

IAEA

MOSCOW, RUSSIA

INFRASTRUCTURE DEVELOPMENT IN NEWCOMER STATES



June, 2014



IAEA

International Atomic Energy Agency



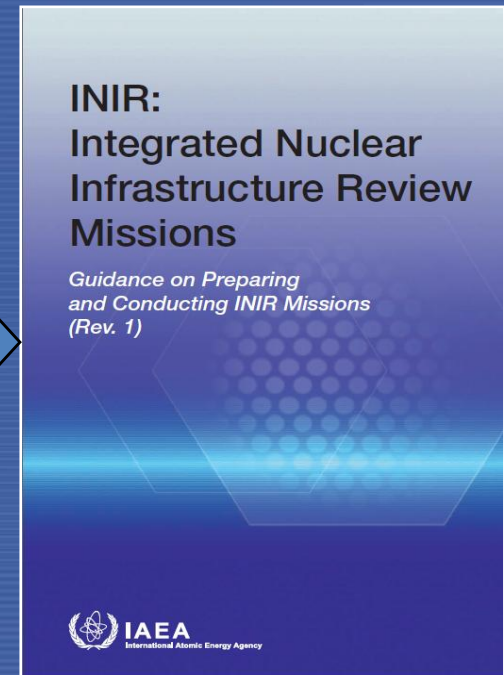
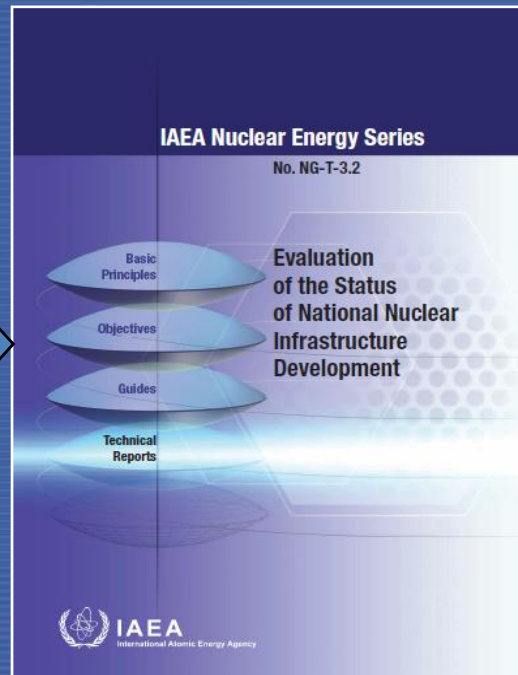
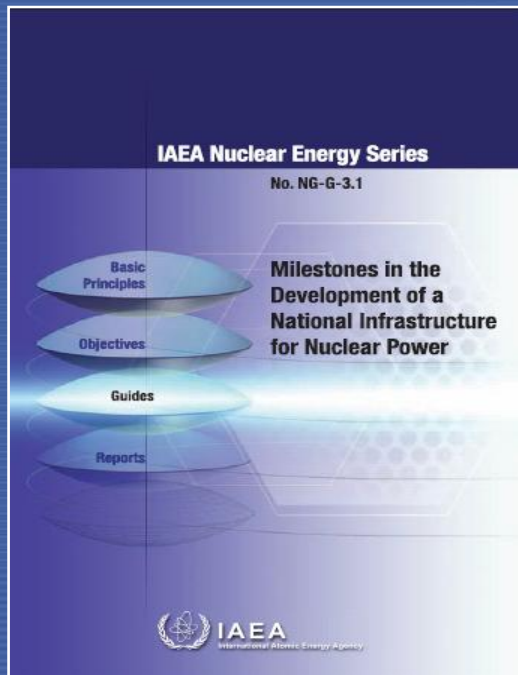
V. NKONG-NJOCK

OUTLINE

- OVERVIEW OF MILESTONE APPROACH
- WORKFORCE IN NUCLEAR POWER
- IAEA INVOLVEMENT AND SUPPORT
- IAEA COOPERATION

MILESTONES APPROACH TO LAUNCHING NUCLEAR POWER

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



MILESTONES IN THE DEVELOPMENT OF A NATIONAL INFRASTRUCTURE FOR NUCLEAR POWER (NG-G-3.1)



MILESTONES APPROACH TO NUCLEAR POWER

Phase 1: Decide!



