

# **Some Important Considerations for Launching a Nuclear Power Programme**

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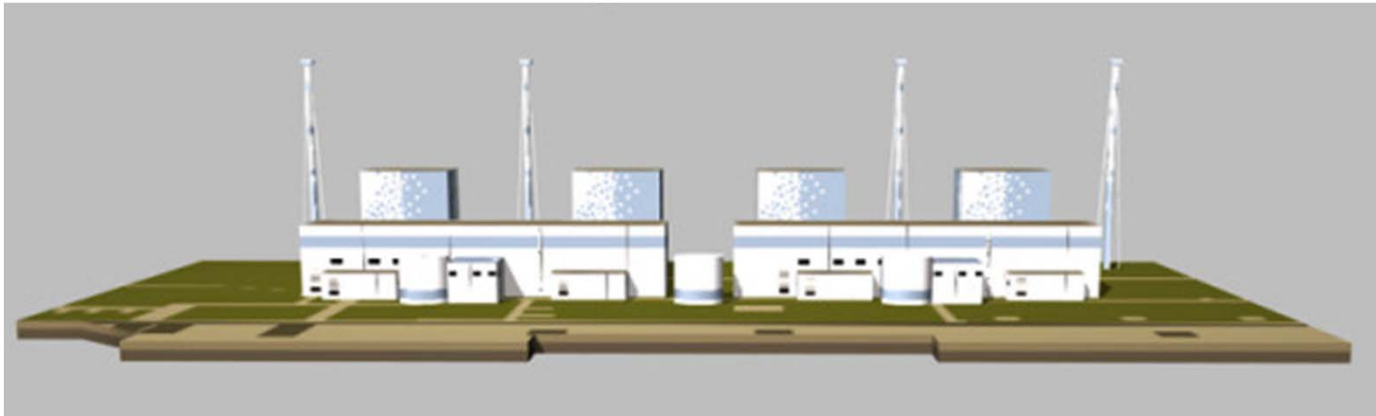


# BASIC INFRASTRUCTURE

- **The implementation of the first nuclear power requires a basic infrastructure,**
- **Infrastructure involves 19 different areas.**

