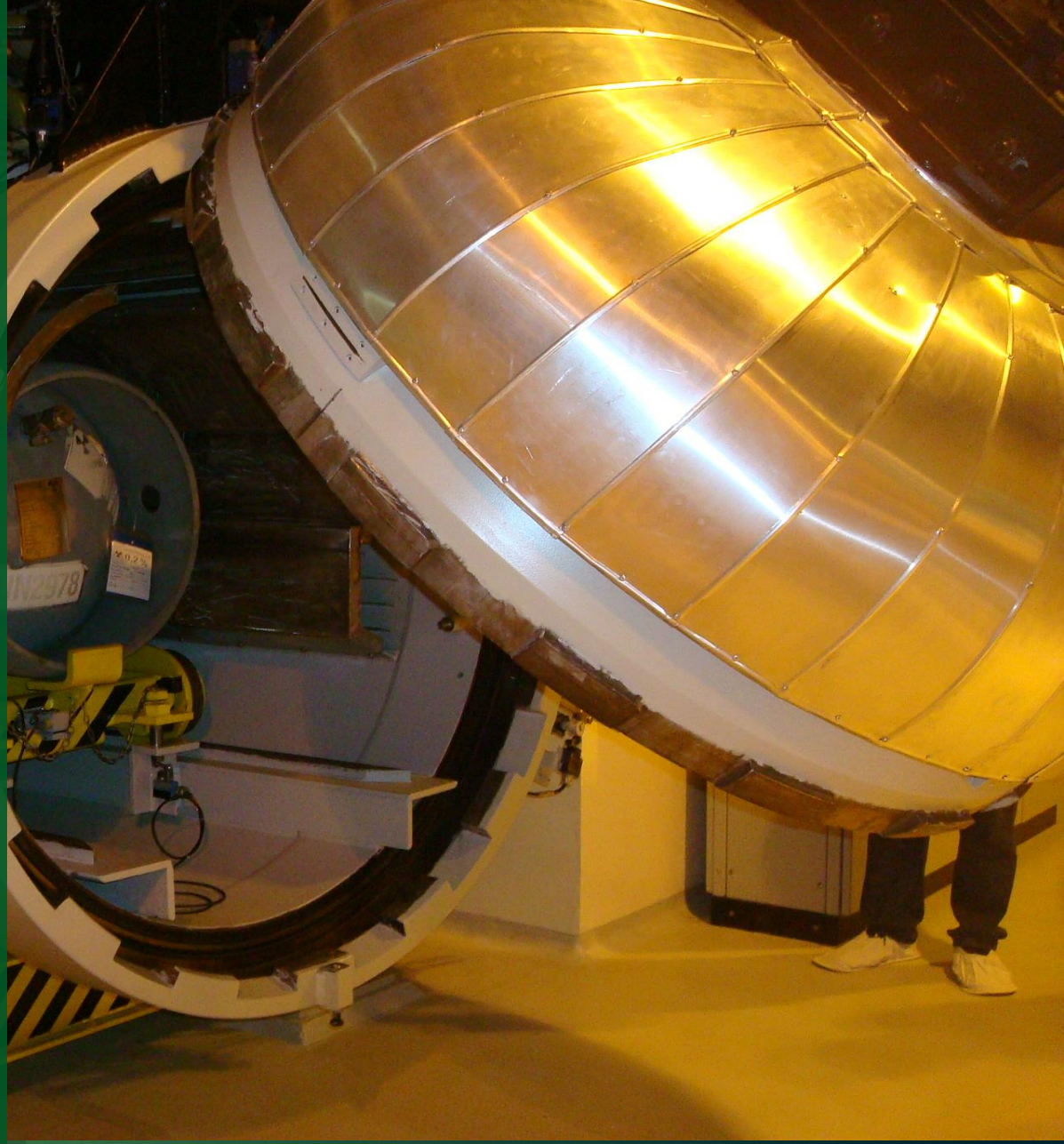
ISOTOPIC ENRICHMENT

ULTRACENTRIFUGATION



INB - ISOTOPIC ENRICHMENT PLANT (RESENDE/RJ)

