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Joint ICTP-IAEA School of Nuclear Energy Management

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Milestone Approach to Develop a National Nuclear Power Programme

Anne Starz
IAEA, Vienna
Austria

Strada Costiera 11, 34151 Trieste, Italy - Tel.+39 040 2240 111; Fax +39 040 224 163 - sci_info@ictp.it

New Nuclear Power Programmes

Anne Starz

Nuclear Energy Department

IAEA

International Atomic Energy Agency

Countries looking to nuclear to meet increased energy demand

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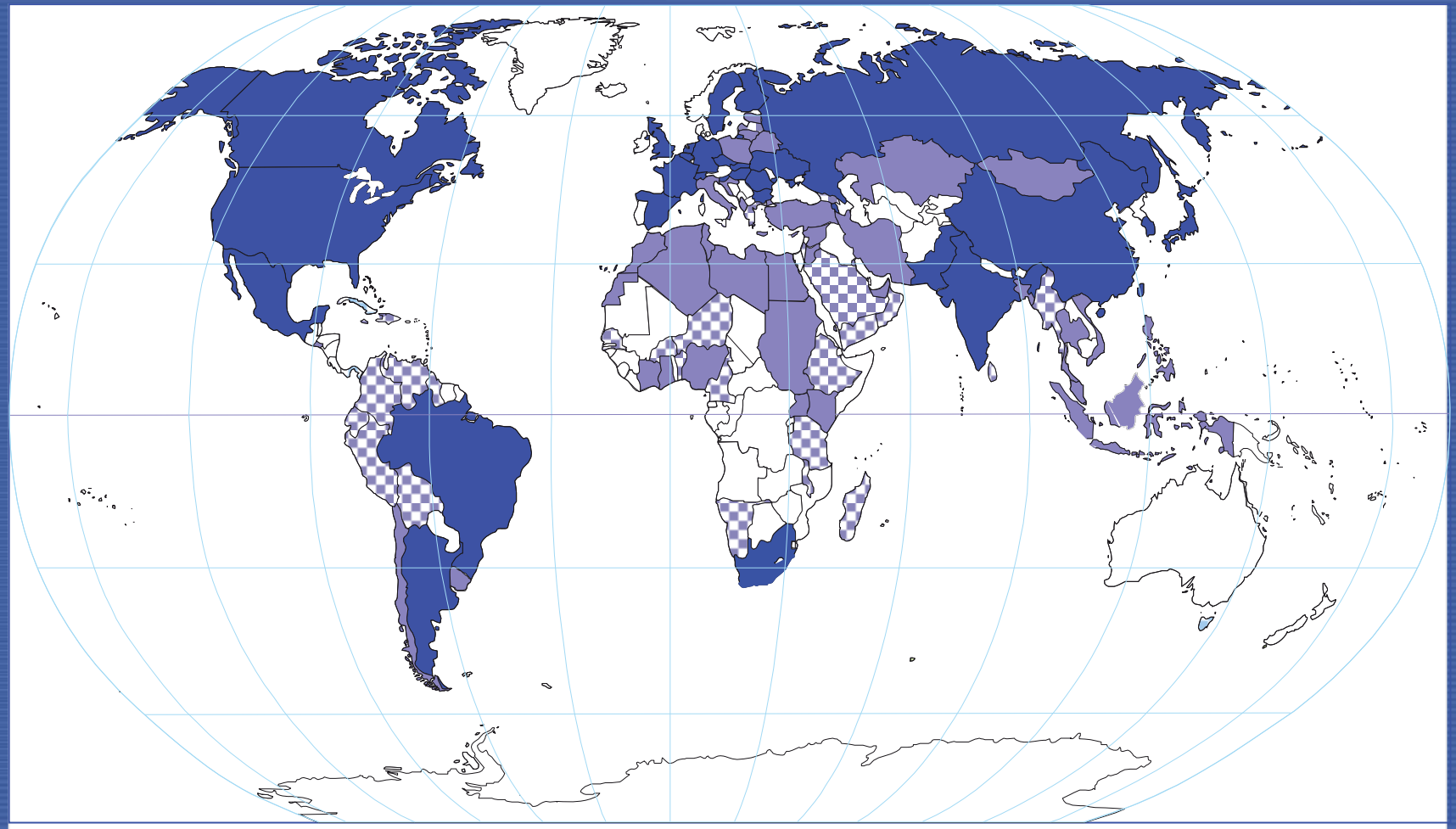
Nuclear power in the world - 2010