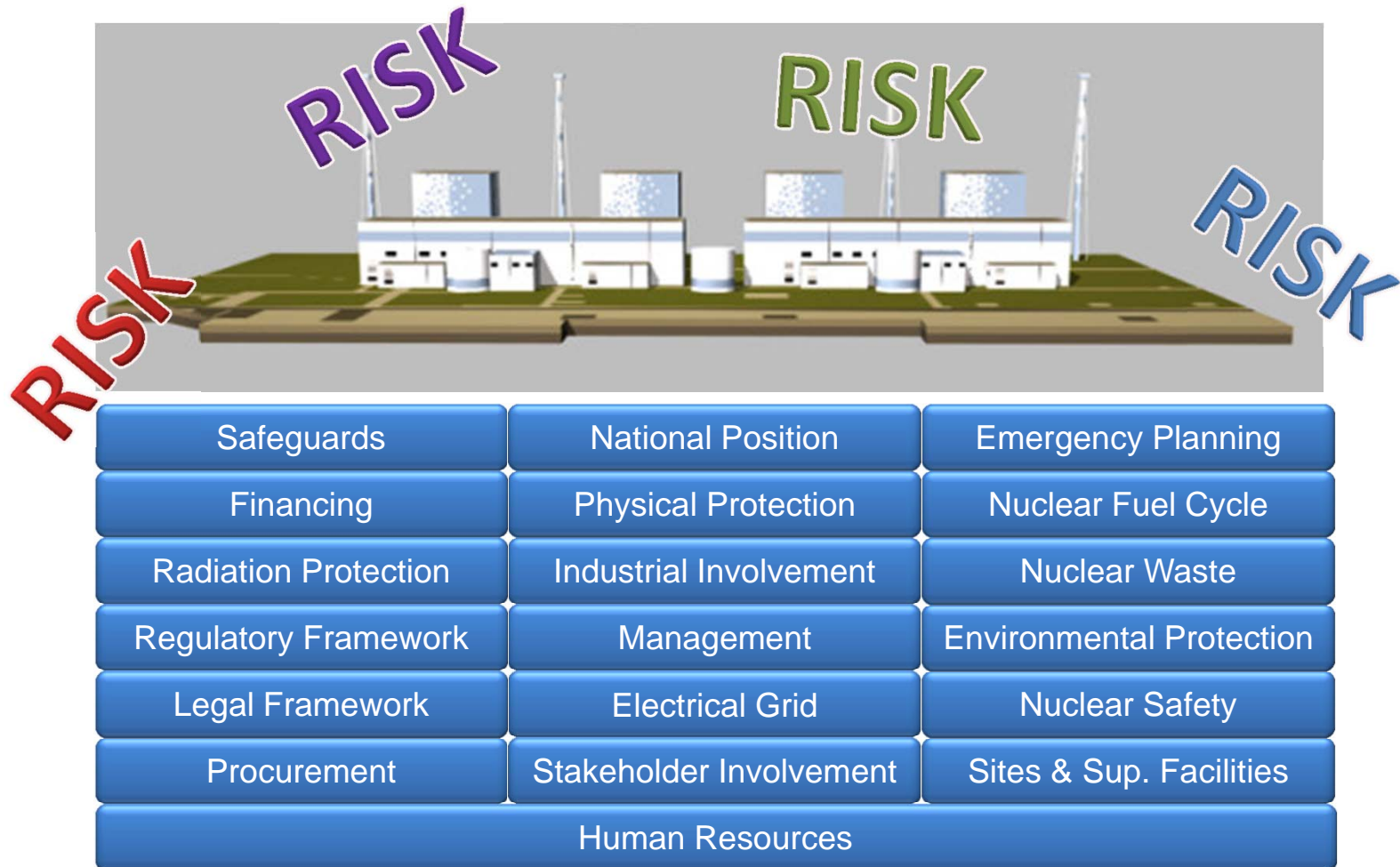


# BASIC INFRASTRUCTURE



Safeguards	National Position	Emergency Planning
Financing	Physical Protection	Nuclear Fuel Cycle
Radiation Protection	Industrial Involvement	Nuclear Waste
Regulatory Framework	Management	Environmental Protection
Legal Framework	Electrical Grid	Nuclear Safety
Procurement	Stakeholder Involvement	Sites & Sup. Facilities
Human Resources		

