IAEA
International Atomic Energy Agency

Milestones Approach and Its Application to SMRs

Milko Kovachev
Head: Nuclear Infrastructure Development Section
Nuclear Power Division - Nuclear Energy Department

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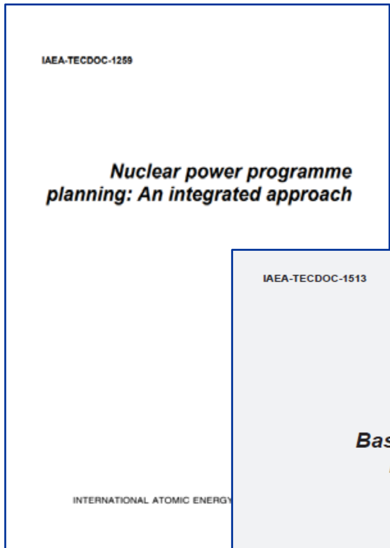
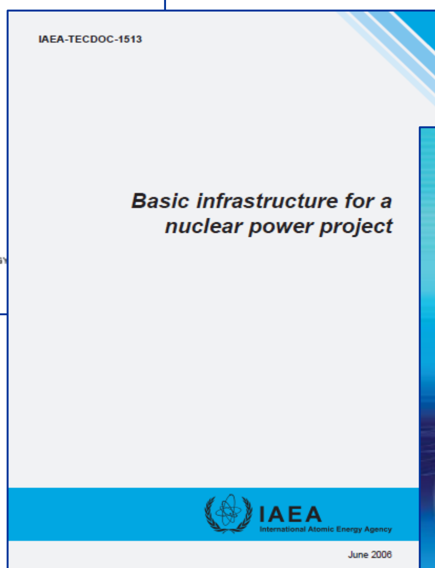
The IAEA Milestones Approach for Nuclear Power Infrastructure Development

The story



2001



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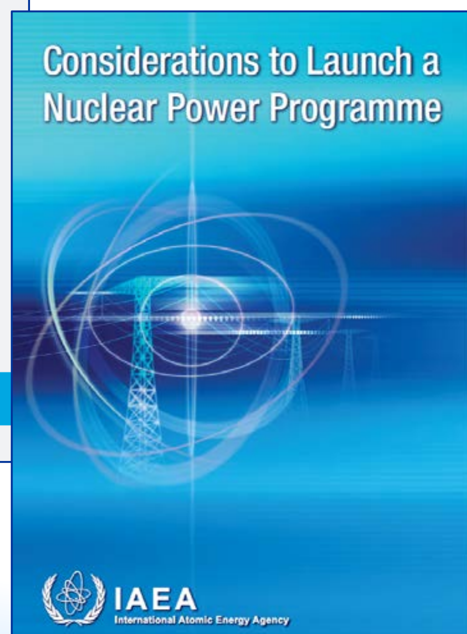

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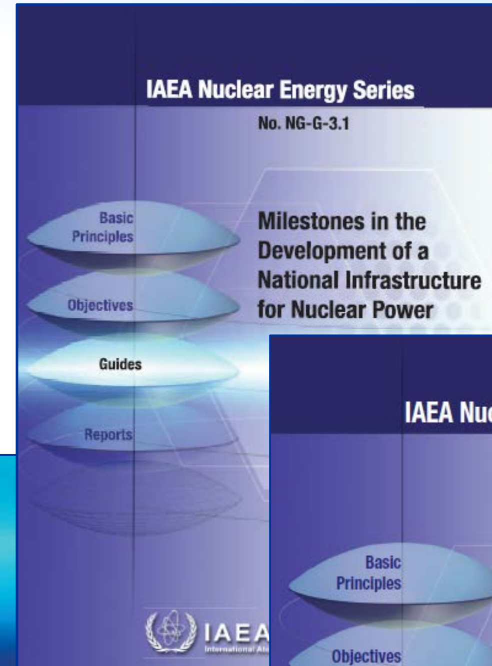