Isotopic Enrichment Projects

- ✓ continuing the implantation of the Uranium Isotopic Enrichment Plant:
  - **Fase 1 (10 cascades) - 70% Angra1**
    - cascades #1 to 6 in operation
    - cascade #7 comissioning - April 2018
    - cascade #10 comissioning - 2021
  - **Fase 2 (+30 cascades) - 100% Angra 1, 2 e 3**
    - licensing process
    - implantation – to start in 2021

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Reconversion

POWDER PRODUCTION - UO_2

Capacity - 160 t/yr UO_2

Enough to supply – Angra 1, 2 and 3

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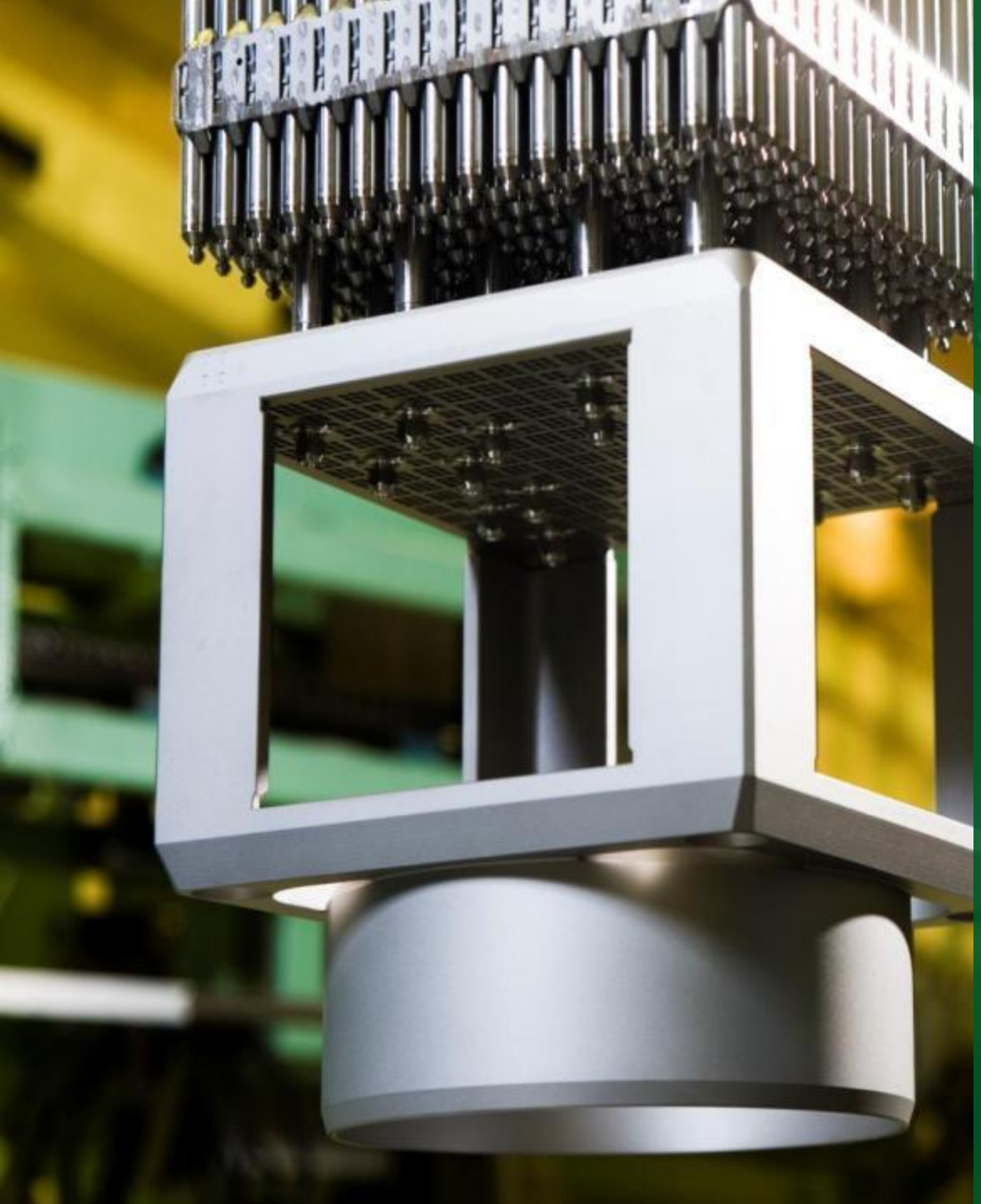
UO_2 pellets production