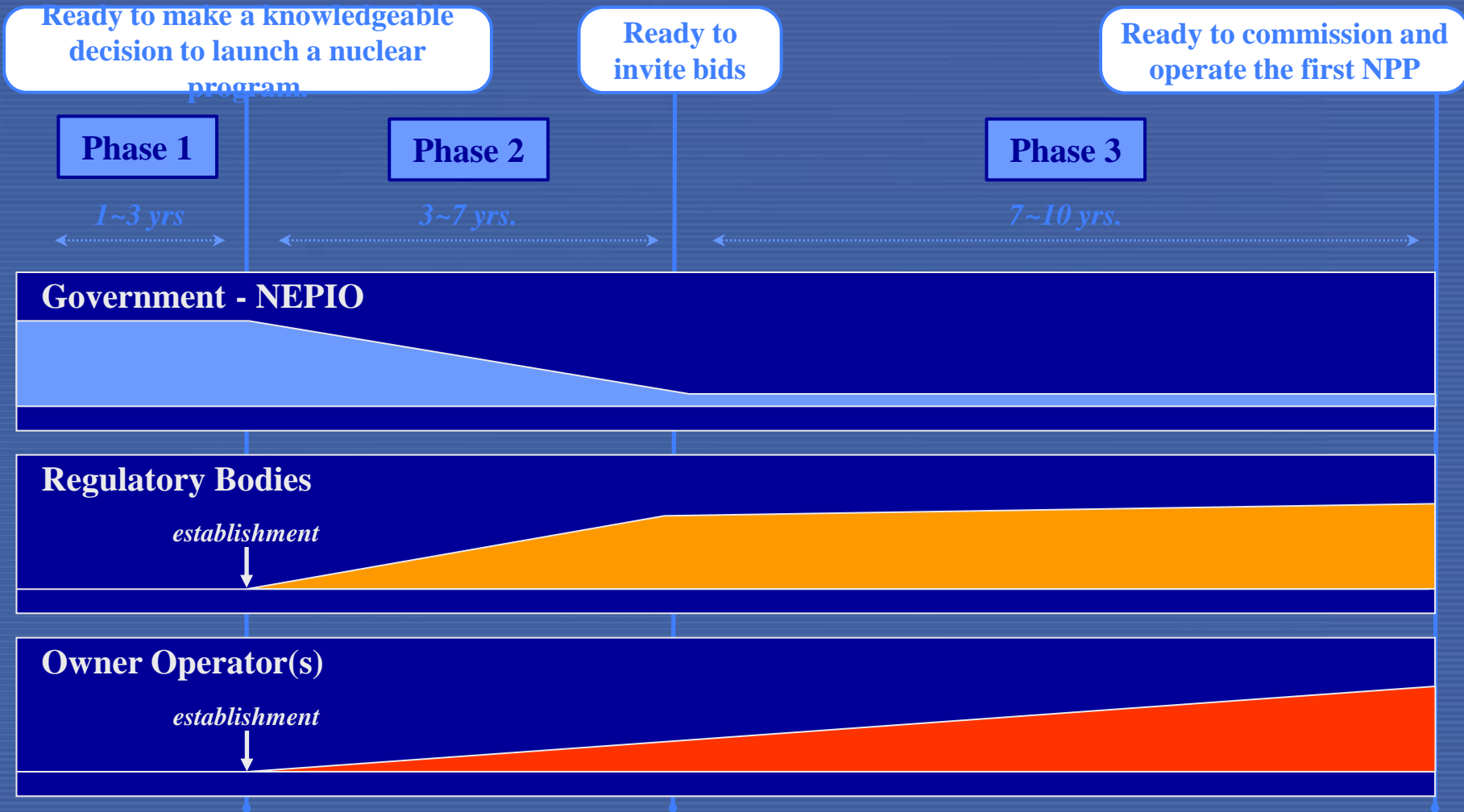
Phase 2: Prepare!



