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# ***HUMAN RESOURCE DEVELOPMENT FOR AN INNOVATIVE NUCLEAR PROGRAM IN AN EMERGING COUNTRY***

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**CNEN**  
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**de Energia Nuclear**

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# An Innovative Nuclear Power Program

(a variant to IAEA's approach for infrastructure development)

Key Concept: **TRANSFER OF TECHNOLOGY**

Science (knowledge)  
**may be** transferred



***BUT***

Technology **is not** transferable,  
**Technology is developed.**



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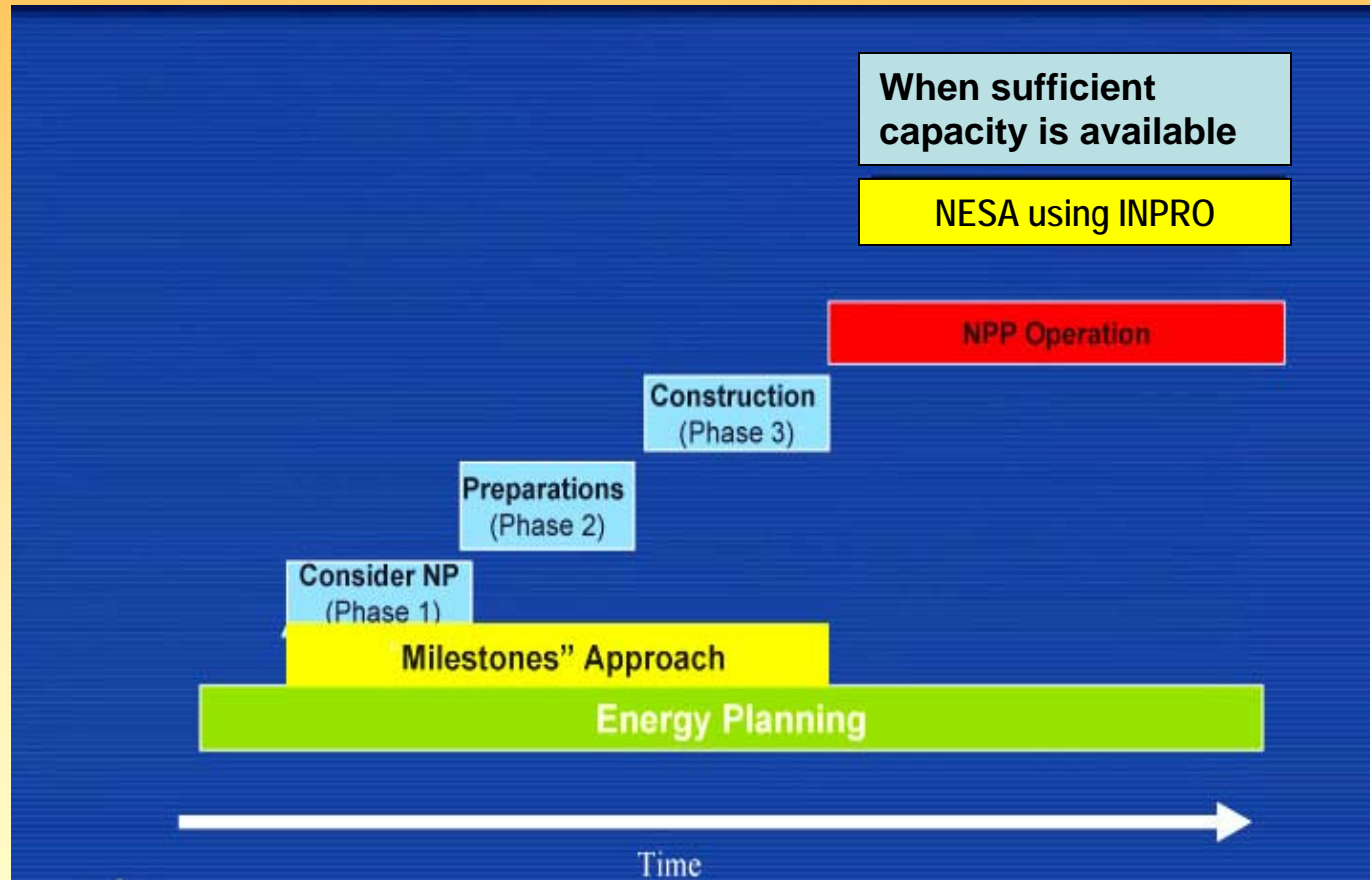
## Key Concept: TECHNOLOGICAL CAPACITY BUILDING

Technological capacity building **is enhanced** by an **effective participation** in the **development** of an **innovative** nuclear reactor

(i.e. a reactor that contributes to **sustainable** energy development - Gen.IV International Forum and the INPRO project / IAEA).