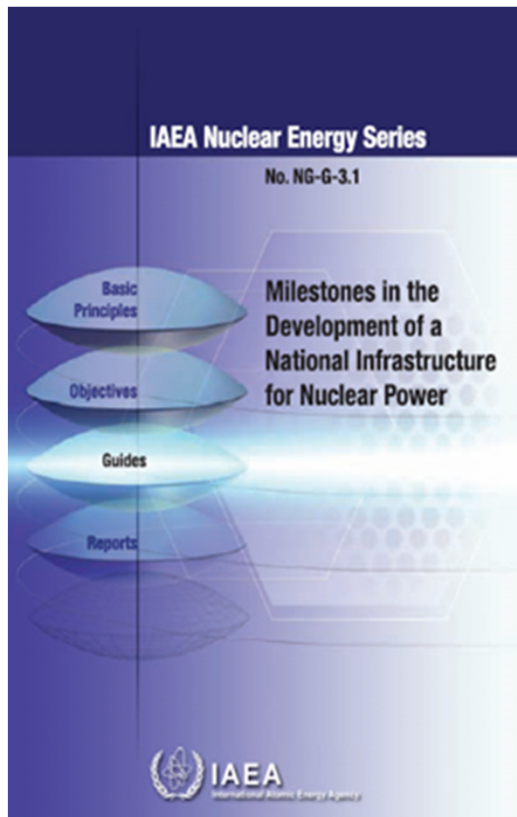
# MISSING INFRASTRUCTURE



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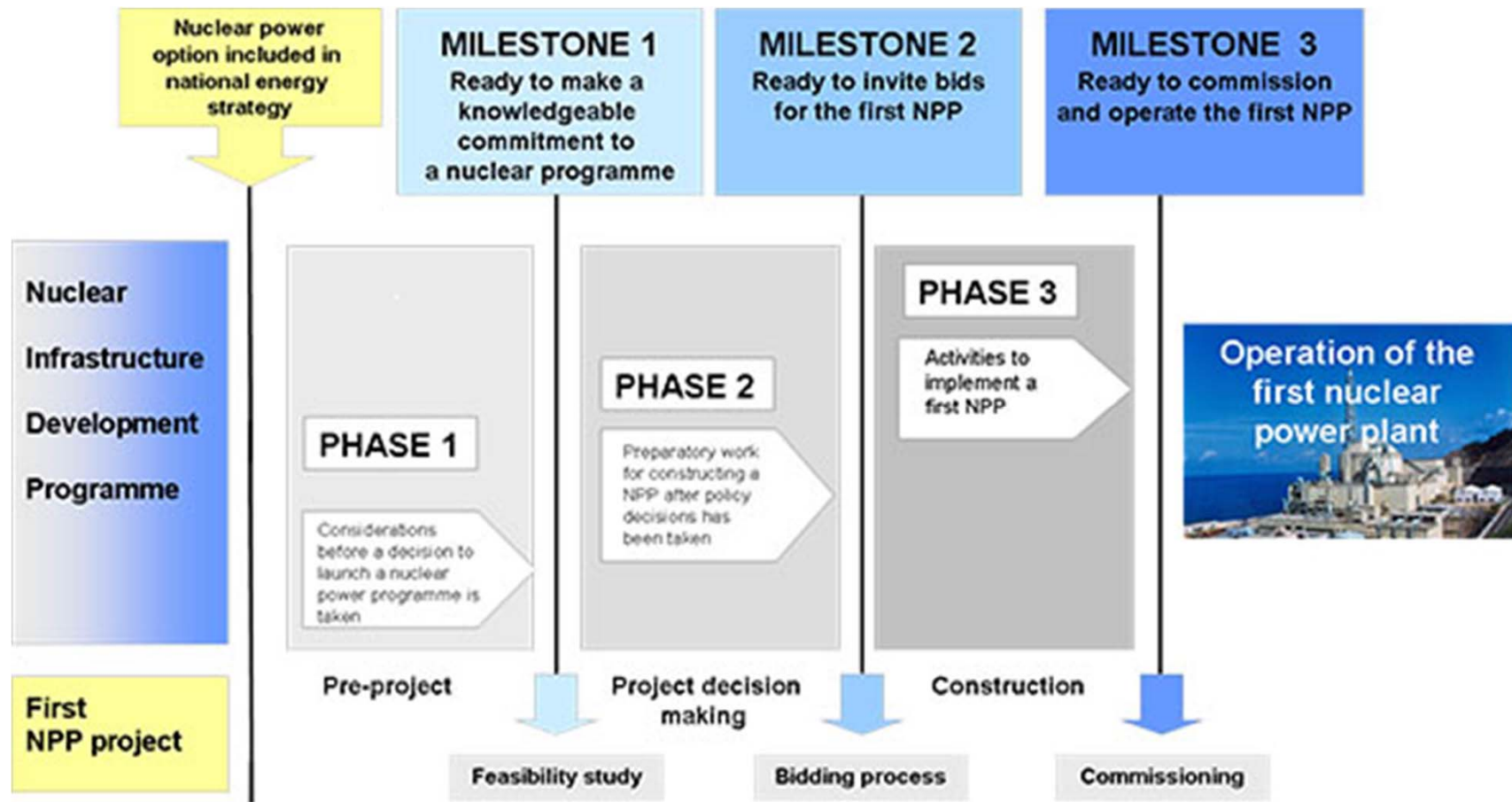
# MILESTONES APPROACH



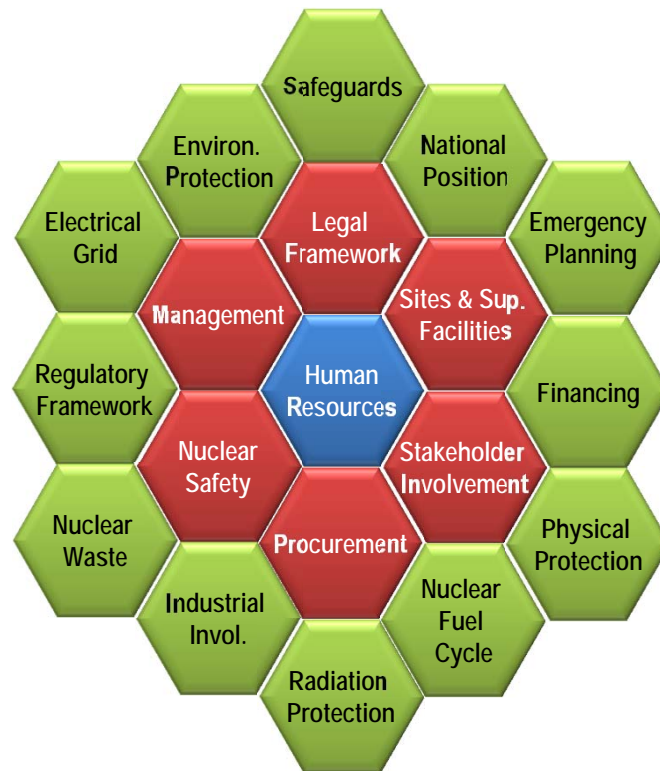
- IAEA designed an approach for newcomers to establish this infrastructure
- This approach is called “milestones approach”

