



**IAEA**

International Atomic Energy Agency  
*Atoms for Peace and Development*

# Milestones Approach: A framework to support countries embarking in a new nuclear power programme

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Roundtable 'Building Nuclear Infrastructure as a Key Component  
for the Sustainability of Nuclear Projects'

# Newcomer Country Numbers

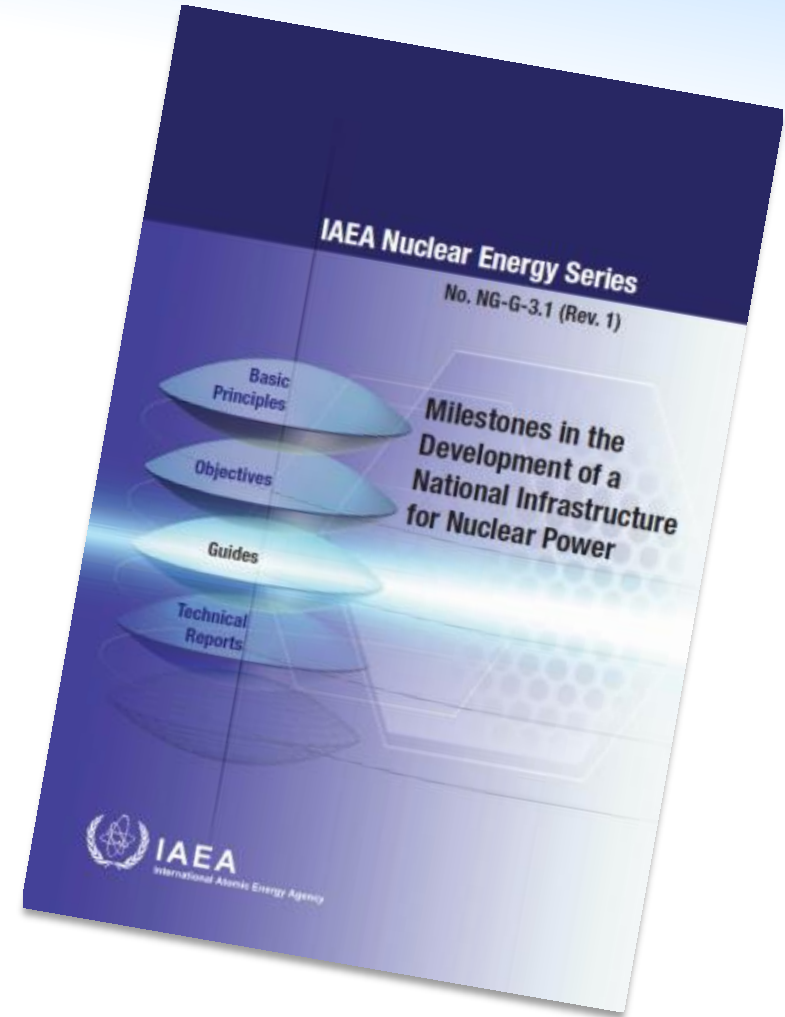
	2013	2014	2015	2016	2019
First nuclear power plant started construction/under construction	2	2	2	2	5
First nuclear power plant ordered	1	1	1	2	0
Decided to introduce nuclear power and started preparing the appropriate infrastructure	6	7	7	6	5
Active preparation for a possible nuclear power programme with no final decision	5	5	6	7	8
Considering nuclear power programme	19	18	11	10	11