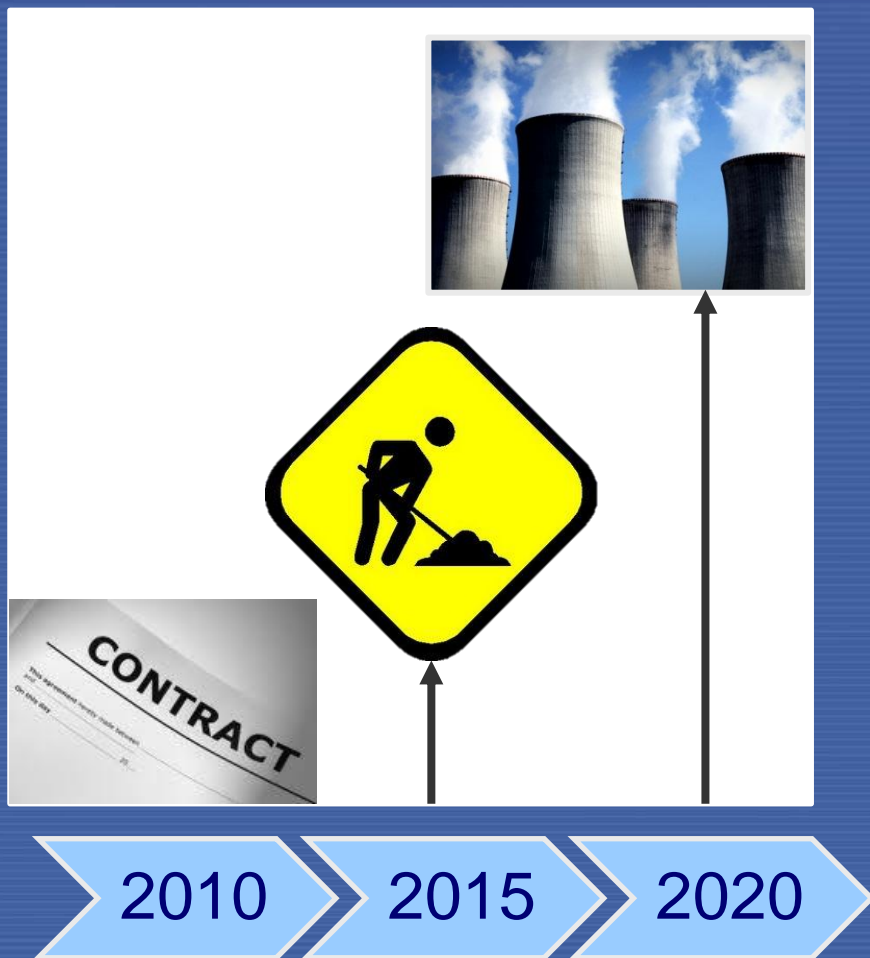
Phase 3: Construct!



