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**NEPIO and its Role**

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# **NEPIO AND ITS ROLE**

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**ICTP/IAEA Nuclear Energy Management School**  
**Italy, Trieste, 2013 July-August**



**IAEA**

International Atomic Energy Agency

# NUCLEAR POWER PROGRAM

- ✓ Energy is essential for development.
- ✓ Nuclear energy can play a role in providing increased access to affordable energy in many parts of the world.
- ✓ Reasons for considering nuclear power to achieve the national energy needs:
  - a lack of available indigenous energy resources,
  - desire to reduce dependence upon imported energy,
  - the need to increase the diversity of energy resources (energy mixt),
  - mitigation of carbon emission increases.
- ✓ Nuclear power program (building a Nuclear Power Plant) involves issues associated with **nuclear material, ionizing radiation** and the **related challenges** and is a major undertaking requiring careful planning, preparation and investment in a **sustainable infrastructure**.

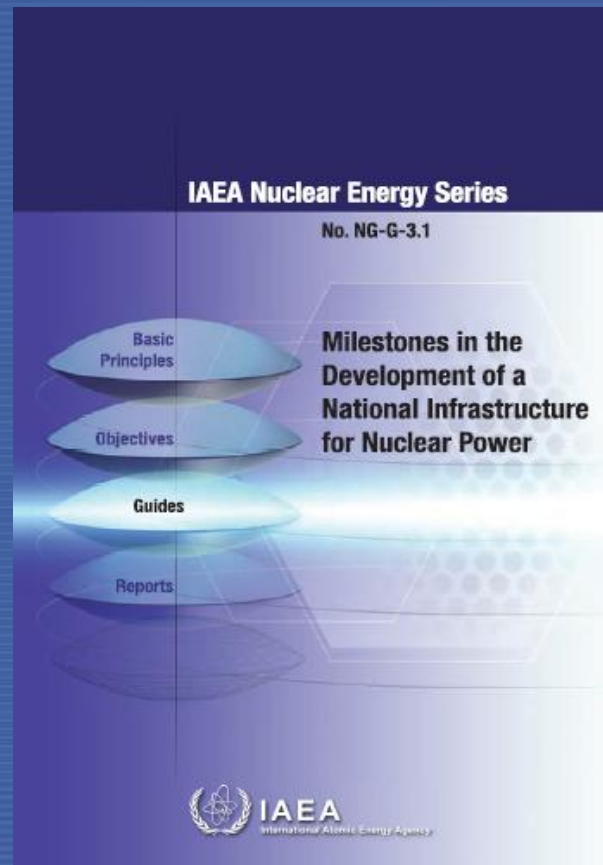
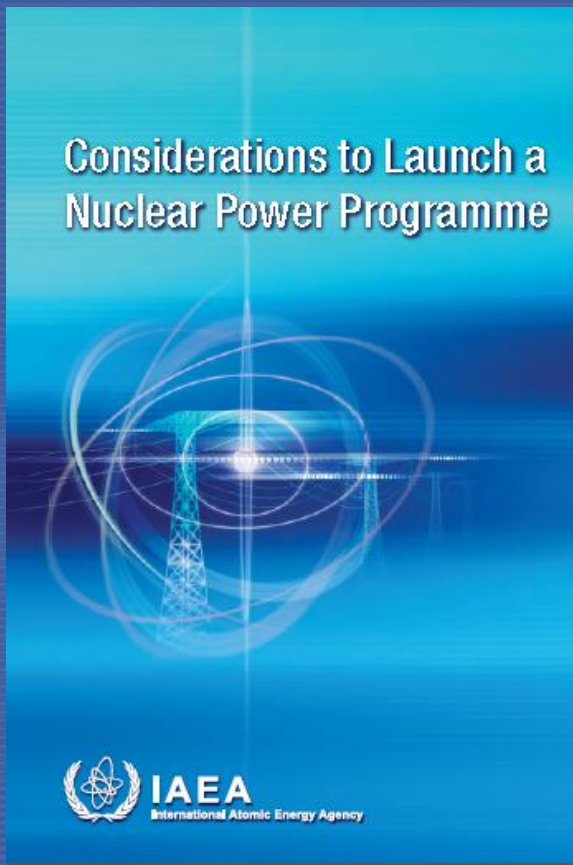
# NUCLEAR POWER INFRASTRUCTURE

**Institutions and Organizations**  
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.**

- ✓ Provides **legal, regulatory, technological, human** and **industrial support** to ensure that the nuclear material is used exclusively for peaceful purposes and in a safe and secure manner.
- ✓ **Hard** (grid, facilities, etc.) and **soft** (legal, regulatory, training, etc.) **infrastructure** are needed for a nuclear power plant project.