# The IAEA Milestones Approach for Nuclear Power Infrastructure Development

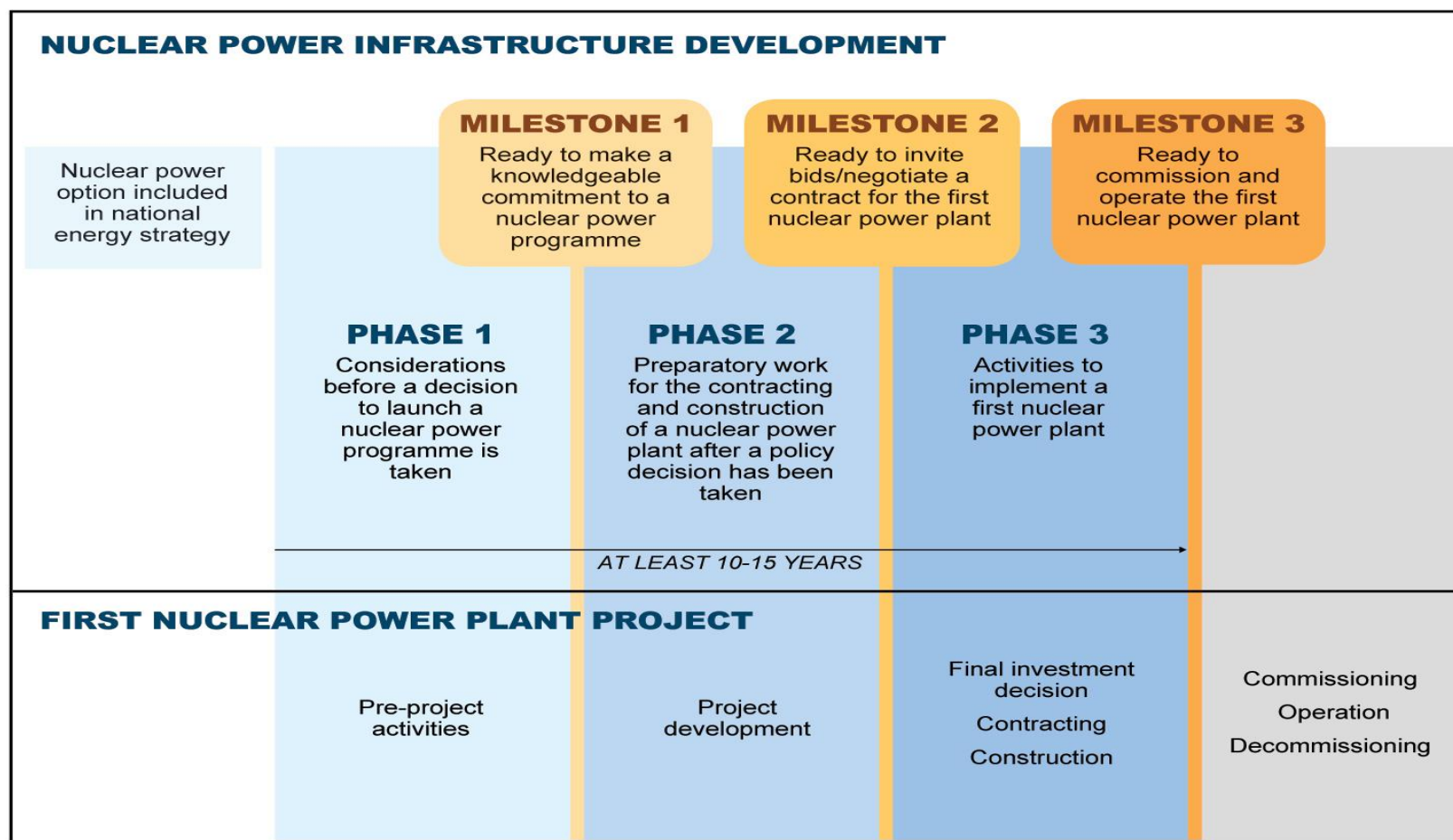
- Phased
- Comprehensive
- Integrated



The Milestones Approach is holistic and considers 19 specific infrastructure issues  
Issued in 2007; Updated in 2015



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



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

- National position
- Nuclear safety
- Management
- Funding and financing
- Legal 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

# PHASE 1: CONSIDER!

## PHASE 1

Considerations  
before a decision  
to launch a  
nuclear power  
programme is  
taken

PRE-PROJECT



## NEWCOMERS CHALLENGES

- How do I start?
- Is there public support?
- Do I have people?
- Can I find the money?
- What am I going to do with the waste?
- Is it safe?
- Can I manage if there is an accident?