LEADERSHIP & ORGANIZATIONS DEVELOPMENT

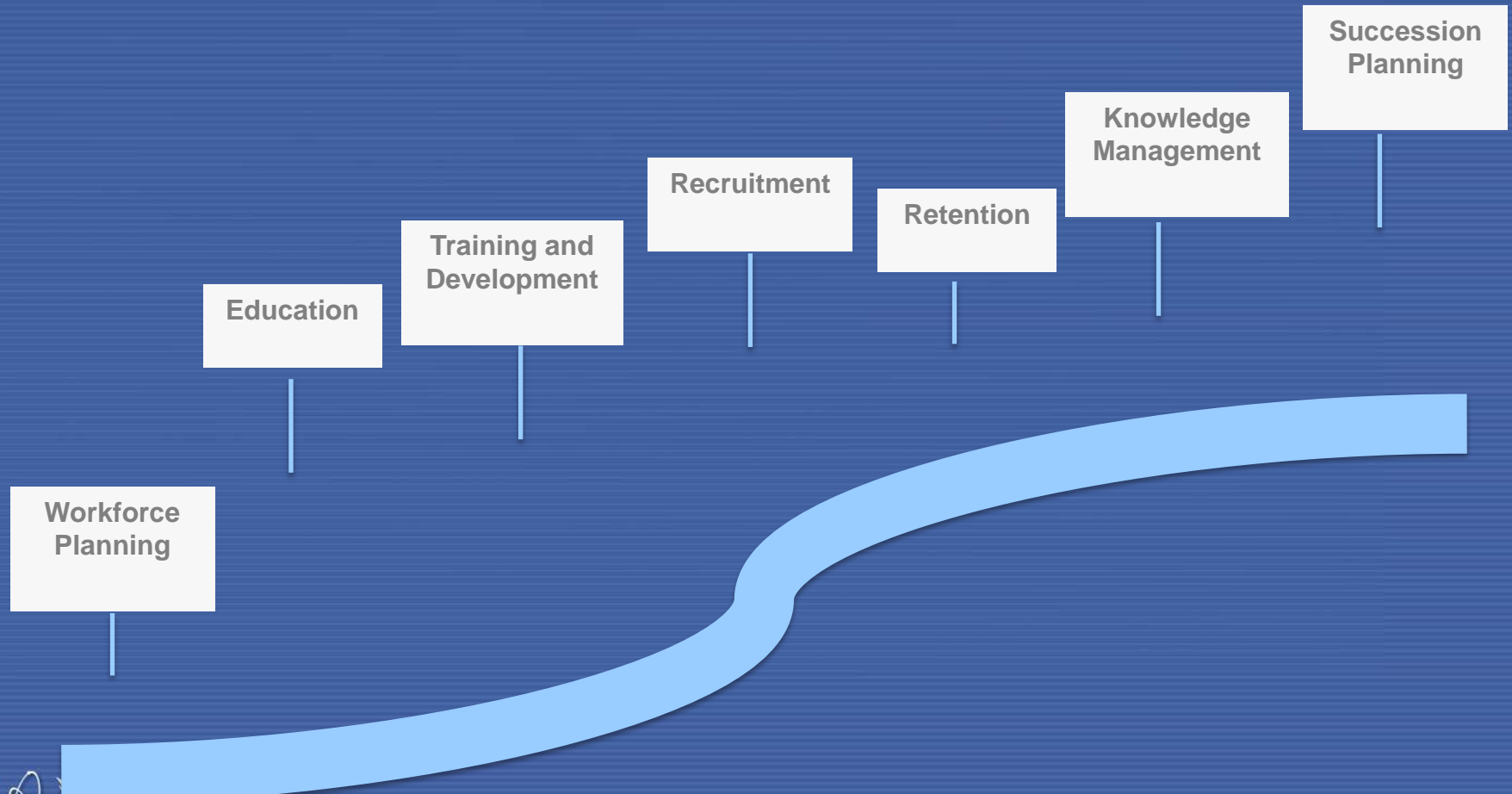


PROJECT SCHEDULE VS. INFRASTRUCTURE DEVELOPMENT



	Phase 1	Phase 2	Phase 3
1. National position	█	█	
2. Nuclear safety	█	█	
3. Management	█	█	
4. Funding and Financing	█	█	
5. Legislative framework	█	█	
6. Safeguards	█	█	
7. Regulatory framework	█	█	
8. Radiation protection	█	█	
9. Electrical grid	█	█	
10. Human resource development	█	█	
11. Stakeholder involvement	█	█	
12. Site and supporting facilities	█	█	
13. Environmental protection	█	█	
14. Emergency planning	█	█	
15. Security	█	█	
16. Nuclear fuel cycle	█	█	

ROADMAP FOR HRD



STAFFING AND TRAINING STRATEGIES

- ❑ Workforce planning
- ❑ Human resources strategy
- ❑ Staff Acquisition Strategy - Recruitment from:
 - Conventional industries
 - Educational institutions
- ❑ Educational and Training Systems
- ❑ Long Term Skill Development & Management
- ❑ Size the required workforce - Its evolution in time for various phases of the NPP life cycle:
 - Construction, Commissioning
 - Operation, Decommissioning

O-O COMPETENCIES

- Each staffing function may have more than one site, plant, or organizational driver
- This table summarizes the complexities of staffing requirements when five major drivers are considered
 - Plant Design
 - Site Layout
 - Regulatory Requirements
 - Outsourcing Options
 - Ability to Centralize
- Careful labor planning can save significant costs over the plant's lifecycle