29 countries with operating reactors

34 Countries considering or planning nuclear power

31 Countries expressing interest in nuclear power

Planning for new programmes 2010

Description	Number in 2008	Number in 2010
Not planning to introduce nuclear power plants, but interested in considering the issues associated with a nuclear power programme	16	31
Considering a nuclear programme to meet identified energy needs with a strong indication of intention to proceed	14	14
Active preparation for a possible nuclear power programme with no final decision	7	7
Decided to introduce nuclear power and started preparing the appropriate infrastructure	4	10
Invitation to bid to supply a nuclear power plant prepared	1	
New nuclear power plant ordered		2
New nuclear power plant under construction	1	1
Total	**51**	**65**

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Post-Fukushima?

A few countries have said in the press that they are no longer considering nuclear. Other countries may review plans, slow down decisions. Several countries proceeding with plans and taking lessons in stride.

Drivers for consideration of nuclear have not changed:

- Increased demand for energy
- Energy independence
- Volatile fossil fuel prices
- Climate change

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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???*

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Newcomers' Top 5 Issues

- How do I start?
- Do I have the people?
- Can I find the money?

- How am I going to get public support?
- What am I going to do with the waste?

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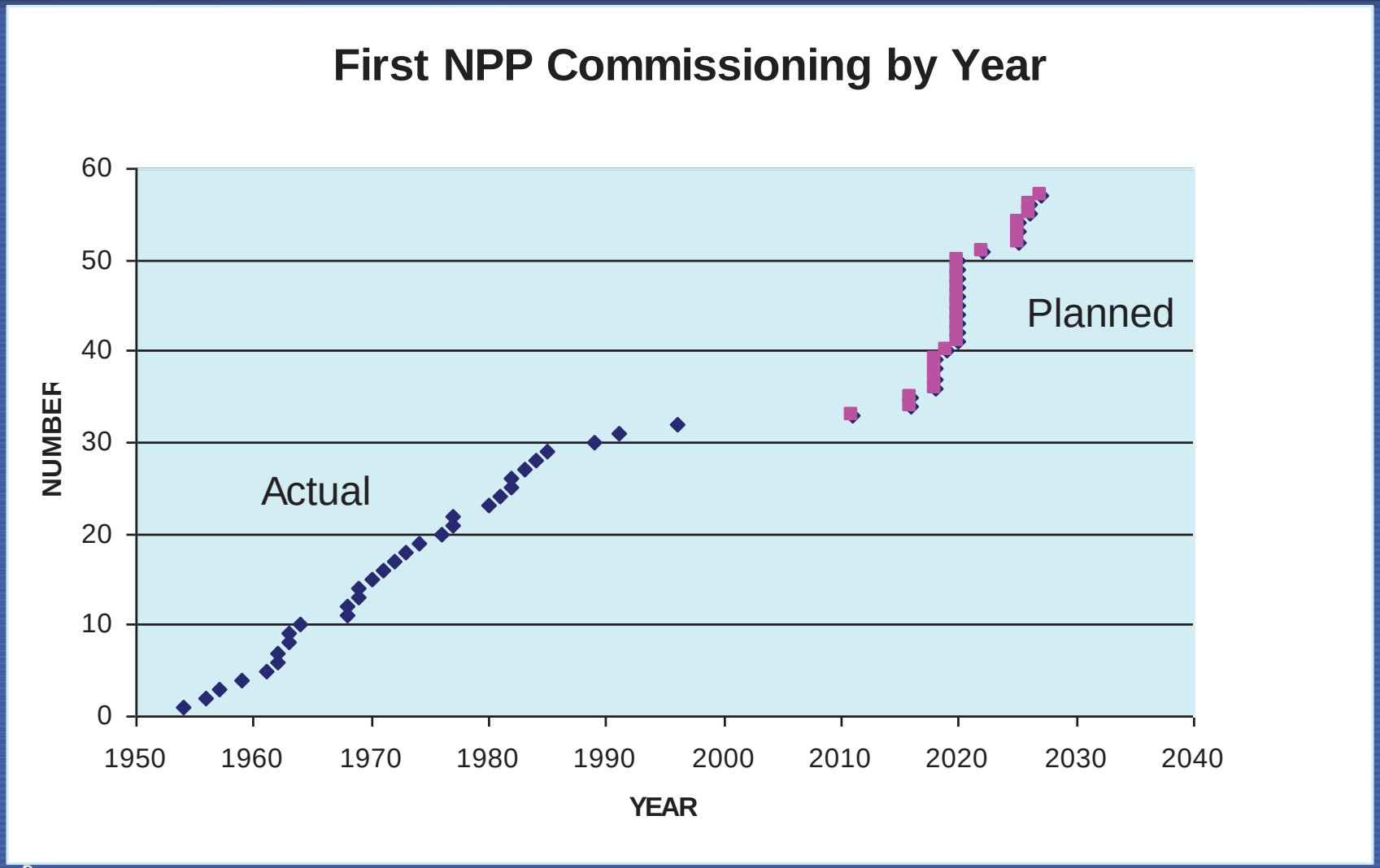
“Newcomers” facing different challenges than countries faced in previous decades



