

**INTERNATIONAL CONFERENCE ON HUMAN RESOURCES DEVELOPMENT FOR INTRODUCING  
AND EXPANDING NUCLEAR POWER PROGRAMMES**

# **ROLE OF IAEA IN KNOWLEDGE TRANSFER**

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# ARGENTINA NUCLEAR BACKGROUND

- ✓ 1958: RA-1 Research Reactor (built & designed by Argentinean)
- ✓ At present (5 RRs in operation):
  - ✓ Two NPPs in operation
    - ✓ Atucha 1 (1974)
    - ✓ Central Nuclear de Embalse (1984)
  - ✓ Two NPPs under construction
    - ✓ Atucha 2 (commercial operation in 2011)
    - ✓ CAREM Prototype (expected in operation in 2015)



RA-1 Reactor



CNE







# ARGENTINA HUMAN RESOURCES

- ✓ 1955 Instituto Balseiro (Physics Career; undergraduate and PhD)
  - ✓ 1977 Nuclear Engineering Career (*unique in Latin America*)
    - ✓ undergraduate
    - ✓ Master in Nuclear Engineering
    - ✓ PhD in Nuclear Engineering
- ✓ CNEA → at present 3 Institutes:
  - ✓ Instituto Balseiro (Physics, Mechanical and Nuclear Engineering)
  - ✓ Instituto Sabato (Material Science & Technology)
  - ✓ Instituto Beninson (Specialization Courses for Nuclear Facility Operators)



# IAEA ROLE

- ✓ **IAEA** → Bridge between nuclear countries and newcomers (e.g. UN Funding)
- ✓ **IAEA** → Provide experts as lecturers (on the 70s)
- ✓ **IAEA** Fellowships → Nuclear Engineers → PhD abroad (on the 70s and 80s)
- ✓ At present → **IAEA** fellowships
  - ✓ Latin-American professional going to Argentina
    - ✓ Master
    - ✓ PhD

# THANKS TO THE IAEA SUPPORT

Argentina has capability to design and build Nuclear Facilities; e.g.

Research Reactors:

- ✓ Argentina
- ✓ Peru
- ✓ Algeria
- ✓ Egypt
- ✓ Australia
- ✓ (other nuclear facilities)

**AUSTRALIAN  
OPAL REACTOR**





# INSTITUTO BALSEIRO IAEA COLLABORATION CENTRE

*AREA: HUMAN RESOURCES FOR  
THE NUCLEAR TECHNOLOGY*

**IAEA Designation: August 2008**



*Atoms for Peace: The First Half Century  
1957-2007*

## **PRESENT IAEA ROLE**

**Support to:**

- ✓ **IAEA fellowships to Latin-American students**
- ✓ **Workshops, courses, conferences, etc.**
- ✓ **Latin America Regional Network (KM)**
- ✓ **Regional Training Centers**

**How to improve IAEA role?**

**..... Just increase its allocate budget**



# THANK YOU!



Handwritten equations and notes on a chalkboard:

- Left side:
  - $\rho_{osc} = \frac{q}{4\pi\epsilon_0 r^2}$
  - $E = E_0 e^{i\omega t}$
  - $P = \epsilon E$
  - $J = \sigma \cdot E$
- Center:
  - $J = \frac{\sigma}{(\omega - \frac{\gamma}{2})} E$
  - $J = \frac{q}{4\pi\epsilon_0 r^2} E$
  - $J = \frac{q}{4\pi\epsilon_0 r^2} E$
  - $J = \frac{q}{4\pi\epsilon_0 r^2} E$
- Right side:
  - Molecular
  - Iónica
  - covalente
  - Metálica
- Bottom right:
  - $P = P_0 + \bar{P}$
  - $\frac{\partial P}{\partial E} = -\frac{q}{\omega}$

Knowledge management is the key factor in the long-term success of any technological project