## MILESTONE 1: DECIDE!

## MILESTONE 1

Ready to make a  
knowledgeable  
commitment to a  
nuclear power  
programme



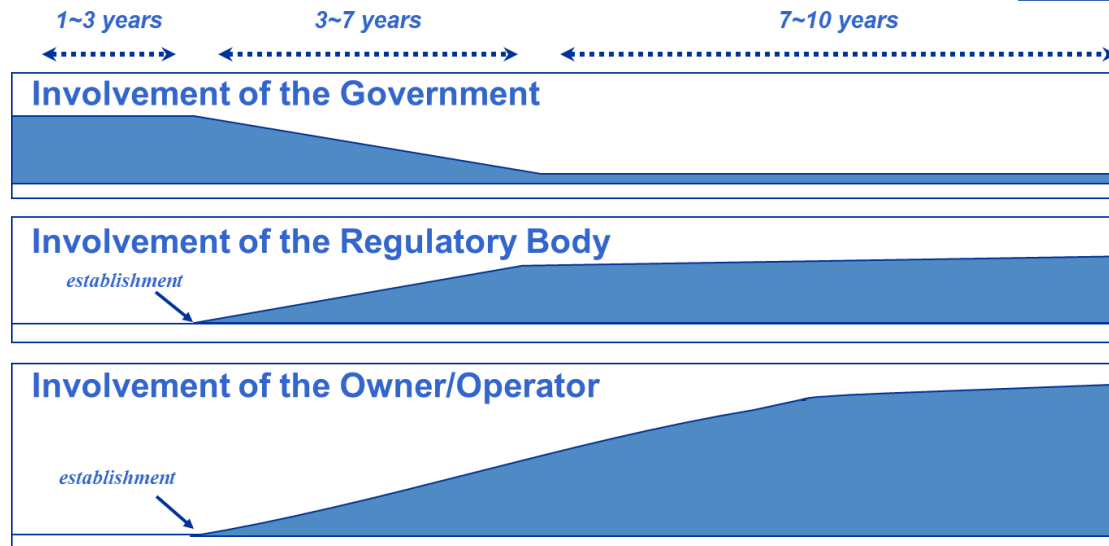
PRE-FEASIBILITY STUDY

# PHASE 2: PREPARE!

## PHASE 2

Preparatory work for the contracting and construction of a nuclear power plant after a policy decision has been taken

### PROJECT DECISION MAKING



## MILESTONE 2

Ready to invite bids/negotiate a contract for the first nuclear power plant

## BIDDING PROCESS

# MILESTONE 2: CONTRACT!



# PHASE 3: CONSTRUCTION

## PHASE 3

Activities to implement a first nuclear power plant

### CONSTRUCTION



Belarus, Ostrovets (2013)

## MILESTONE 3

Ready to commission and operate the first nuclear power plant



Site Evaluation

Design

Construction

Commissioning

Operation



Review of documentation + Oversight Activities

COMMISSIONING



# INIR Missions 2009-2018

1. Jordan (Phase 1)	2009
2. Indonesia (Phase 1)	2009
3. Viet Nam (Phase 1)	2009
4. Thailand (Phase 1)	2010
5. UAE (Phase 2)	2011
6. Bangladesh (Phase 1&2)	2011
7. Jordan follow-up	2012
8. Belarus (Phase 1&2)	2012
9. Viet Nam (Phase 2)	2012
10. Poland (Phase 1)	2013
11. South Africa (Phase 2)	2013
12. Turkey (Phase 2)	2013
13. Jordan (Phase 2)	2014
14. Viet Nam follow-up	2014
15. Nigeria (Phase 2)	2015
16. Kenya (Phase 1)	2015
17. Morocco (Phase 1)	2015
18. Bangladesh follow-up	2016
19. Poland follow-up	2016
20. Kazakhstan (Phase 1)	2016
21. Malaysia (Phase 1)	2016
22. Ghana (Phase 1)	2017
23. Niger (Phase 1)	2018
24. UAE (Phase 3)	2018
25. Saudi Arabia (Phase 2)	2018
26. Sudan (Phase 1)	2018
27. Philippines (Phase 1)	2018