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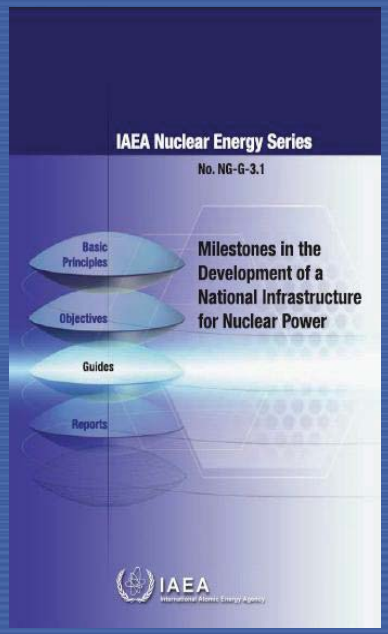
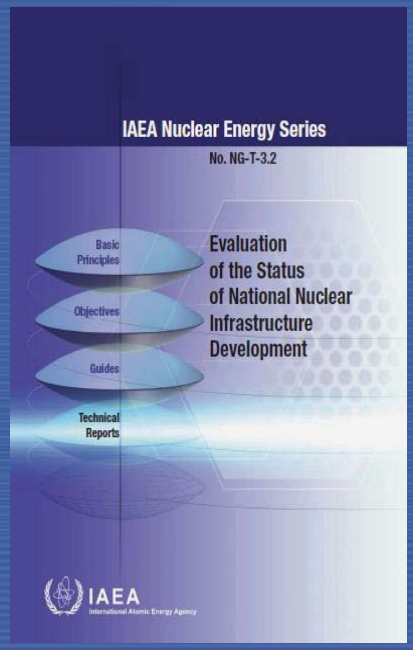
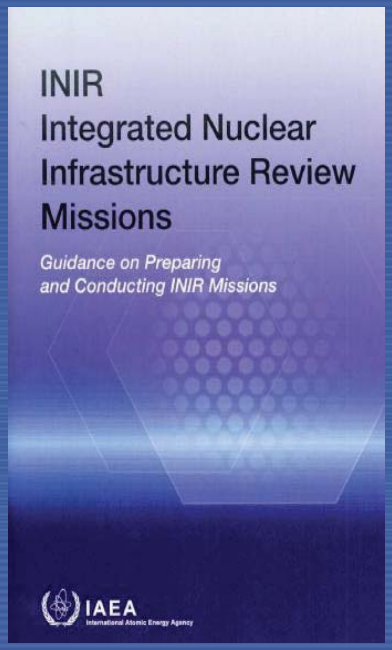
Milestones approach to launching nuclear power

- Based on international experience
- Comprehensive and holistic (19 issues)
- Phased (3 Phases)







