New Nuclear Power Programmes

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How to start a nuclear programme?

- The nuclear power option emerges...
  - Political leader makes an announcement
  - Energy planners identify the option in the mix
  - Policy makers see potential benefits
- And then what???
Forming a National Position

Must address these core issues:

- How do I start?
- Can I get the people?
- Can I find the money?
- Is there public support?
- What am I going to do with the waste?
- Is there suitable technology?
- Can I manage if there is an accident?
“Newcomers” facing challenges
Milestones approach to launching a nuclear power program

• Based on international experience
• Comprehensive and holistic (19 issues)
• Phased (3 Phases)
Phased Approach to Nuclear Power

Considerations before decision to launch
Prep work for construction
Construction
Operation
Decommissioning

Considerations to Launch a Nuclear Power Programme

IAEA Safety Standards
Fundamental Safety Principles

IAEA Nuclear Energy Series
Milestones in the Development of a National Infrastructure for Nuclear Power

Handbook on Nuclear Law

Establishing a National Nuclear Installation Safety Infrastructure
Milestones in the Development of a National Infrastructure for Nuclear Power (NG-G-3.1)

NUCLEAR INFRASTRUCTURE DEVELOPMENT PROGRAMME

**MILESTONE 1**
Ready to make a knowledgeable commitment to a nuclear programme

**MILESTONE 2**
Ready to invite bids for the first nuclear power plant

**MILESTONE 3**
Ready to commission and operate the first nuclear power plant

**PHASE 1**
Considerations before a decision to launch a nuclear power programme is taken

**PHASE 2**
Preparatory work for the construction of a nuclear power plant after a policy decision has been taken

**PHASE 3**
Activities to implement a first nuclear power plant

**OPERATION OF THE FIRST NUCLEAR POWER PLANT**
Institutions and Organisations provide Legislation and Regulations under which Industry develops technology, provides facilities and uses education and science to train staff to enable society to be confident that the nuclear industry can operate Safely, Securely and Economically.
Nuclear Infrastructure

Decision Makers (Government/Utilities)

Requirements

Arrangements

International Components

Nuclear Infrastructure

Technical Community (Institutions, Universities, Industry, Research Centres)

Technology
What’s important?

A nuclear power program must be:

- Comprehensive – many stakeholders
- Integrated – coordinated planning
- Government Commitment – essential to long-term sustainability
I'd rather manage a nuclear infrastructure development project.

The daydreams of cat herders
National Position

• Factors for success:
  • Consensus across the political spectrum
  • Translating nuclear power into social values
  • Connecting the technical community to the bureaucrats and politicians
  • Communicating with the public
  • Clear policy at the beginning forms foundation for future decisions
Human Resources

- How did they manage?
Vendor consortium participates in ownership and operation of the plant.
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Which ones are important to SMRs…ALL OF THEM!!
INPRO and Milestones approach

- **Milestones** involves **near-term decisions** that must be made by government ministries and related organizations (within 15-20 years)

- **INPRO/NESA** – Nuclear Energy System Analysis involves considering innovative approaches or enhancements to existing nuclear energy programs and to plan for **long-term sustainability** of a MS Nuclear Energy System (within 50-100 years)
STRUCTURE OF THE USER CONSIDERATIONS

2 Infrastructure and implementation
  2.1 Type of contract 1
  2.2 Local infrastructure 2
  2.3 Licensing and regulatory functions 4
  2.4 Electrical grid infrastructure 2
  2.5 Assurance of fuel supply 5
  2.6 Assurance of critical materials and components 3
  2.7 Local participation 2
  2.8 Technology transfer 3
  2.9 Human resource development 2
  2.10 Development of industrial infrastructure
Why are we here today??

- INPRO…considering innovative approaches or enhancements to existing nuclear energy programs
- Look at Infrastructure issues and phased approach and ask: **HOW CAN SMRs HELP ADDRESS THIS??**
- Remember that the need for extensive infrastructure for nuclear power is in part based on the need for **safety, security, and non-proliferation**…**CAN SMRs HELP REDUCE THE RISKS ASSOCIATED WITH THESE KEY ISSUES??**
- Can SMRs really reduce the infrastructure needed? How?
- Must be realistic and understand that some wishes may be in direct contradiction (i.e., turnkey/ technology transfer)
- Remember that user’s **wants** and **needs** are not the same!!
- Member states must become a Knowledgeable Customer in order to effectively deal internationally, with consultants, and with vendors
Thank you for your attention...

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...atoms for peace.