*NE series guide NG-G-3.1 “Milestones in the Development of a National Infrastructure for Nuclear Power, September 2007*

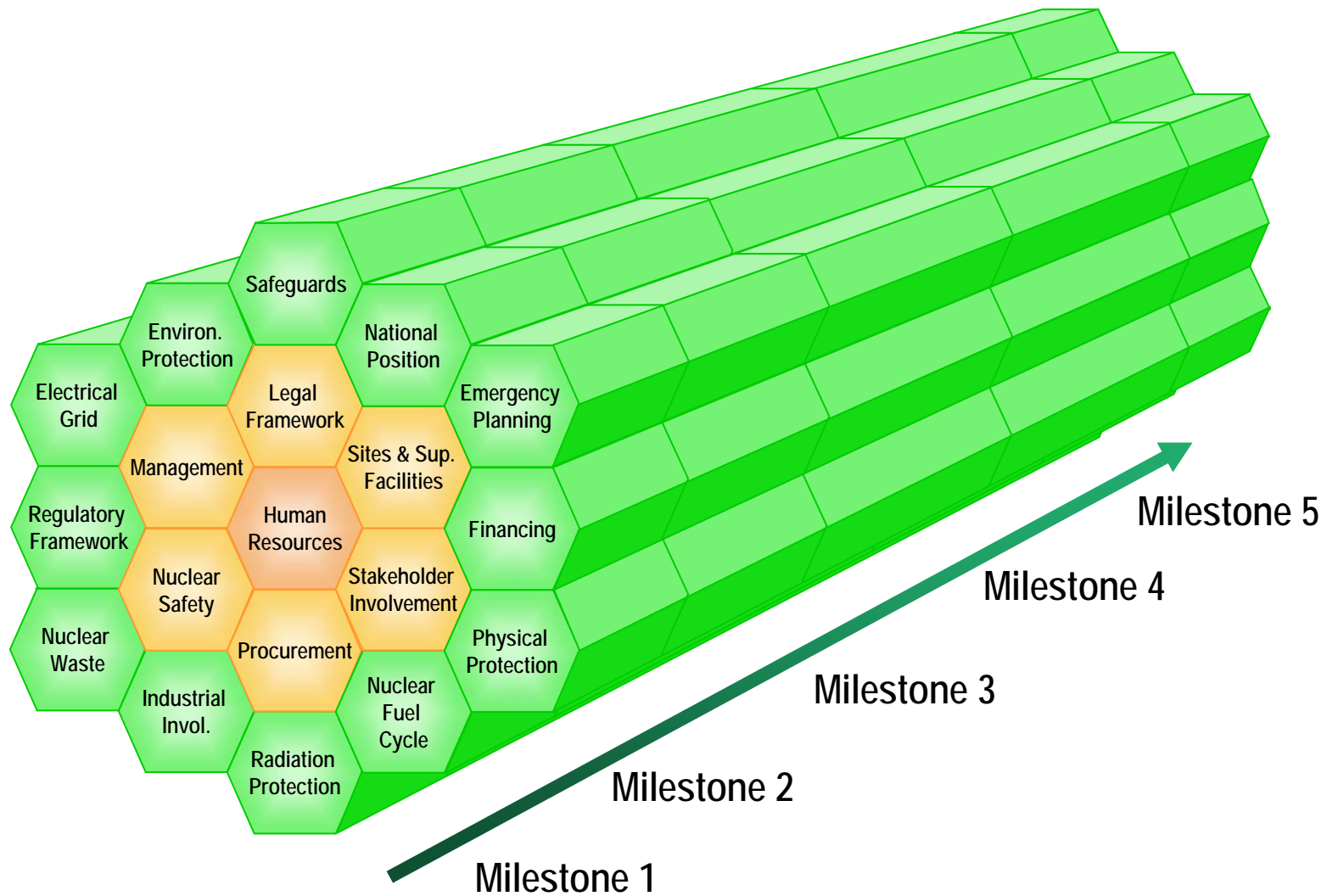