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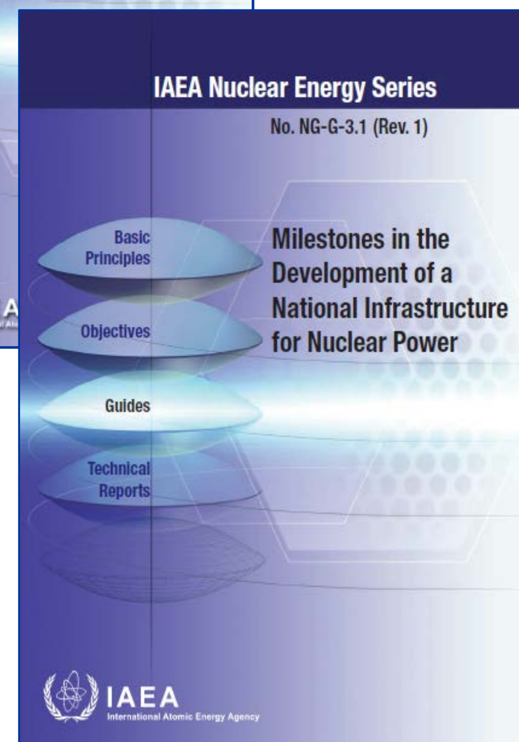


2015

The Milestones Approach

The Milestones Approach: A phased and comprehensive nuclear power programme management guide creating an enabling environment for successful project

The IAEA Milestone Approach provides guidance on the elements of infrastructure that should exist at significant points in the development process

- 3 Phases (Consider – Prepare – Construct)
- 3 Milestones (Decide – Contract – Commission)
- 19 Infrastructure Issues

The IAEA Milestones Approach
19 Infrastructure Issues

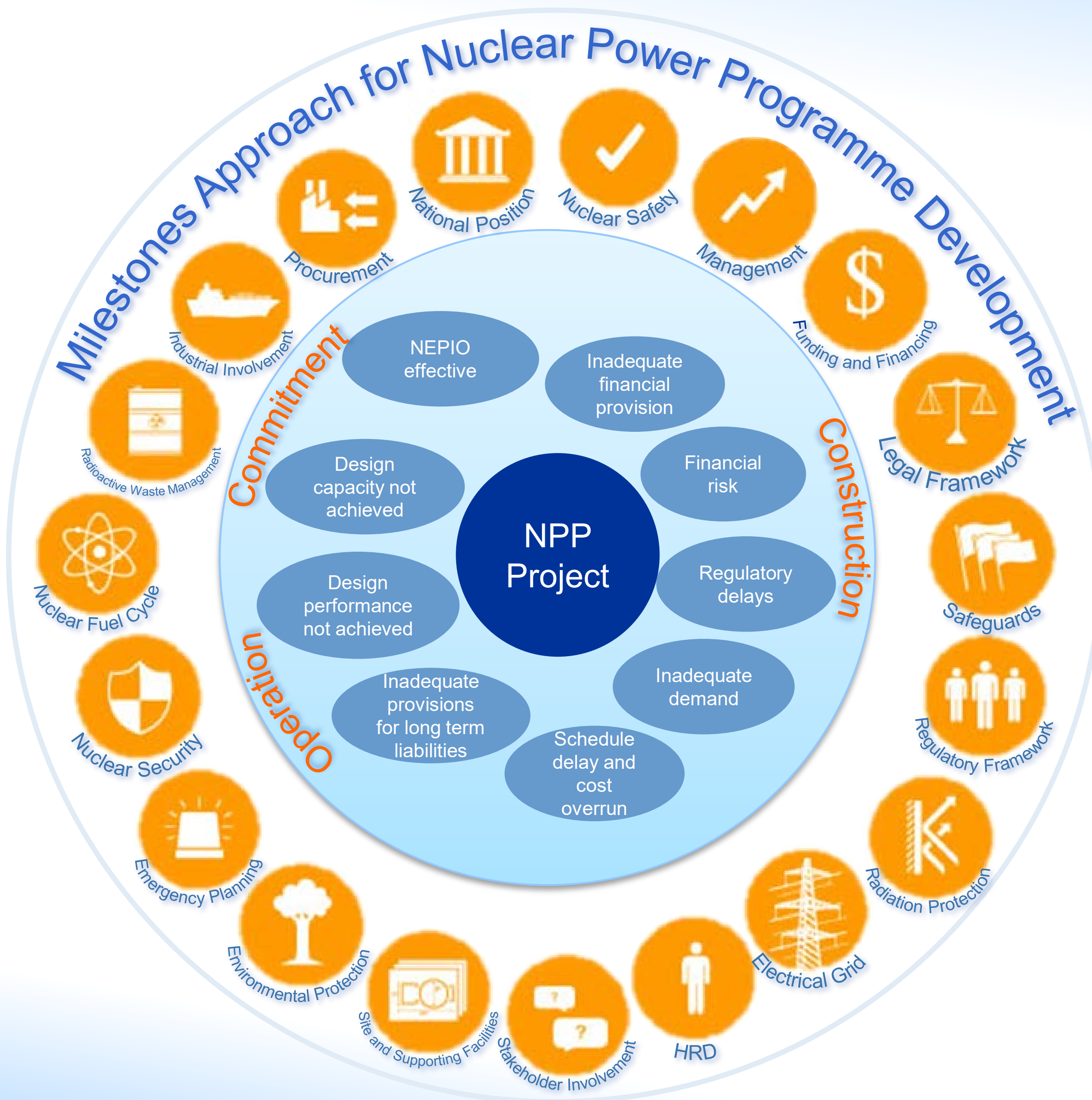
The Milestones Approach
Programme, Project and Infrastructure