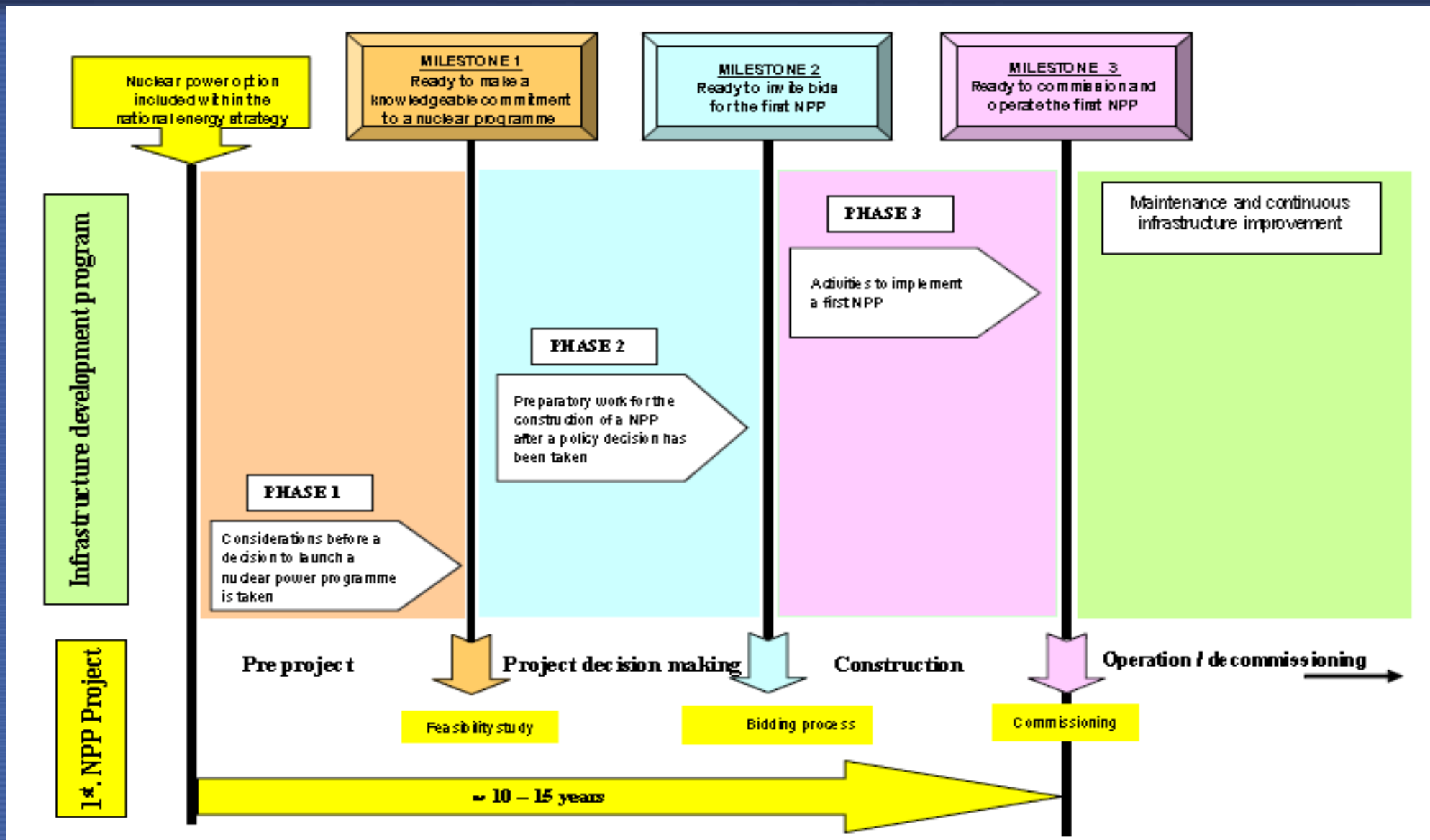
# IMPLEMENTATION OF NUCLEAR POWER

- Implementation of a nuclear power program involves several complex and interrelated activities with long duration.
- IAEA recommendations (guidance):



“Milestones in the Development of National Infrastructure for Nuclear Power” (NG-G-3.1/2007) provided an overview of the overall program to develop the national infrastructure for nuclear power.

# IAEA MILESTONE DOCUMENT (1)

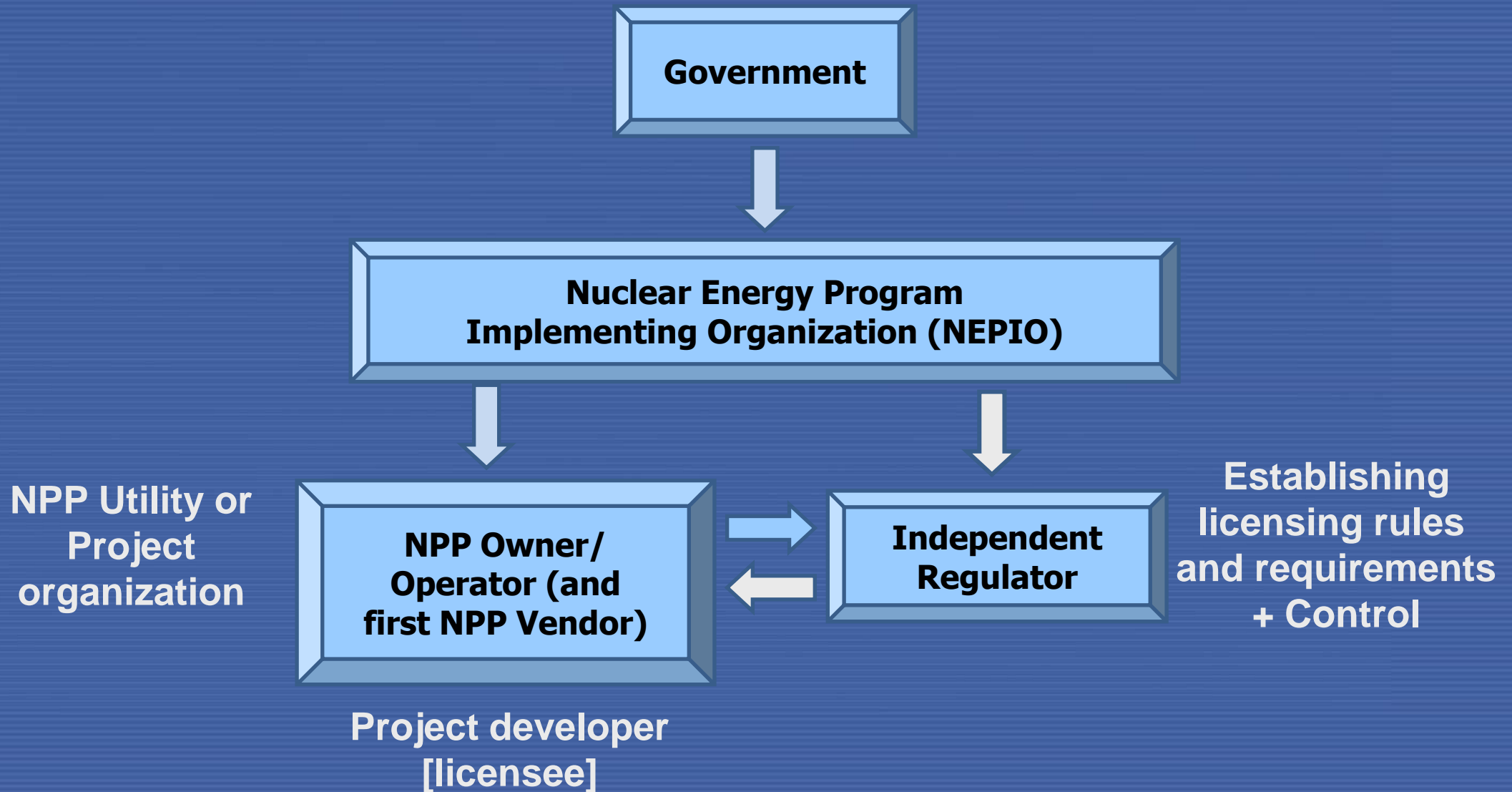


# IAEA MILESTONE DOCUMENT (2)

Issues	Milestone 1	Milestone 2	Milestone 3
National position			
Nuclear safety			
Management			
Funding and financing	Conditions	Conditions	Conditions
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			