Area	Function	Plant Design	Site Layout	Regulatory Requirement	Outsourcing	Centralization
Operations	Applied Radiation Protection	X		X	X	X
	ALARA/Radiological Engineering	X		X		X
	Chemistry	X				
	Decontamination/Radwaste Processing	X				
	Environmental					X
	Fire Protection	X				
	Operations	X	X	X		
	Operations Support	X	X			
	Radiation Protection Support			X	X	X
Engineering	Computer Engineering	X	X	X		X
	Design/Drafting	X	X	X	X	X
	Modifications Engineering	X				X
	Nuclear Fuels	X				X
	Plant Engineering	X				
	Procurement Engineering					X
	Project Management				X	X
	Reactor Engineering	X	X	X		
	Technical Engineering	X	X		X	X
Maintenance	Facilities Maintenance		X		X	X
	Maintenance/Construction	X				
	Maintenance/Construction Support	X				
	Outage Management	X				
	Quality Control/Non-Destructive Examination					X
	Safety/Health	X				X
	Scheduling	X				
Regulatory	Emergency Preparedness	X				X
	Licensing	X				X
	Nuclear Safety Review					X
	Quality Assurance					X
	Security	X				X
Site Support	Budget/Accounting			X		X
	Communications			X		X
	Contracts				X	X
	Document Control/Records					X
	Human Resources					X
	Information Management					X
	Management					
	Management Support					
	Materials Management	X			X	X
	Purchasing				X	X
	Training		X	X		X
	Warehouse	X	X		X	X

OPERATION

ENGINEERING

MAINTENANCE

REGULATORY

SITE SUPPORT

REGULATORY FUNCTIONS & COMPETENCE FRAMEWORKS

CORE
REGULATORY
FUNCTIONS

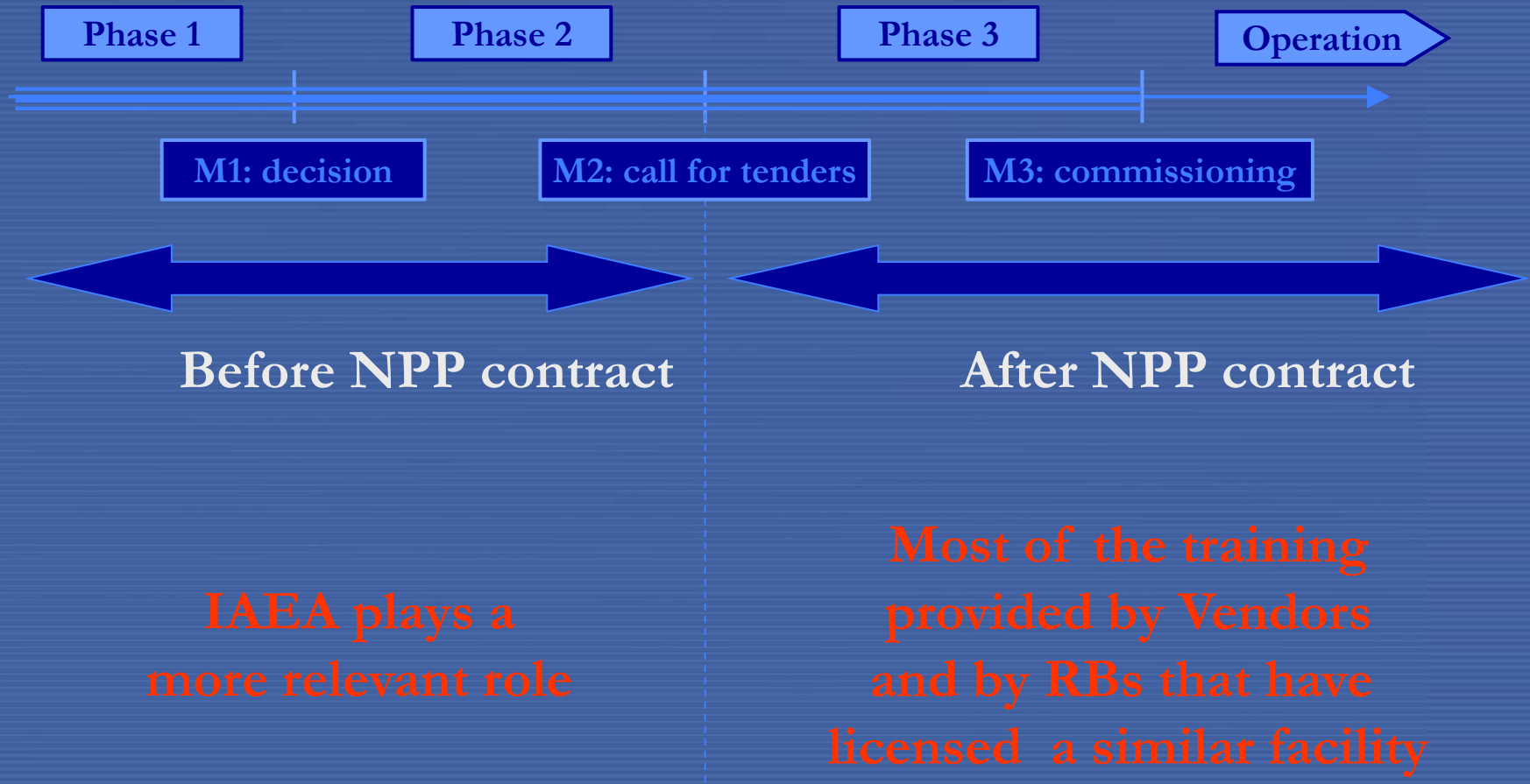
- DEVELOPMENT OF REGULATIONS AND GUIDES
- REVIEW AND ASSESSMENT
- AUTHORIZATION
- INSPECTION AND ENFORCEMENT
- COMMUNICATION & INFORMATION