# MILESTONES APPROACH



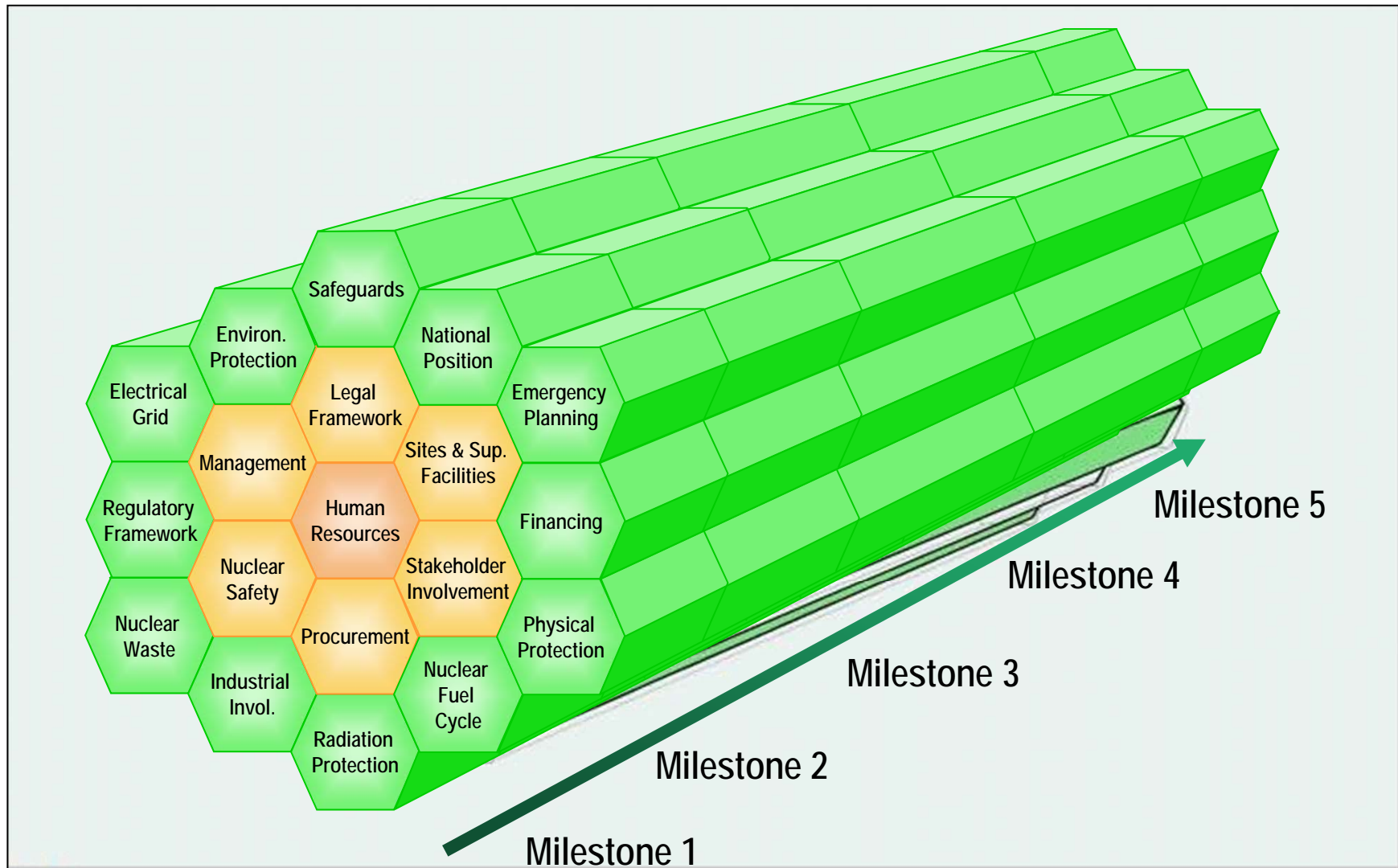
# INFRASTRUCTURE AREAS



# INFRASTRUCTURE AREAS IN MILESTONES



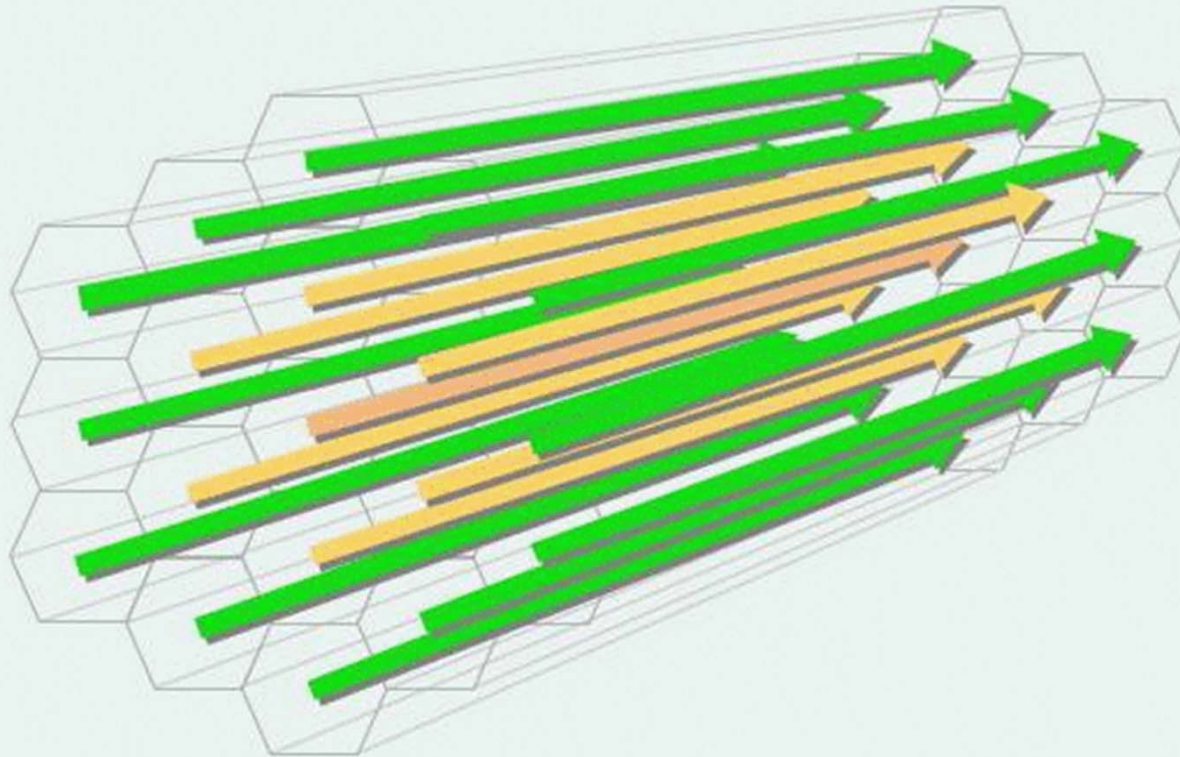