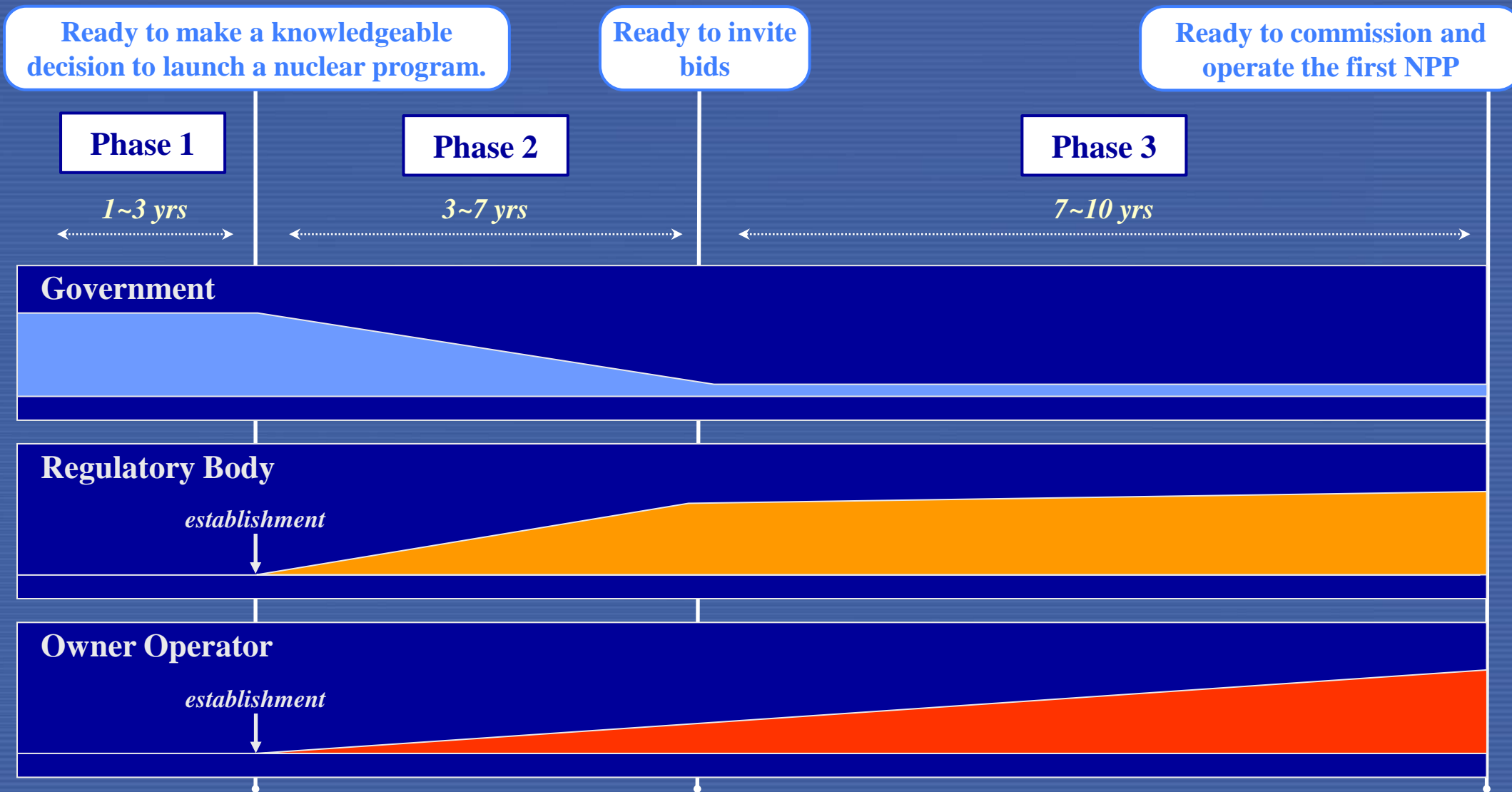


# MAIN PLAYERS IN NUCLEAR POWER





# MILESTONES AND INVOLVED ORGANIZATIONS



# WHY NEPIO ?

- In the process of the implementation of a nuclear power program the Government will form **an organization to coordinate** all the required activities in the initial stage (Phase 1)
- NEPIO main role: study and initially promote the development of the nuclear power program.
- **Key factors** to the success of the NEPIO:
  - ✓ Appointment of the NEPIO from a high level of the Government
  - ✓ Strong support across Government and industry
  - ✓ Adequately funded (state budget) and staffed (capabilities)
  - ✓ Clear mandate, including responsibilities and authorities
  - ✓ Defined timescale for achievement (schedule)
  - ✓ Official public announcement by Government of the formation of the NEPIO.

# NEPIO OBJECTIVES

- ✓ NEPIO should develop for a Member State a complete understanding of the commitments associated with the use of nuclear power.
- ✓ Shall performed necessary researches, studies, and makes policy recommendations on decision to launch nuclear power program.
- ✓ Have to coordinate nuclear power infrastructure development across Government, industry, future NPP Owner/Operator, Regulatory Body, etc.
- ✓ Should be a multi-disciplinary agency and have to reports at a high-level in Government.