Imperative
of
Synergies

REGULATORY COMPETENCIES

<p>4. Personal and interpersonal effectiveness competencies</p> <ul style="list-style-type: none">4.1. Analytical thinking, problem solving and decision making4.2. Personal effectiveness4.3. Communication4.4. Team work4.5. Management	<p>1. Legal basis and regulatory processes competencies</p> <ul style="list-style-type: none">1.1. Legal basis1.2. Regulatory process1.3. Regulatory guidance documents1.4. License and licensing documents1.5. Enforcement process
<p>3. Regulatory practices competencies</p> <ul style="list-style-type: none">3.1. Safety-focused analytical techniques3.2. Inspection techniques3.3. Auditing techniques3.4. Investigation techniques	<p>2. Technical disciplines competencies</p> <ul style="list-style-type: none">2.1. Basic technology2.2. Applied technology2.3. Specialized technology

PHASING IN HRD : IAEA SUPPORT



MANAGING HUMAN RESOURCES

IAEA Nuclear Energy Series NG-G-2.1

Human Resource Management Objectives

Ensure needed competence

Organize work activities

Anticipate human resource needs

Monitor and continually improve performance

Integrated Management System (foundation)

IAEA Nuclear Energy Series

No. NG-G-2.1

Basic Principles

Objectives

Guides

Technical Reports

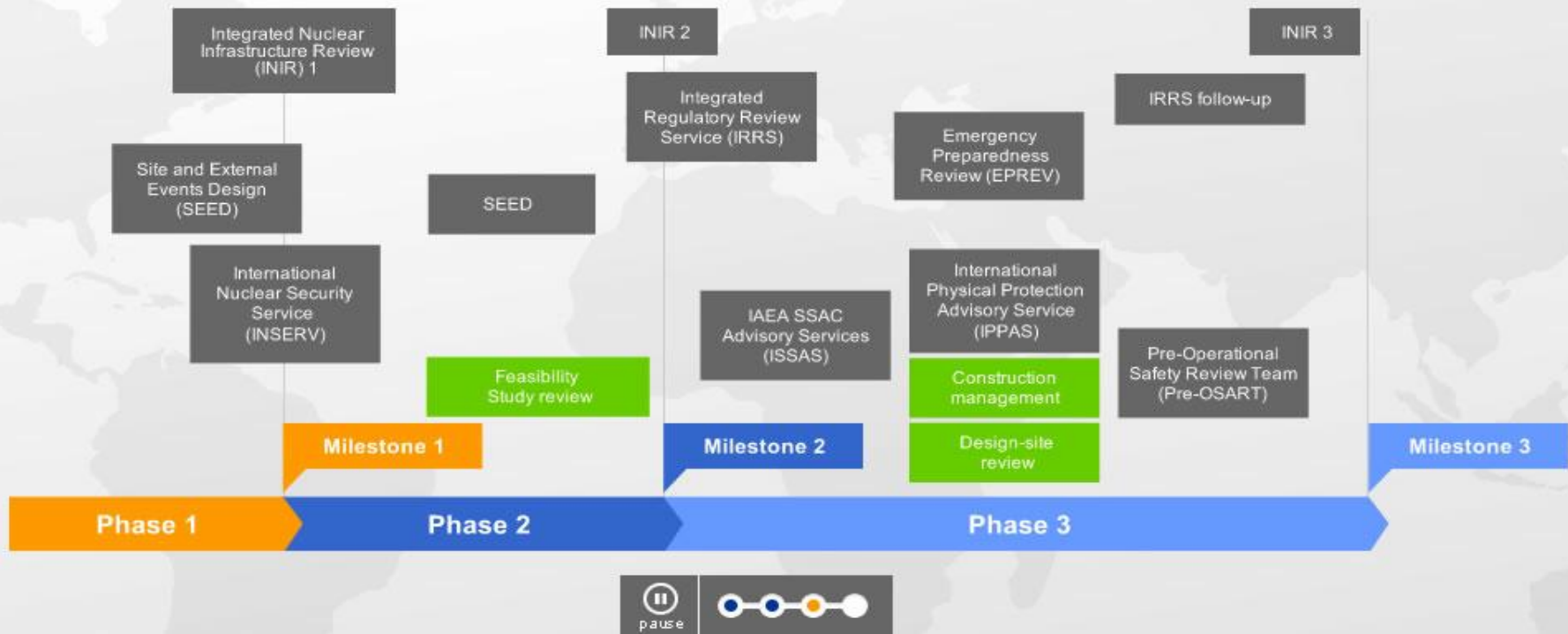
Managing Human Resources in the Field of Nuclear Energy