Pellet Production - UO_2

Capacity - 120 t/yr UO_2

Enough to supply Angra 1, 2 and 3



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Fuel Assembly Production

FUEL ASSEMBLY PRODUCTION

Capacity - 240 t/yr uranium

Enough to supply Angra 1, 2 and 3

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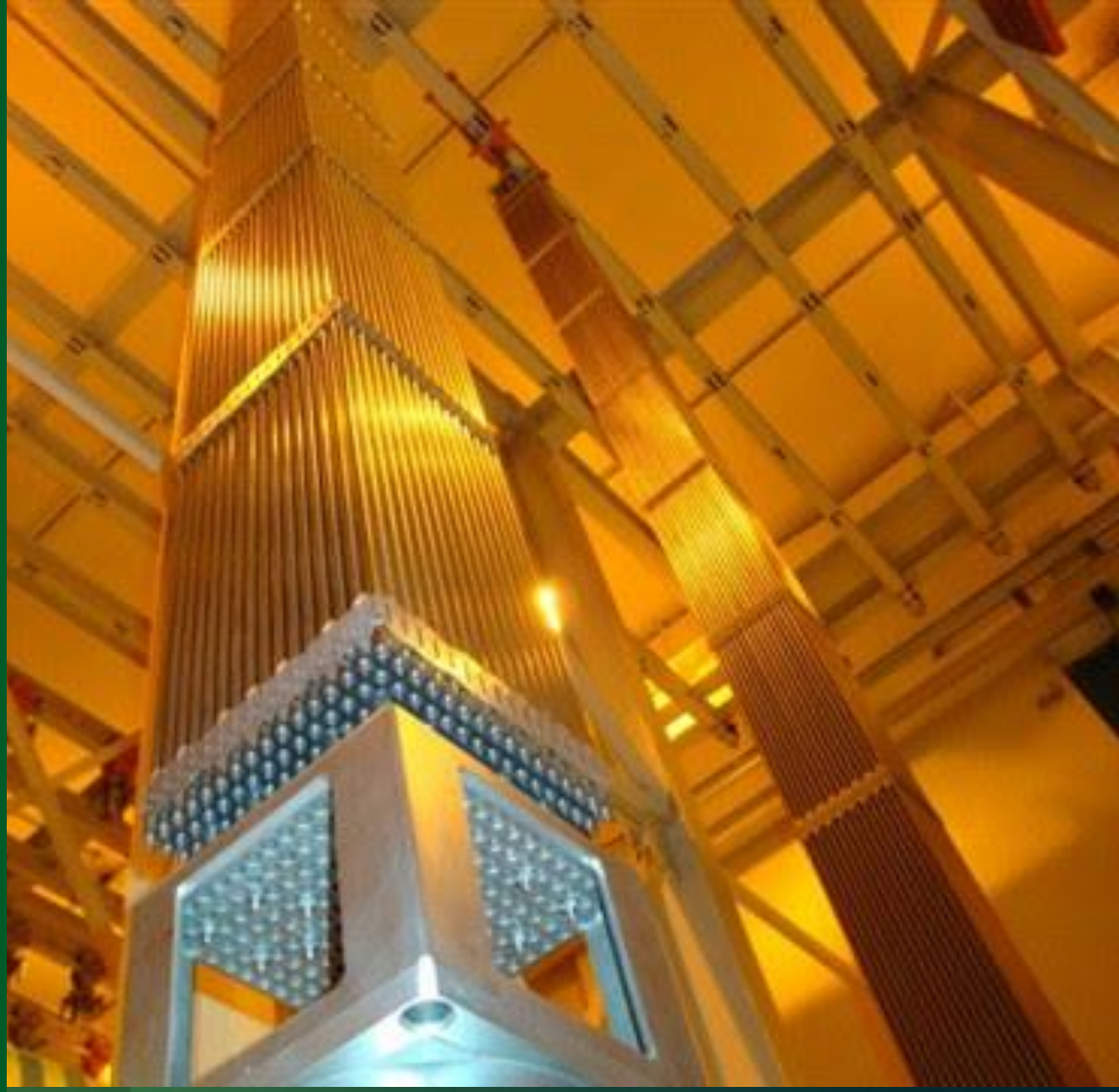
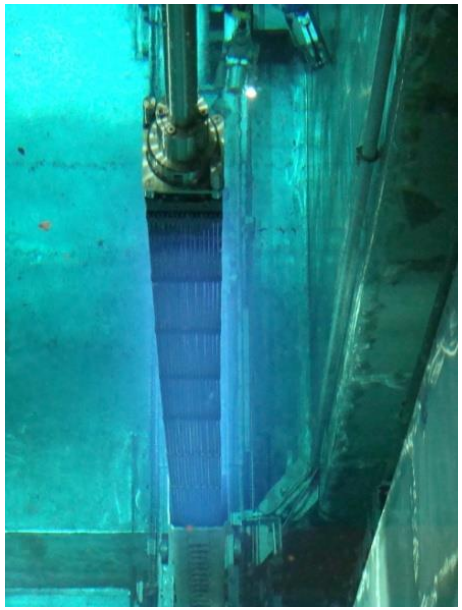
Fuel Services