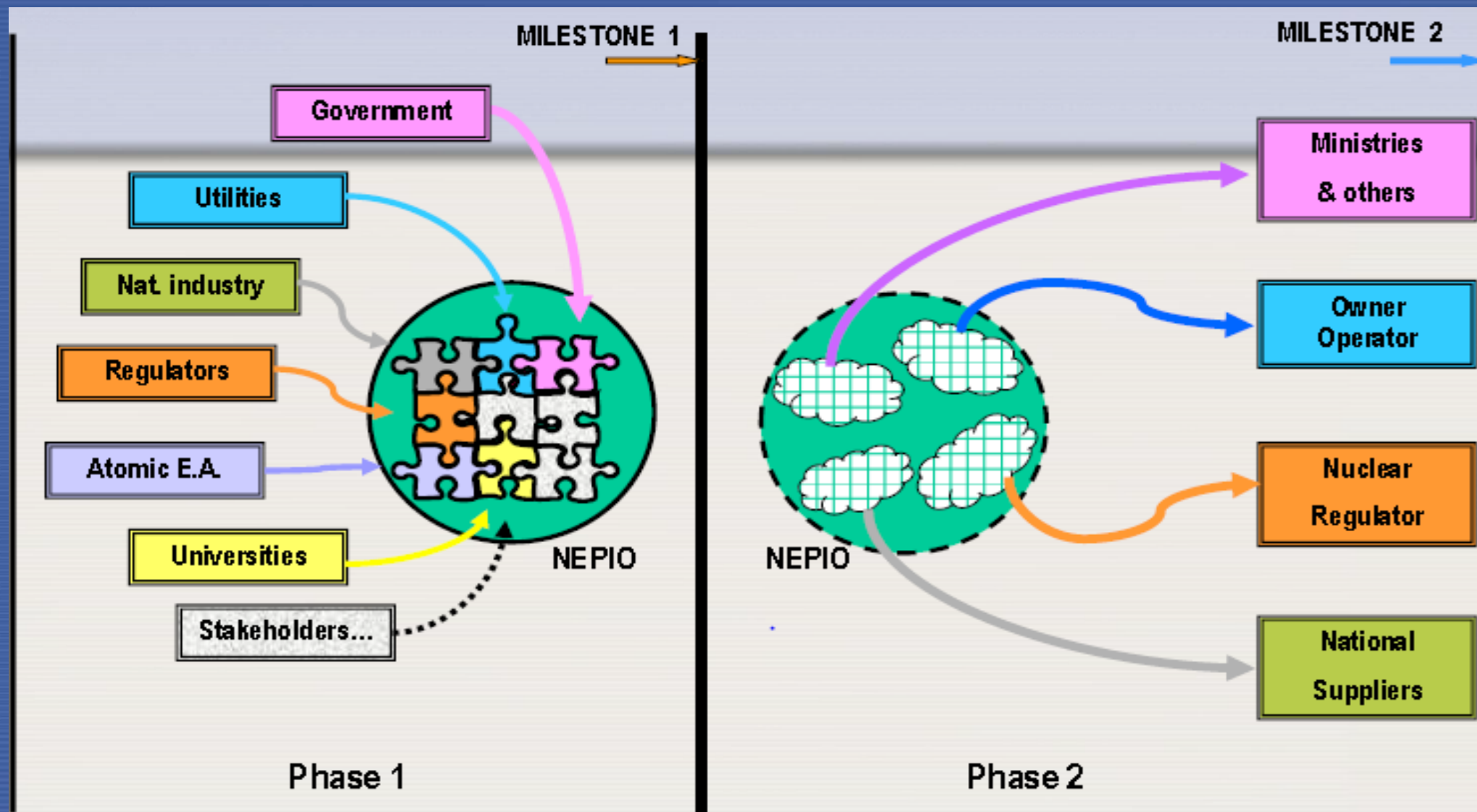
# NEPIO RESPONSIBILITIES IN PHASE 1

- Phase 1 is a **planning phase**
- NEPIO prepares **policy** and **strategy recommendations** to the decision-makers in Government with respect to each of the 19 infrastructure issues identified in the Agency Milestones Document
- NEPIO will:
  - ✓ study the 19 infrastructure issues and understand implications and possible resolutions
  - ✓ produce a **comprehensive report** clearly laying out the commitments and processes necessary, enabling a knowledgeable commitment of the Government
  - ✓ prepare for a Government decision (Milestone 1)
  - ✓ arrange self-evaluation of the preparatory work and establish corrective action
- NEPIO comprehensive report will be backed up by more **detailed reports** for individual infrastructure issues
- Typical schedule for the NEPIO report preparation: **1-3 years**

# NEPIO RESPONSIBILITIES IN PHASE 2

- Phase 2: preparatory work for the first NPP (ready for NPP acquisition)
- NEPIO turns the **approved strategies** into firm **action plans** for each infrastructure issue and assigns responsibility to institutional organizations which will become a permanent part of the overall infrastructure program
- NEPIO will:
  - ✓ Play the crucial role to coordinate the development of the national nuclear power infrastructure
  - ✓ Remain the leader for some policy issues, but most issues will become the responsibility of permanent organizations
  - ✓ Monitor progress, oversee and coordinate among the various implementing organizations (Regulatory Body, NPP Owner/Operator, etc.) for development of national infrastructure
  - ✓ Arrange self-evaluation of the infrastructure status and establish corrective action
- Continued Government support and funding during Phase 2 remain vital to success of the program.

# NEPIO TRANSITION TO PHASE 2





# NEPIO ROLES FOLLOWING PHASE 2

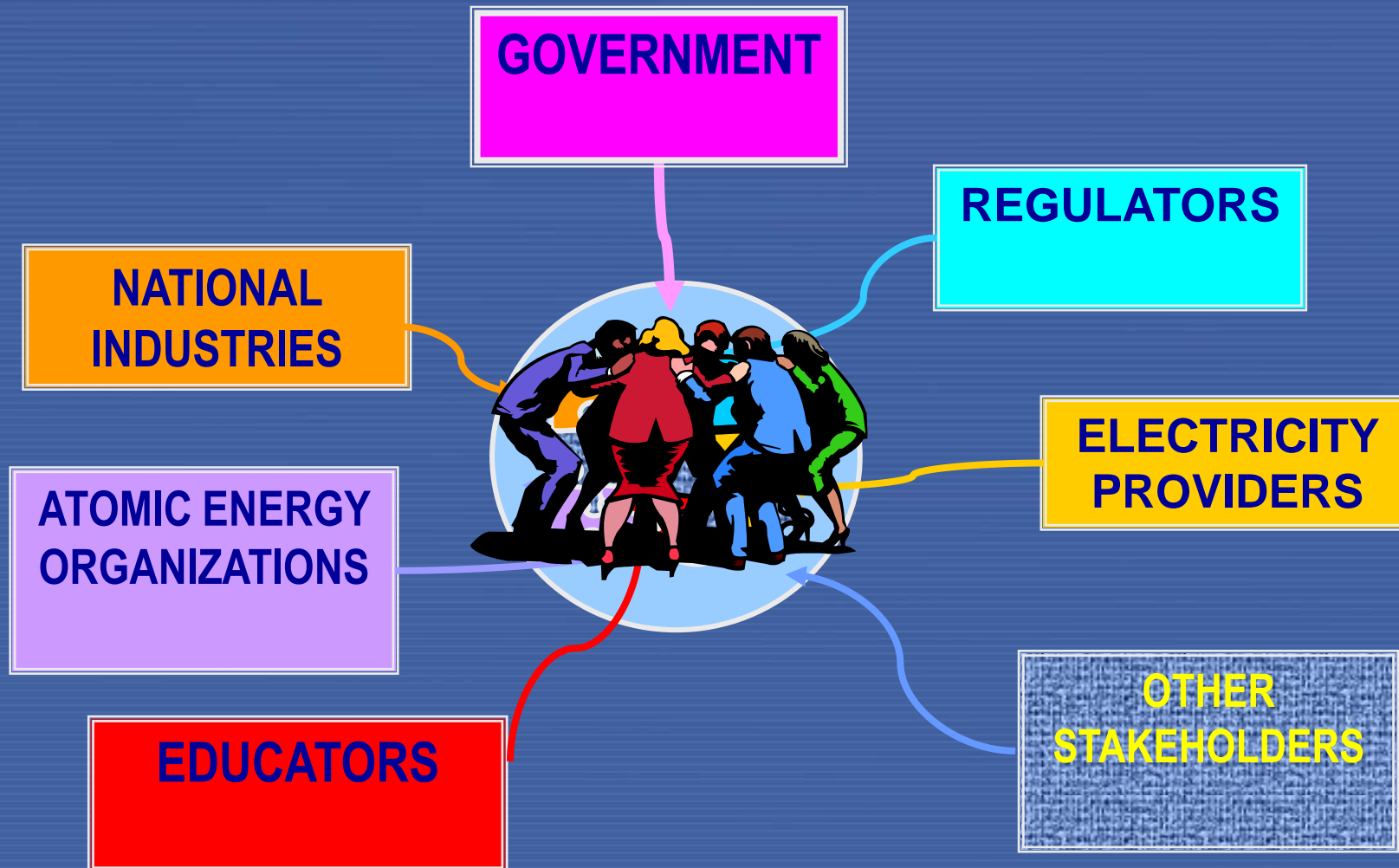
- ✓ Phase 3: activities for the first NPP implementation (contracting, construction, etc.)
- ✓ NEPIO responsibilities are already transferred to responsible organizations (state or private entities).
- ✓ Government commitment shall continue in this phase and remain significant.
- ✓ It is assumed that the duties of the NEPIO will be incorporated into the appropriate **Governmental agency**, which will act as the **guiding organization** for the country's nuclear power program.
- ✓ NEPIO may assume an **oversight role** to assure that the program objectives are being met and that the "Knowledge" has been transferred to the right entities.
- ✓ Coordination mechanisms should be established where needed to ensure coordination at the national level between safety-security-safeguards (3 S) and other functions (nuclear fuel cycle, etc.).