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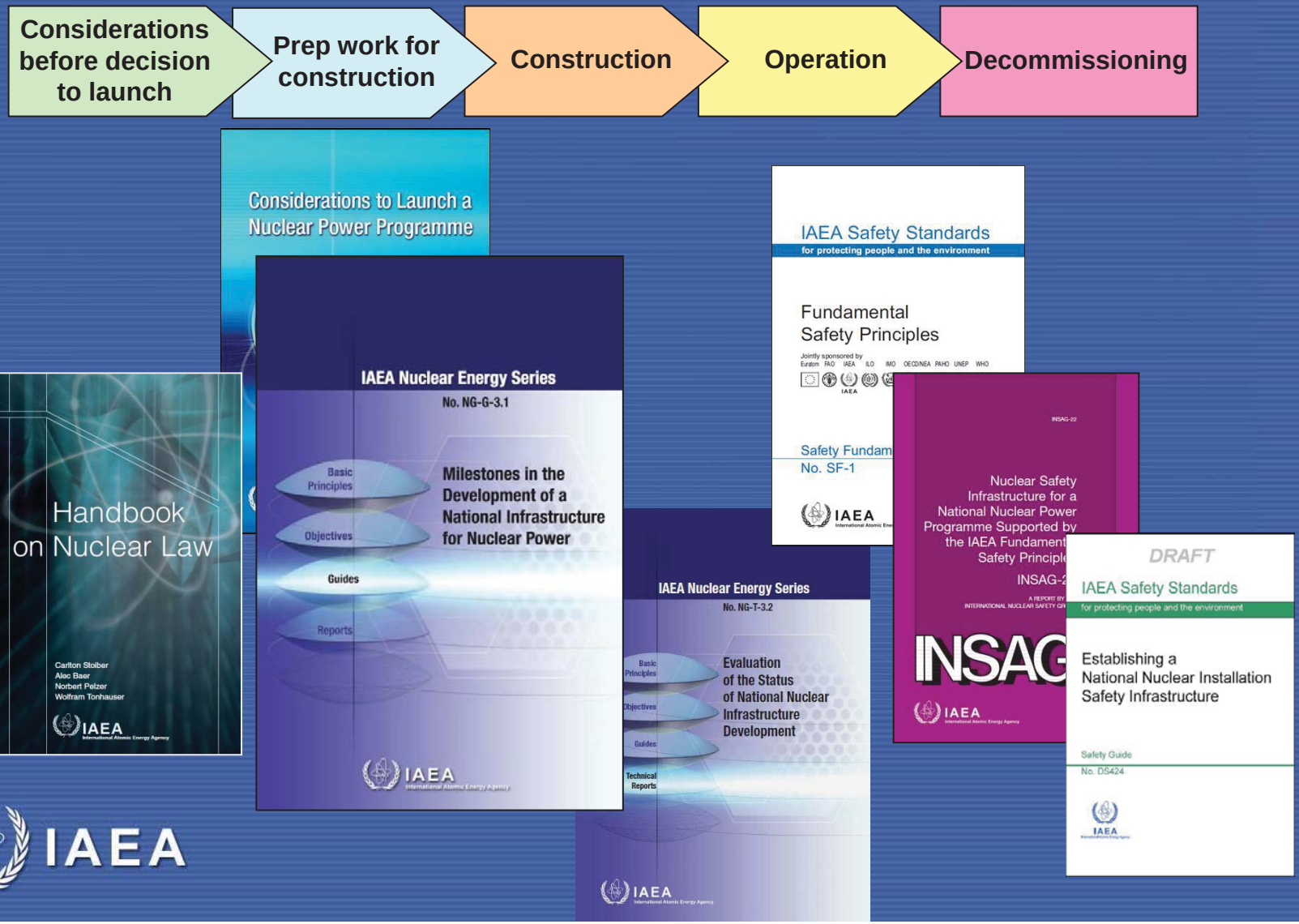
Phased Approach to Nuclear Power