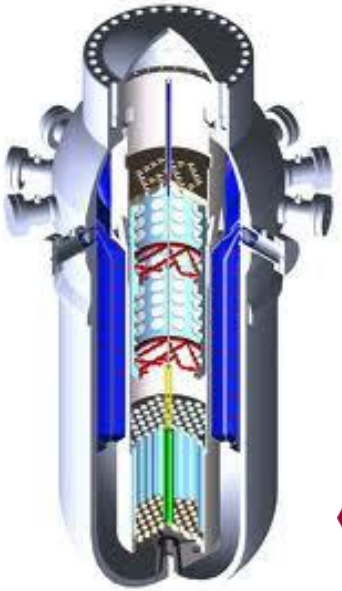
Fuel Services

- Fuel handling
- Core load and unload
- Inspections and repair services
- Reactor floor services

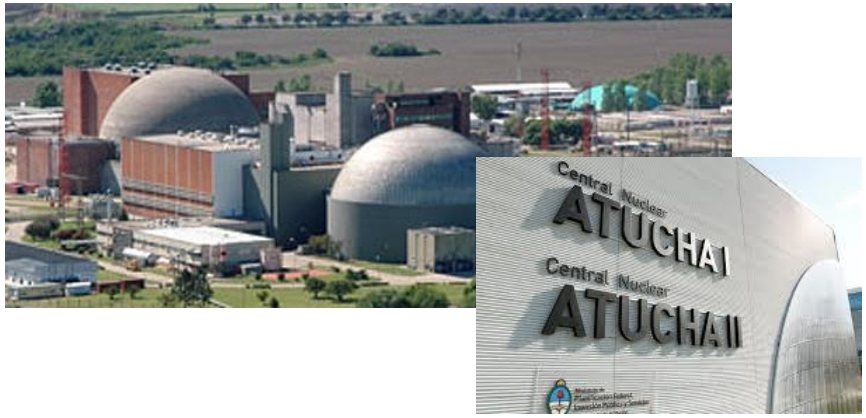


INB - International Partners

- enriched UO_2 powder to reactors in Argentina
- enriched UO_2 for nuclear fuel of research reactors



CAREM



INB – Long Term Strategies

Short Term
(Next 12 months)

- ✓ restarting yellowcake (U_3O_8) production.
- ✓ improving costs structure.
- ✓ increasing Human Resource Capacitation/ and manpower availability.
- ✓ increasing isotopic uranium enrichment plant.
- ✓ exploring partnerships and associations.

Basis for Growth
(2-4 years)

- ✓ increasing isotopic enrichment plant.
- ✓ applying plan for exploitation of known reserves.
- ✓ applying plan for selling yellowcake (U_3O_8) surplus
- ✓ increasing research and prospection.

Vision of Future
(5-20 years)

- ✓ to be economically sustainable**.**
- ✓ producing +2,000 t/yr. of yellowcake (U_3O_8).
- ✓ to be an exporter of uranium products and services.
- ✓ to be self-sufficient in isotopic uranium enrichment services.

INB – Vision 2026

To be recognized as a supplier in the uranium international market, with excellence in business management, and looking for self-sufficiency and sustainability.

Thank you !

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