# MANY PROJECTS



# PROJECT MANAGEMENT

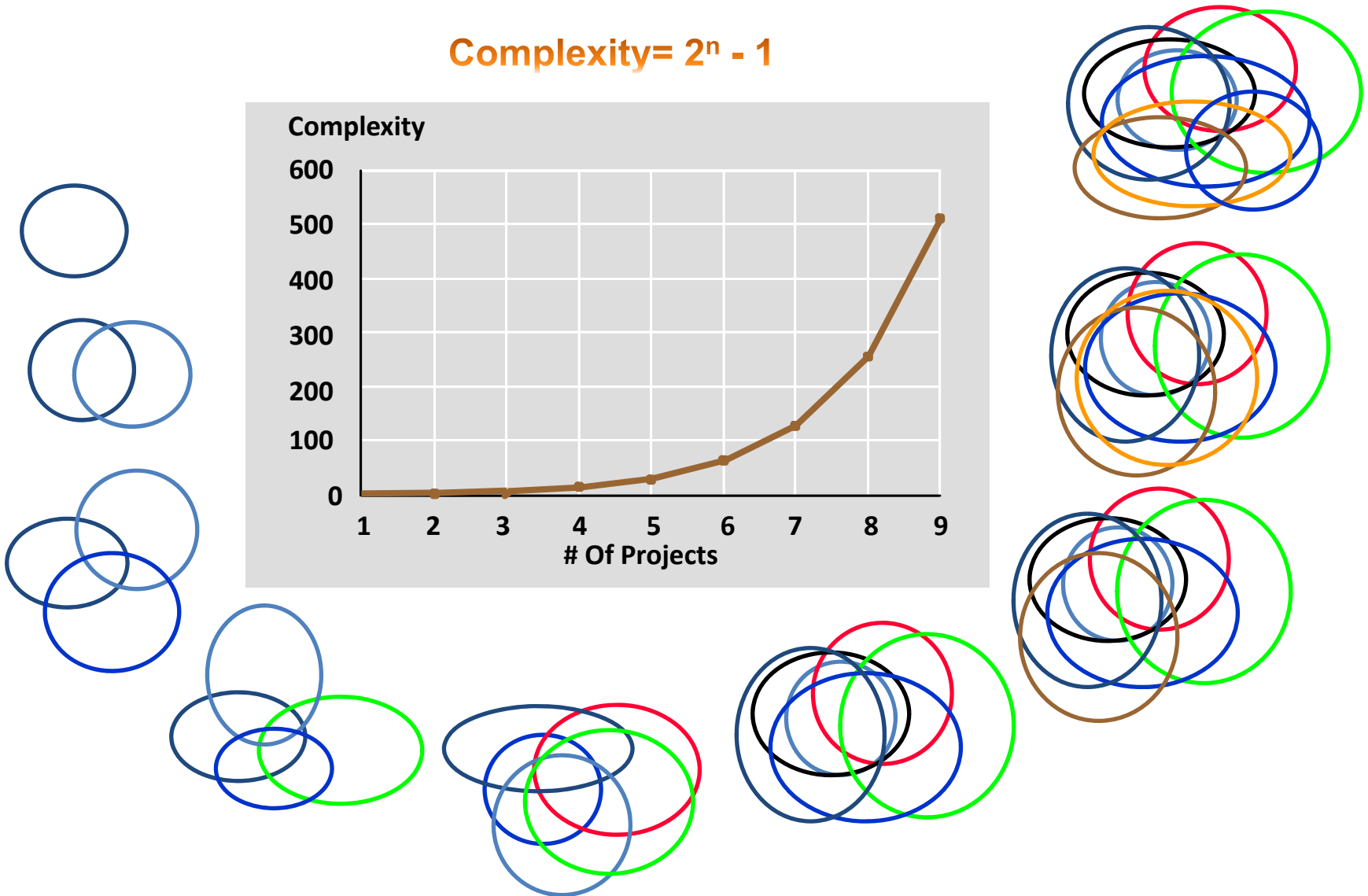
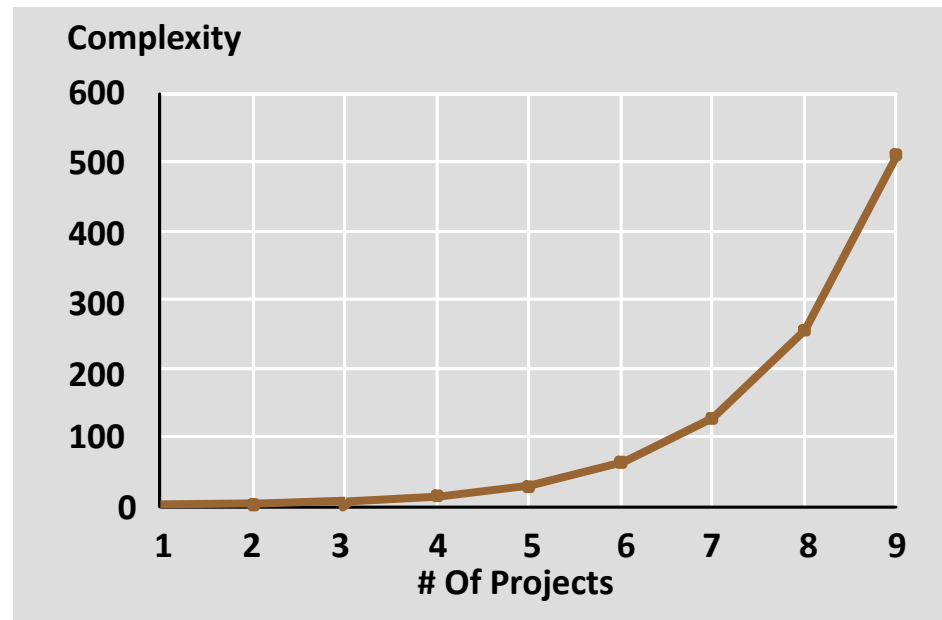
- **“Project Management” is very important,**
- **Establish a sound Project Management System,**
- **Establish and follow PM standards,**
- **Develop human resources for project management,**
- **Establish a certification system,**