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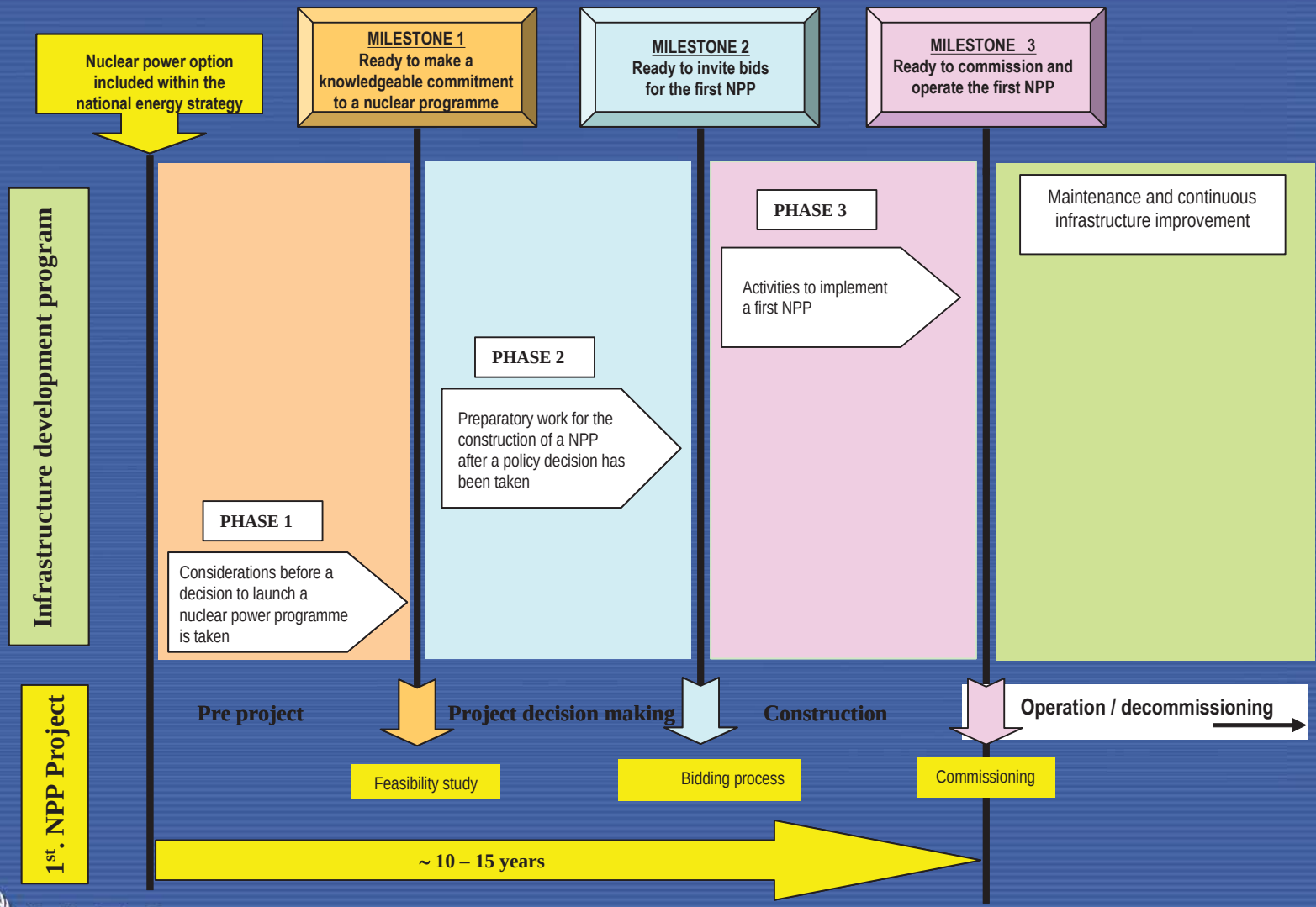
Milestones in the Development of a National Infrastructure for Nuclear Power (NG-G-3.1)