# NEPIO CAPABILITIES

- ✓ Picking the right NEPIO general manager/director.
  - Trust and confidence of Government, industry and public
  - Not necessarily nuclear expert or scientist, but should be familiar with nuclear.
- ✓ Leadership positions in NEPIO filled with local nationals, especially for stakeholder involvement.
  - Knowledge and understanding of culture and national processes
- ✓ Hire competent staff, advisors and consultants (as necessary).
- ✓ Consult with international organizations and other similar governmental organizations (inter-governmental agreements).

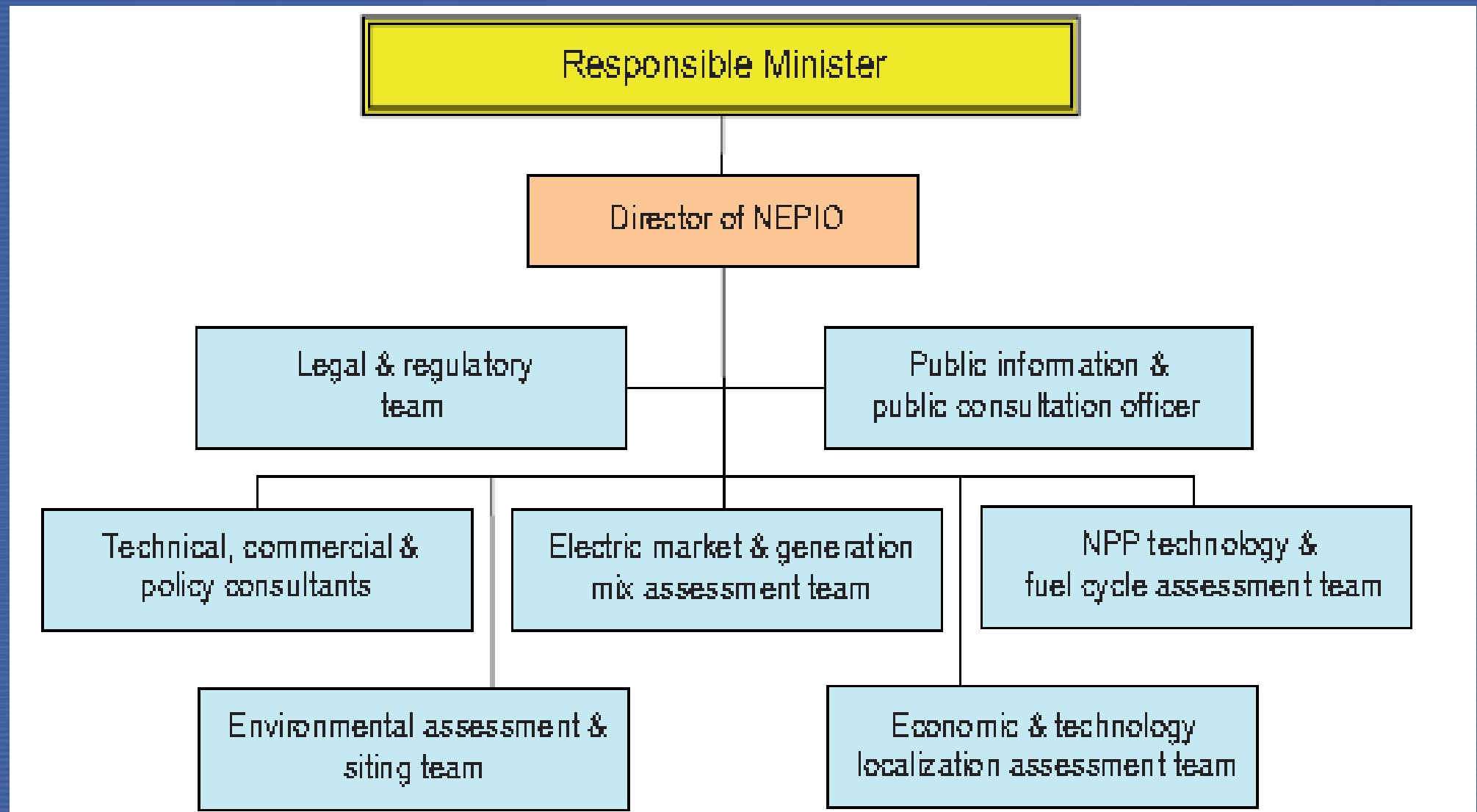