# IAEA's approach for infrastructure development

(WS on Tools for NESAs for LT Planning & Development - IAEA, 20-23 July, 2009)

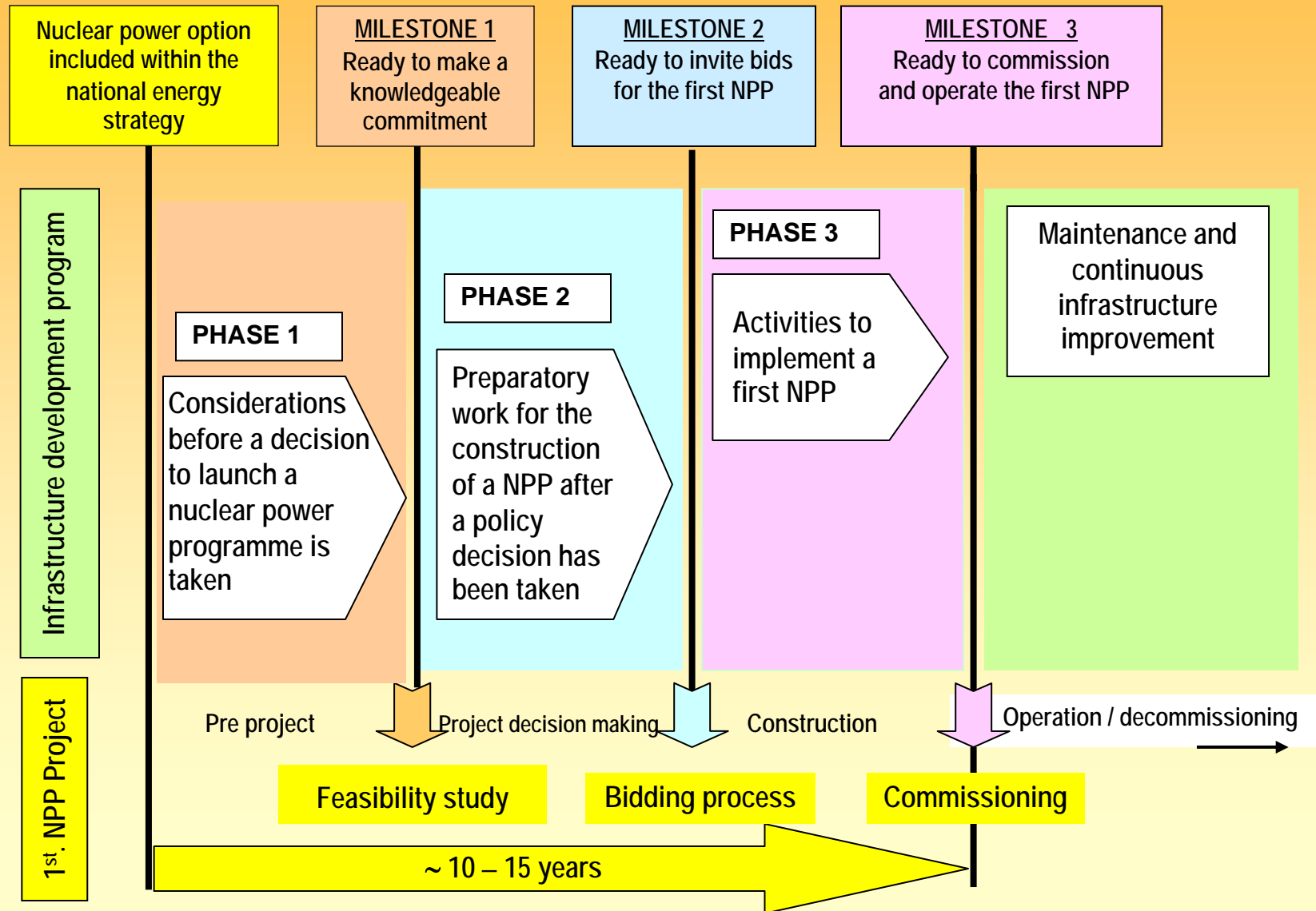


“Milestone Document” - NG-G-3.1, published in 2007

NESA - Nuclear Energy System Assessment

INPRO - International Project on Innovative Nuclear Reactors and Fuel Cycles

# IAEA's Milestone approach



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## Key concepts:

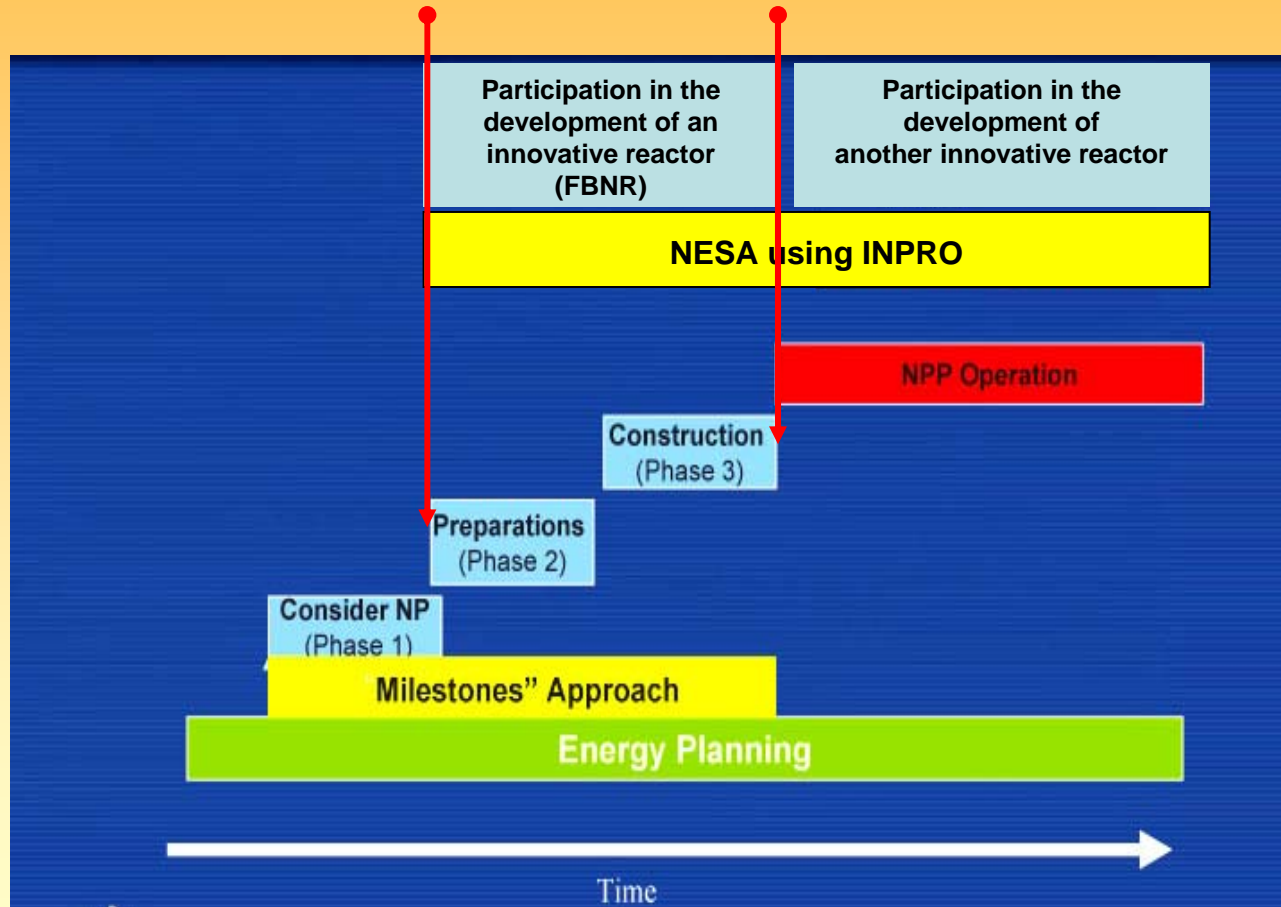
- **Technology** is not transferable but **developed**,
- Work on the development of an innovative nuclear reactor **enhances** human resource capacity building.

## Distinctive features:

- Development of R&D capabilities **in parallel** with the development of nuclear infrastructure, and
- **Early participation** in the **development of an innovative nuclear reactor** (e.g., Fixed Bed Nuclear Reactor, FBNR).

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(a variant to IAEA's approach for infrastructure development)



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## Guidelines for establishing a HR development program

- Develop training courses in **INPRO assessment methodology**,
- Get involved in the R&D of **non-nuclear components** of an innovative nuclear reactor concept of national interest,
- Develop training courses in-house & **abroad on nuclear engineering** to qualify technicians, engineers and other professionals, in order to build a minimum human resource capability,
- Get involved in the **R&D of nuclear components** of the innovative nuclear reactor concept of interest as soon as the minimum nuclear infrastructure, **including human resources**, is available.



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# FBNR Nuclear Reactor for Developing Countries

An innovative small, simple in design, inherently safe and  
environmental friendly reactor

Farhang Sefidvash

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