Nuclear Infrastructure

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

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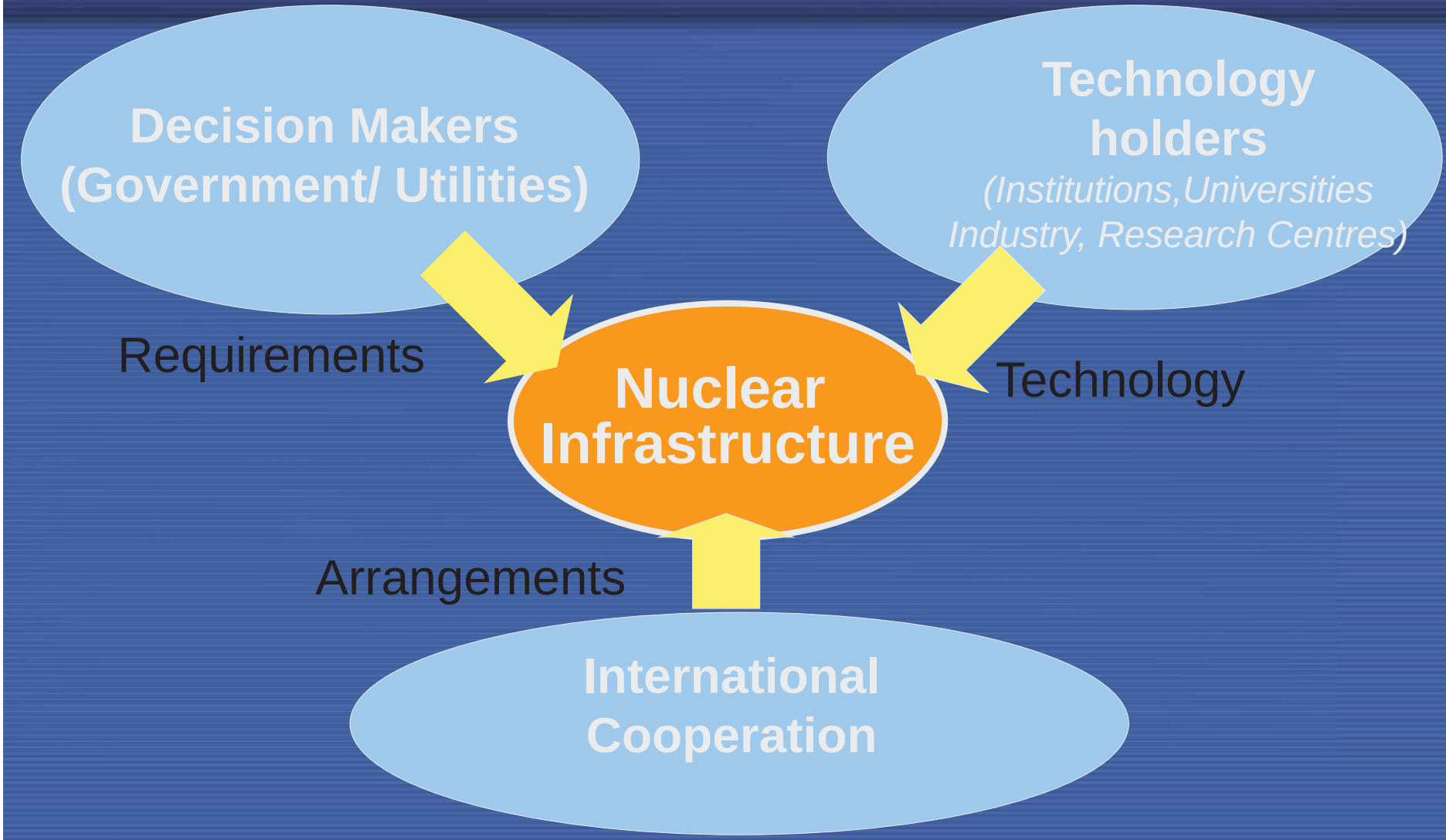
Nuclear Infrastructure



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

- National position
- Nuclear safety
- Management
- Funding and financing
- Legislative framework
- Safeguards
- Regulatory framework
- Radiation protection
- Electrical grid
- Human resources development
- Stakeholder involvement
- Site and supporting facilities
- Environmental protection
- Emergency planning
- Security and physical protection
- Nuclear fuel cycle
- Radioactive waste
- Industrial involvement
- Procurement

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What's important?

- Comprehensive – many stakeholders
- Integrated – coordinated planning
- Government Commitment – essential to long-term sustainability