The programme includes one or more NPPs, possible related projects, …..and the supporting infrastructure. As the programme develops, many specific activities will be undertaken to implement the first nuclear power plant project, and it is important that the distinction be clear.

Projects are temporary undertakings to develop and construct NPPs.

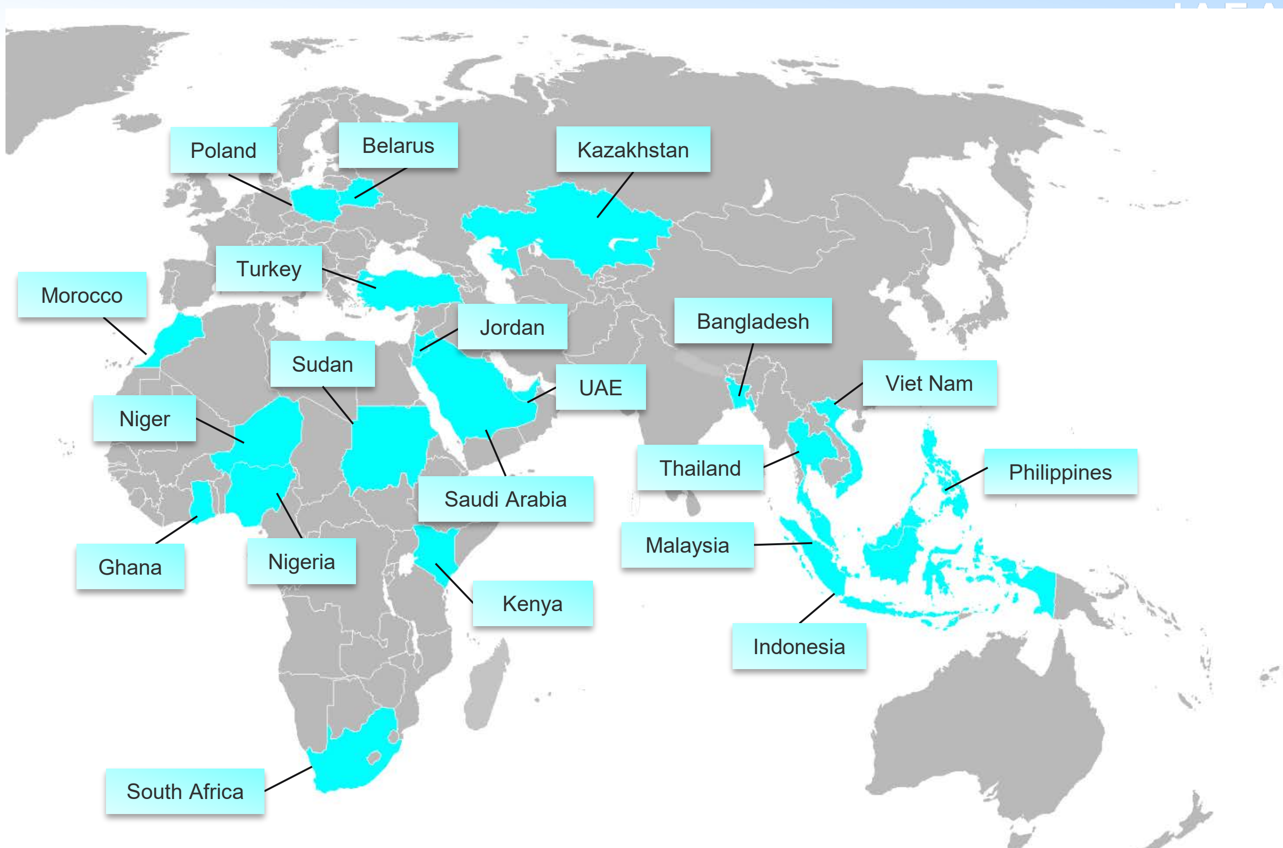
The infrastructure provides the processes and capabilities to enable the project activities and the subsequent operation of the NPP to be implemented safely, securely and sustainably.