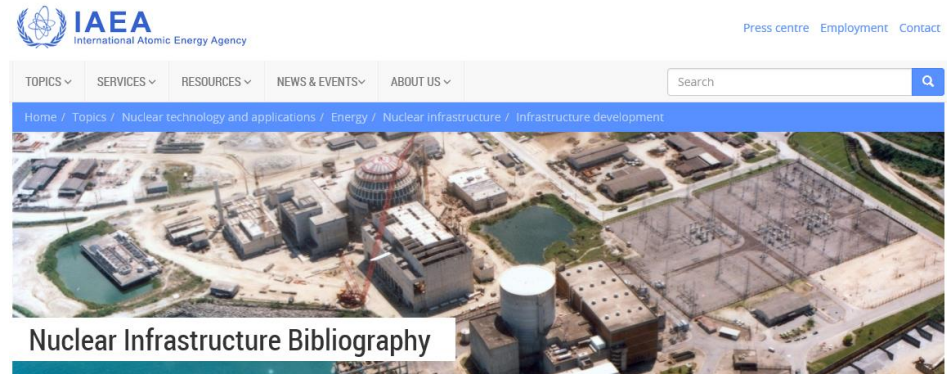
27 INIR missions in 20 Member States

# Areas where gaps were identified

1. National Position
2. Legal Framework
3. Regulatory Framework
4. Management
5. HRD

# Nuclear Infrastructure Bibliography

- Key and supporting documentation exists for the **19 Infrastructure Issues**



## Infrastructure development

- > Milestones Approach
- > Nuclear Infrastructure Bibliography
- > E-learning for Nuclear Newcomers

The IAEA guidance publication [Milestones in the Development of a National Infrastructure for Nuclear Power](#) outlines 19 infrastructure issues that need to be addressed in developing a new nuclear power programme. This bibliography is categorised according to these issues, listed below.

Click on any of the topics below to see the list of relevant IAEA publications. Further technical publications can be found on [IAEA Publications](#).

- |                          |                                    |
|--------------------------|------------------------------------|
| 1. National Position     | 10. Human Resource Development     |
| 2. Nuclear Safety        | 11. Stakeholder Involvement        |
| 3. Management            | 12. Site and Supporting Facilities |
| 4. Funding and Financing | 13. Environmental Protection       |
| 5. Legal Framework       | 14. Emergency Planning             |
| 6. Safeguards            | 15. Nuclear Security               |
| 7. Regulatory Framework  | 16. Nuclear Fuel Cycle             |
| 8. Radiation Protection  | 17. Radioactive Waste Management   |
| 9. Electrical Grid       | 18. Industrial Involvement         |
|                          | 19. Procurement                    |