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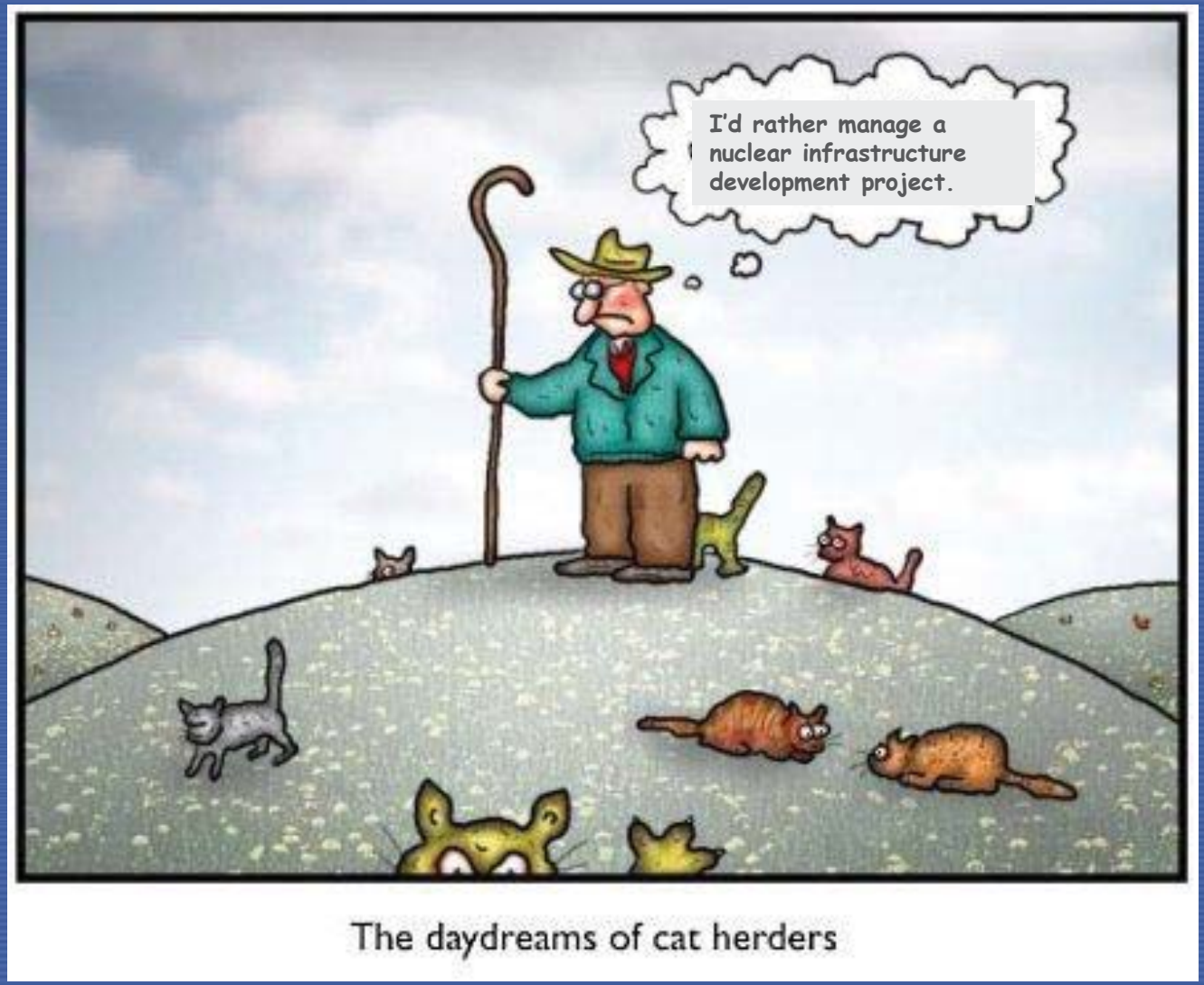
National Position