Milestones Approach
Nuclear Power Programme Management Guide



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 conducted in 20 Member States

Newcomer countries showing interest in SMRs

- Jordan
- Saudi Arabia
- Sudan
- Indonesia
- Philippines
- Poland

The Milestones Approach and SMRs

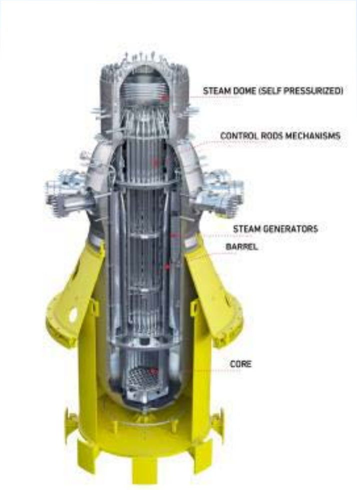
- Increasing number of Member States showing interest in deployment of SMRs including a number of newcomer countries
- SMR specific aspects, in terms of infrastructure
  - Design: First of a Kind designs, floating/transportable NPPs, modular multi-units SMRs, etc
  - Management: Shorter construction times
  - Financing: Lower initial cost due to smaller size
  - Grid: Smaller grid requirements
  - Regulatory framework: Development of SMR specific requirements, Competency in RB, licensing challenges
  - Fuel Cycle/Waste Management: Manage by user country or spent fuel back to vendor, etc
  - Industrial Involvement: Standardization may lead to lower local industrial involvement

The Milestones Approach and SMRs

- A CS meeting held in July 2017 reviewed the IAEA Evaluation Methodology for a deployment scenario and concluded that Evaluation Methodology is applicable for the evaluation of the infrastructure for SMR deployment with additional explanations for some conditions
- SMR Regulators Forum published a report covering
  - Application of graded approach to design and safety analysis of SMRs
  - Defence in Depth approaches for SMRs
  - Emergency Planning Zones (EPZ) for SMRs
- Experience and knowledge accumulated in the countries implementing SMR projects will be reflected in the Agency guidelines

Summary

- Milestones Approach is the framework for embarking countries for any technology including SMRs
- The IAEA Evaluation Methodology for infrastructure is applicable for SMR deployment, with additional explanations
- The application of the IAEA safety requirements for SMRs remains to be demonstrated (application of graded approach, EPZ requirements, Defence in Depth considerations, etc)
- Aspects related to the deployment of SMRs will be added to the IAEA guidance and services as the experience and knowledge accumulated in implementing countries



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Thank you!