IAEA
International Atomic Energy Agency

One of important tasks – to develop, regularly update and implement a **Workforce Plan**

IAEA REVIEW SERVICES

THE IAEA CAN PROVIDE **REVIEWS**
AND **SERVICES** THROUGHOUT EACH PHASE
AND AT EACH MILESTONE OF THE NUCLEAR POWER PROGRAMME.



COOPERATION



**ROSATOM CENTRAL
INSTITUTE FOR
CONTINUING
EDUCATION AND
TRAINING**

ROSATOM-CICE&T

Support to Members States :
Egypt, Nigeria, Vietnam,
Mongolia, Bangladesh, Belarus,
etc.

19 September 2011 –
Signature “Practical
Arrangements” between
CICET and the IAEA.

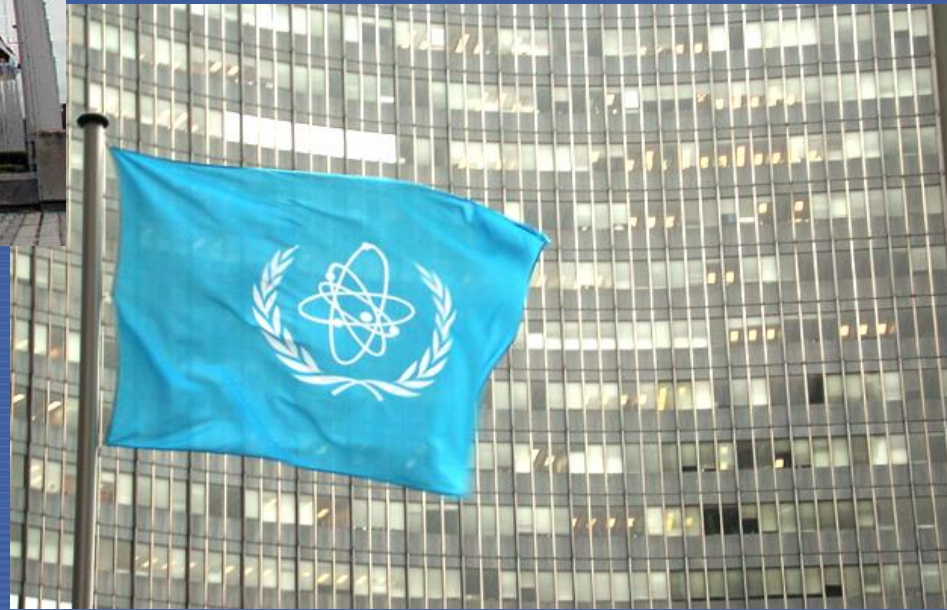


Training
Experts

Russian



THANK YOU



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...atoms for peace.