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

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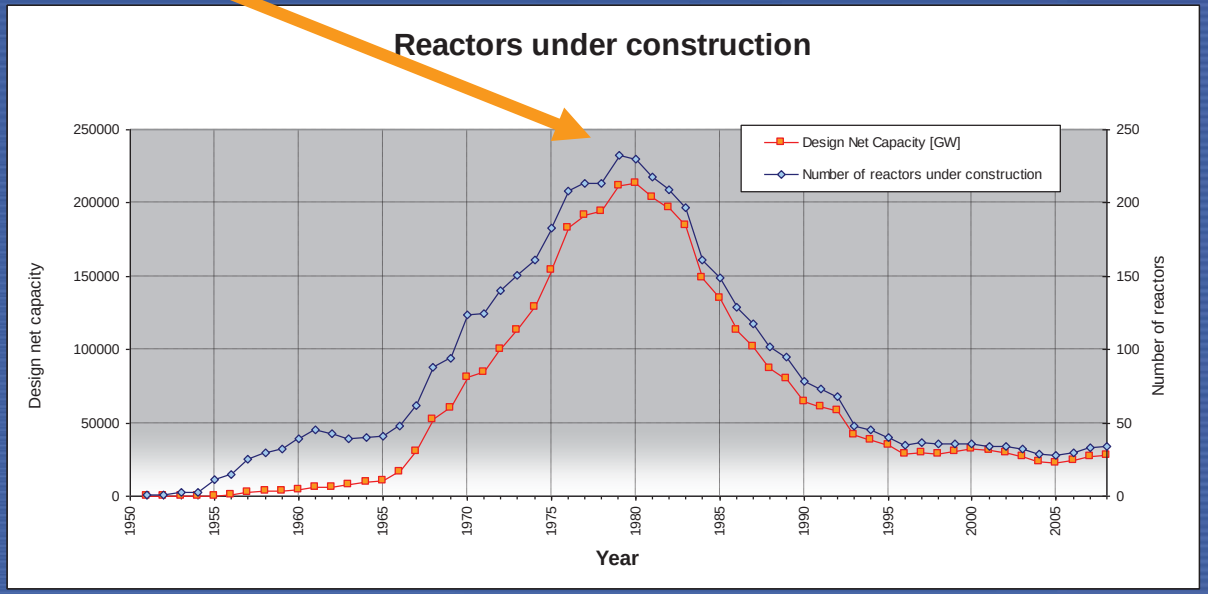
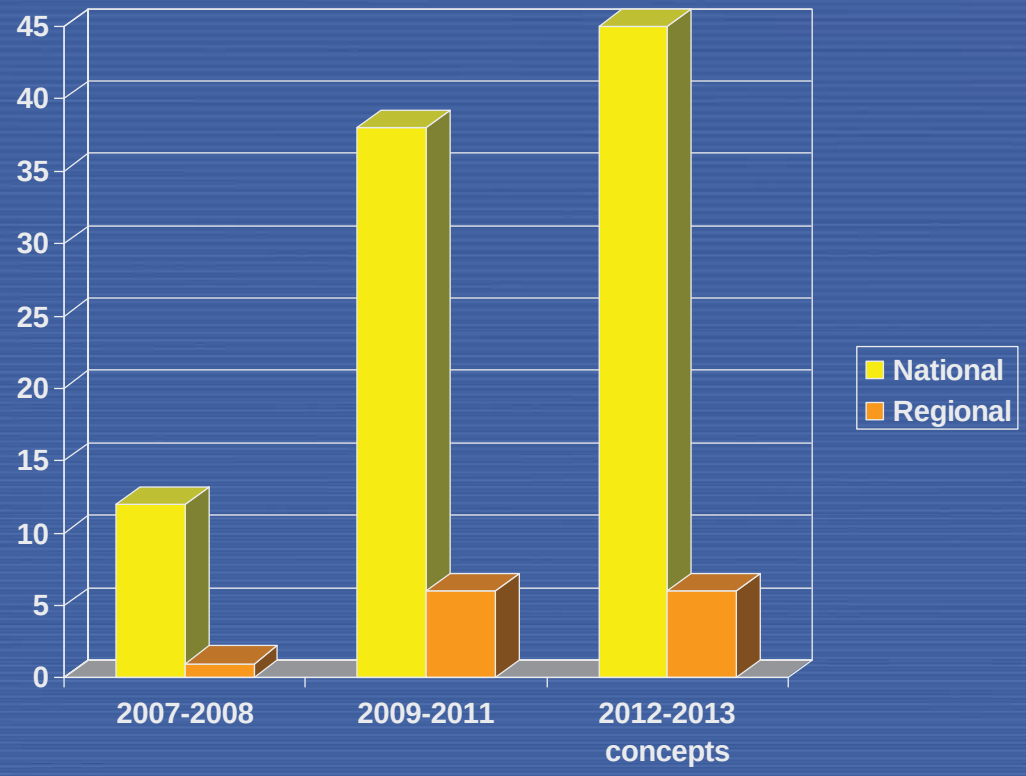
Human Resources

- How did they manage?



IAEA Technical Cooperation



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Alternative Contracting and Ownership

Vender Consortium

Strategic Partners

Investors

Project Company

Government

Power purchase agreement guarantees price

Vendor consortium participates in ownership and operation of the plant

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Comprehensive Infrastructure Evaluation

- How do you know when you are ready?
  - Self-evaluations
  - Periodic reviews by international experts IAEA offers Integrated Nuclear Infrastructure Review Service

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Anne Starz
Integrated Nuclear Infrastructure Group
International Atomic Energy Agency
a.starz@iaea.org
+43-1-2600-26742

www.iaea.org/NuclearPower/Infrastructure

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Atoms for Peace