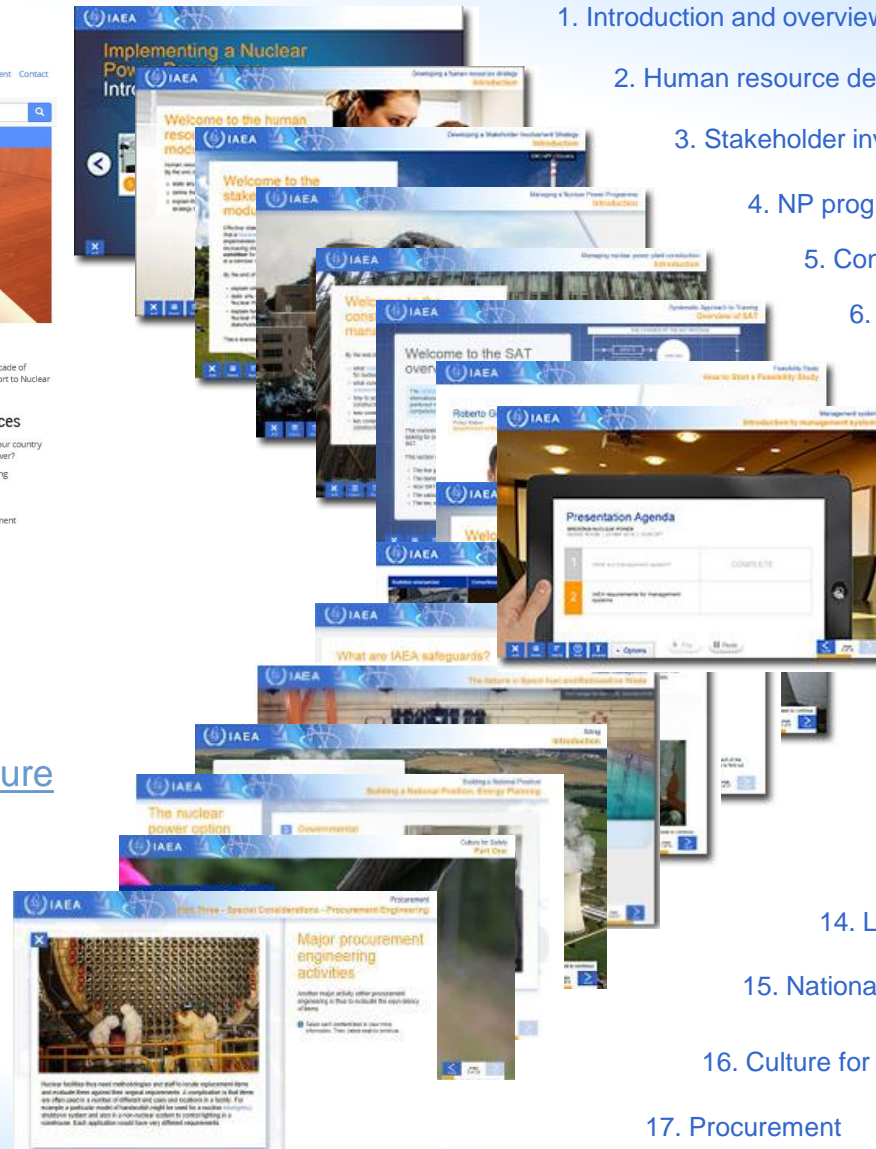
## Related Resources

- IAEA Milestones Approach: Developing the National Infrastructure for Nuclear Power (Brochure)
- IAEA Milestones Approach: Developing the National Infrastructure for Nuclear Power (Video)
- IAEA Scientific and Technical Publications
- Nuclear Infrastructure Development Section
- Department of Nuclear Energy
- Department of Nuclear Safety and Security

<https://www.iaea.org/topics/infrastructure-development/bibliography>

# E-Learning Modules

1. Introduction and overview
2. Human resource development
3. Stakeholder involvement
4. NP programme management
5. Construction management
6. Systematic approach to training
7. Feasibility study
8. Management systems
9. Safety infrastructure
10. Emergency preparedness and Response
11. Safeguards
12. Spent Fuel and Radioactive Waste Management
13. Siting
14. Legal framework
15. National position
16. Culture for Safety
17. Procurement
18. Industry Involvement




**E-learning for Nuclear Newcomers**

This IAEA interactive series of e-learning modules covers various aspects of developing a safe, secure and sustainable nuclear power programme. The modules explain the IAEA Milestones Approach, a phased comprehensive method that covers 19 nuclear infrastructure issues to help countries that are considering or planning their first nuclear power plant understand the commitments and obligations associated with a nuclear power programme. The modules are also appropriate for countries expanding an existing nuclear power programme.

**Related Stories**

- IAEA Marks a Decade of Integrated Support to Nuclear Newcomers

**Related resources**

- Introductory video: Is your country considering nuclear power?
- How to use the e-learning modules
- Milestones Approach
- Infrastructure Development

**E-learning for Nuclear Newcomers**

The IAEA approach to introducing a Nuclear Power Programme

Bringing decades of expertise to life.

Available in: [www.iaea.org/NuclearPower/infrastructure/e-learning](http://www.iaea.org/NuclearPower/infrastructure/e-learning)

This video clip introduces the IAEA's e-learning series for nuclear newcomers that explains the IAEA approach to developing a safe, secure and sustainable nuclear power programme.

<https://www.iaea.org/topics/infrastructure-development/e-learning-for-nuclear-newcomers>





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International Atomic Energy Agency

*Atoms for Peace and Development*

*Thank you!*