# NEPIO INVOLVES STAKEHOLDERS



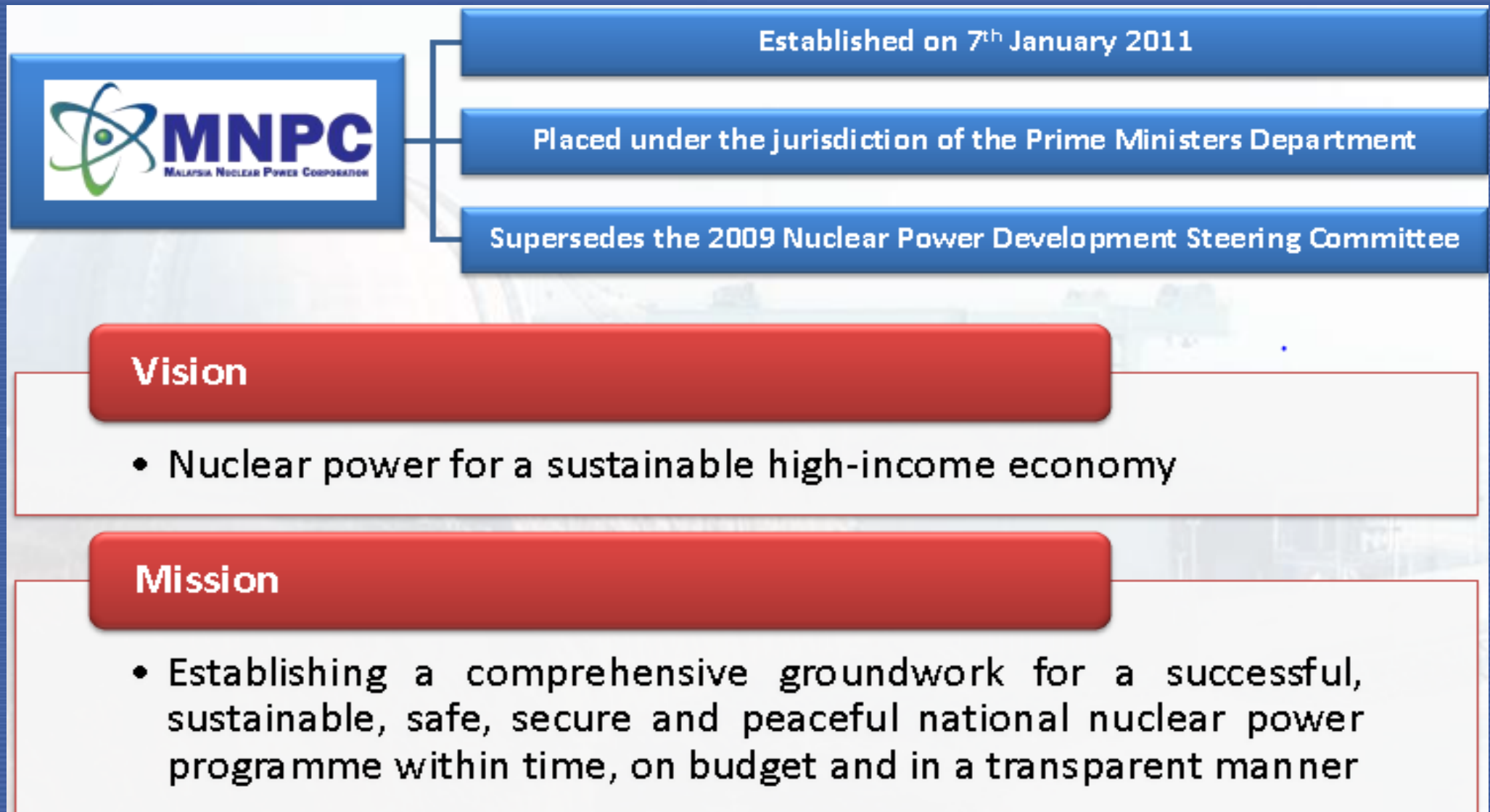
# NEPIO – EXPERTISE REQUIRED

- ✓ Energy Policy and Planning
- ✓ Electrical national grid
- ✓ NPP in the electricity market
- ✓ Economics of nuclear power
- ✓ Legal and Regulatory Framework
- ✓ Stakeholder Involvement including public communication
- ✓ Education and Human Resources Development
- ✓ Nuclear Power Technology
- ✓ Environmental Impact Assessment
- ✓ NPP siting (site selection)
- ✓ National industrial development
- ✓ Role of the Government and the private sector

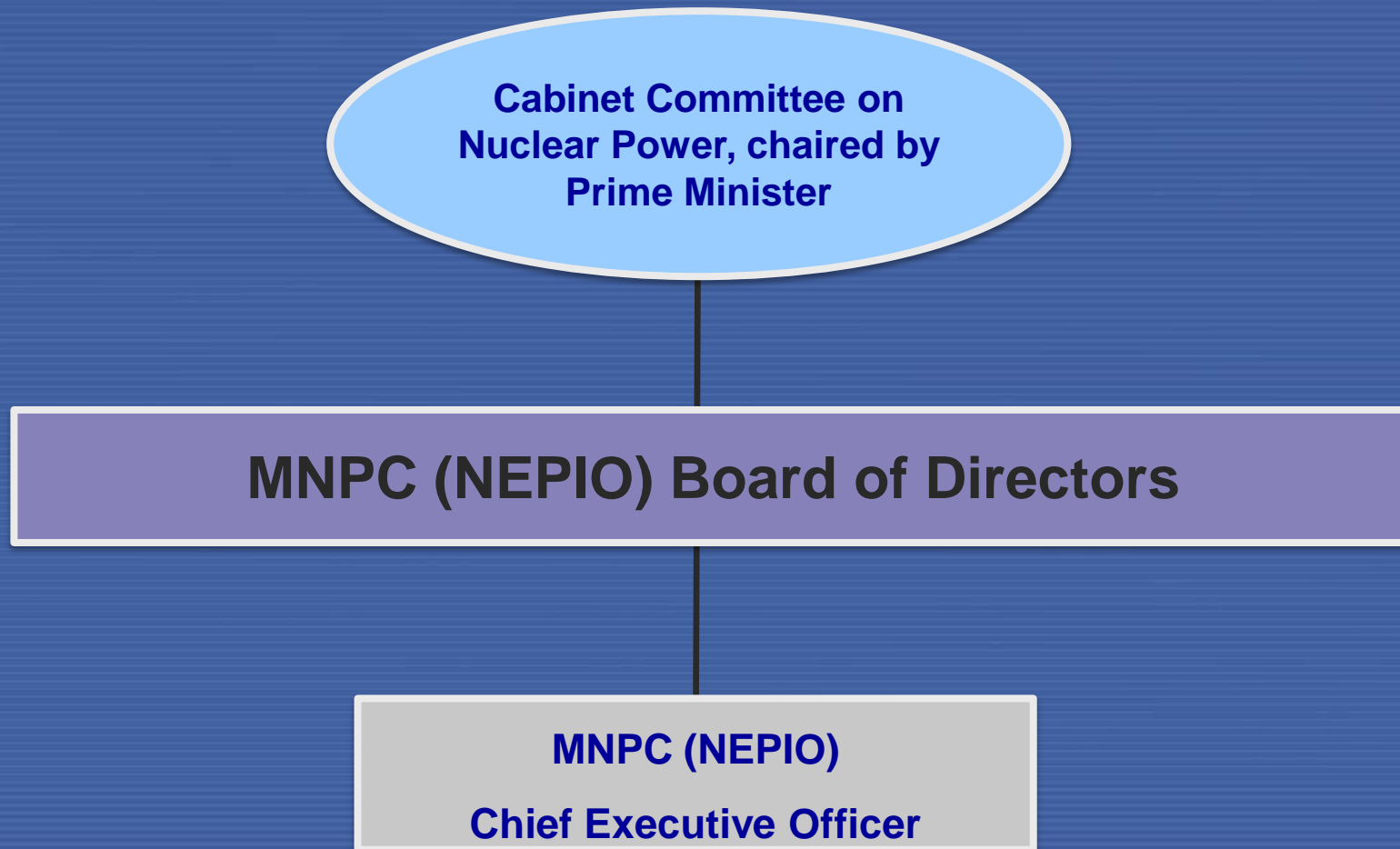
# NEPIO ORGANIZATION CHART (EXAMPLE)



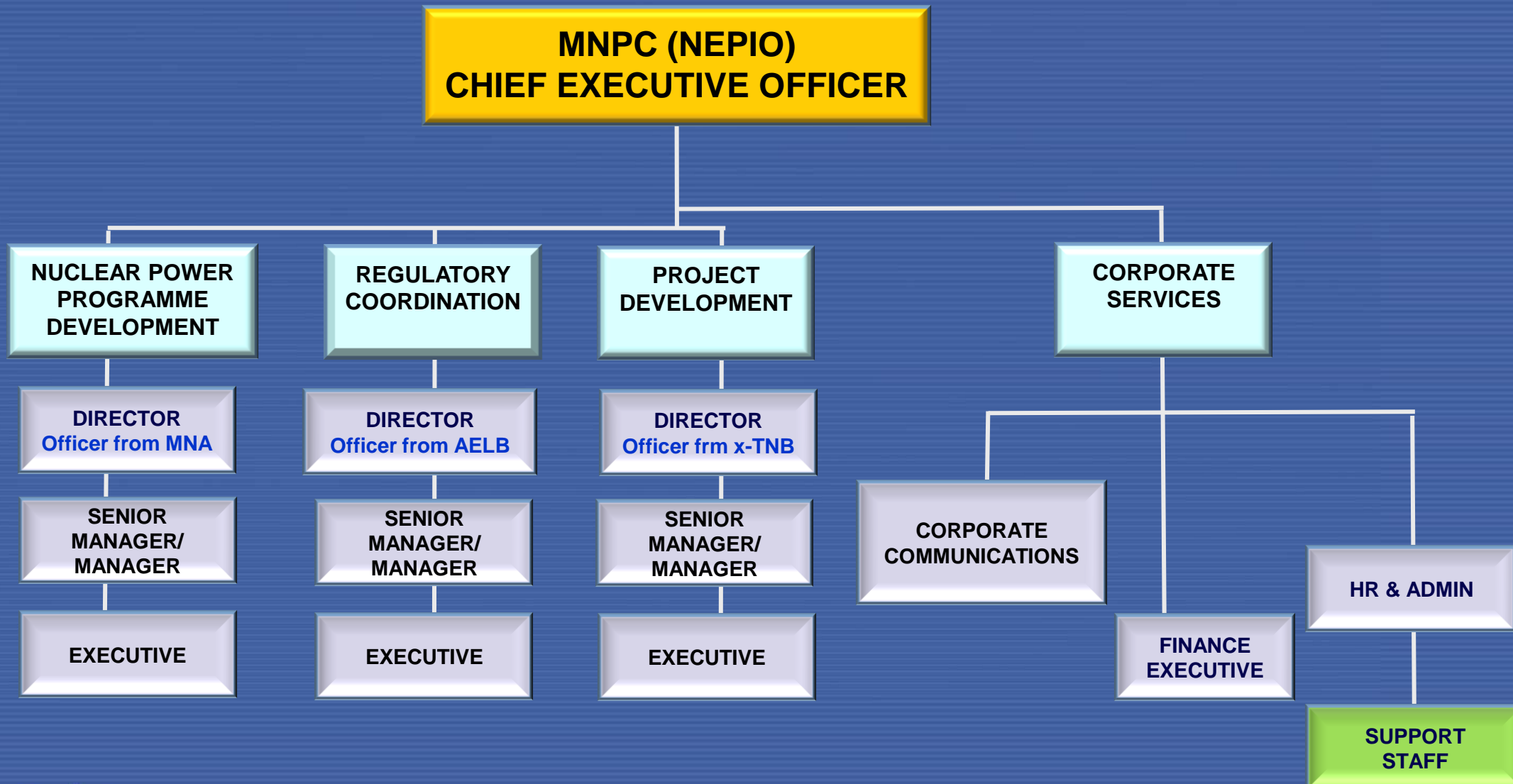
# NEPIO IN MALAYSIA (EXAMPLE 1)



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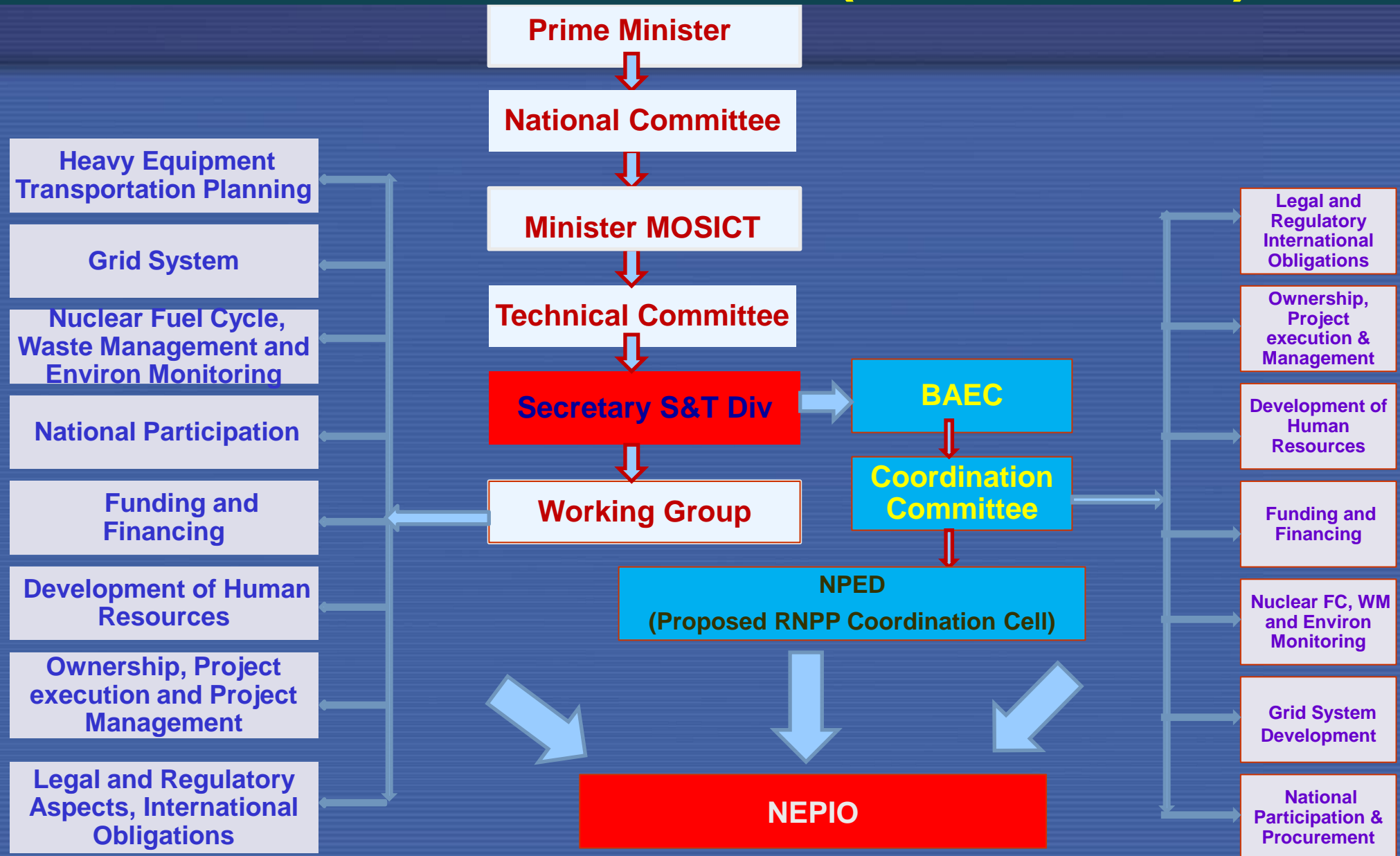


# NEPIO IN MALAYSIA (EXAMPLE 1)





# NEPIO IN BANGLADESH (EXAMPLE 2)



Working Sub-Groups

IAEA

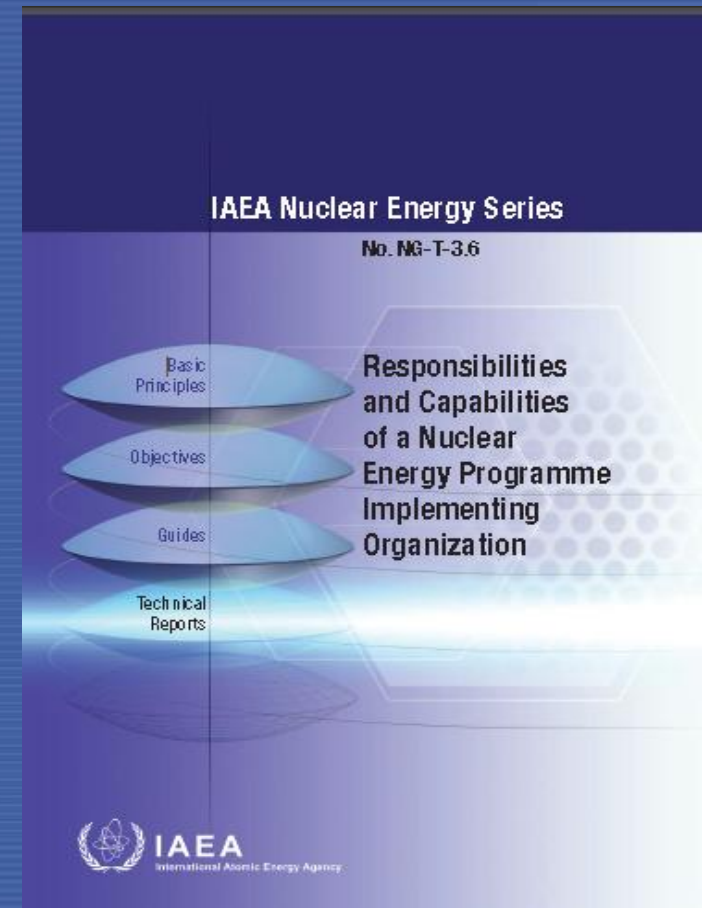
Sub-Committees on RNPP

# IAEA GUIDANCE DOCUMENT

## IAEA Nuclear Energy Series Technical Reports **Responsibilities and Capabilities of a Nuclear Energy Programme Implementing Organization** **No. NG-T-3.6**

### Content:

- ✓ Government commitment
- ✓ Responsibilities and functions of a NEPIO
- ✓ Structure of a NEPIO
- ✓ Capabilities of a NEPIO



# CONCLUSION

- ✓ A NEPIO should be viewed as a **preparatory body** that should ideally meld into the institutions and organizations that will be responsible for the proper conduct of a national nuclear power program.
- ✓ In Phase 1 a NEPIO have an important responsibility to **define the commitments and requirements** necessary to employ an effective, safe, secure and peaceful nuclear power program.
- ✓ Equally important, during Phase 2, NEPIO should have the **oversight role**, to see that commitments and functions are assumed by the designated organizations.
- ✓ As Milestone 2 is achieved, a **promotional role** may be assigned to NEPIO (as a Governmental agency) so that the nuclear power program continues to receive adequate support and funding from the Government, including policy and program development for high level radioactive waste disposition and for maintaining international commitments.





**Thanks !**