# COORDINATION BETWEEN PROJECTS



# COORDINATION BETWEEN PROJECTS

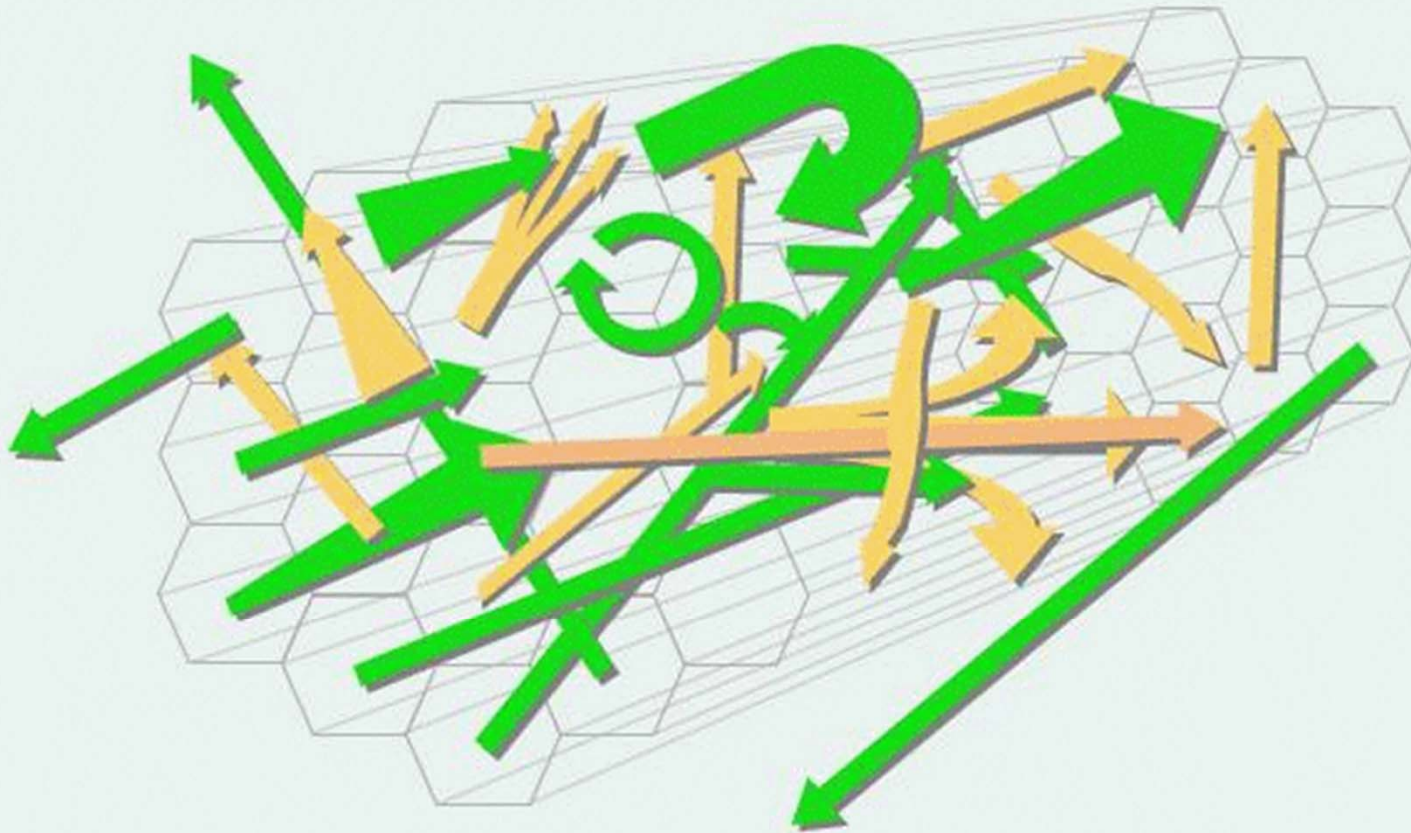
Complexity=  $2^n - 1$



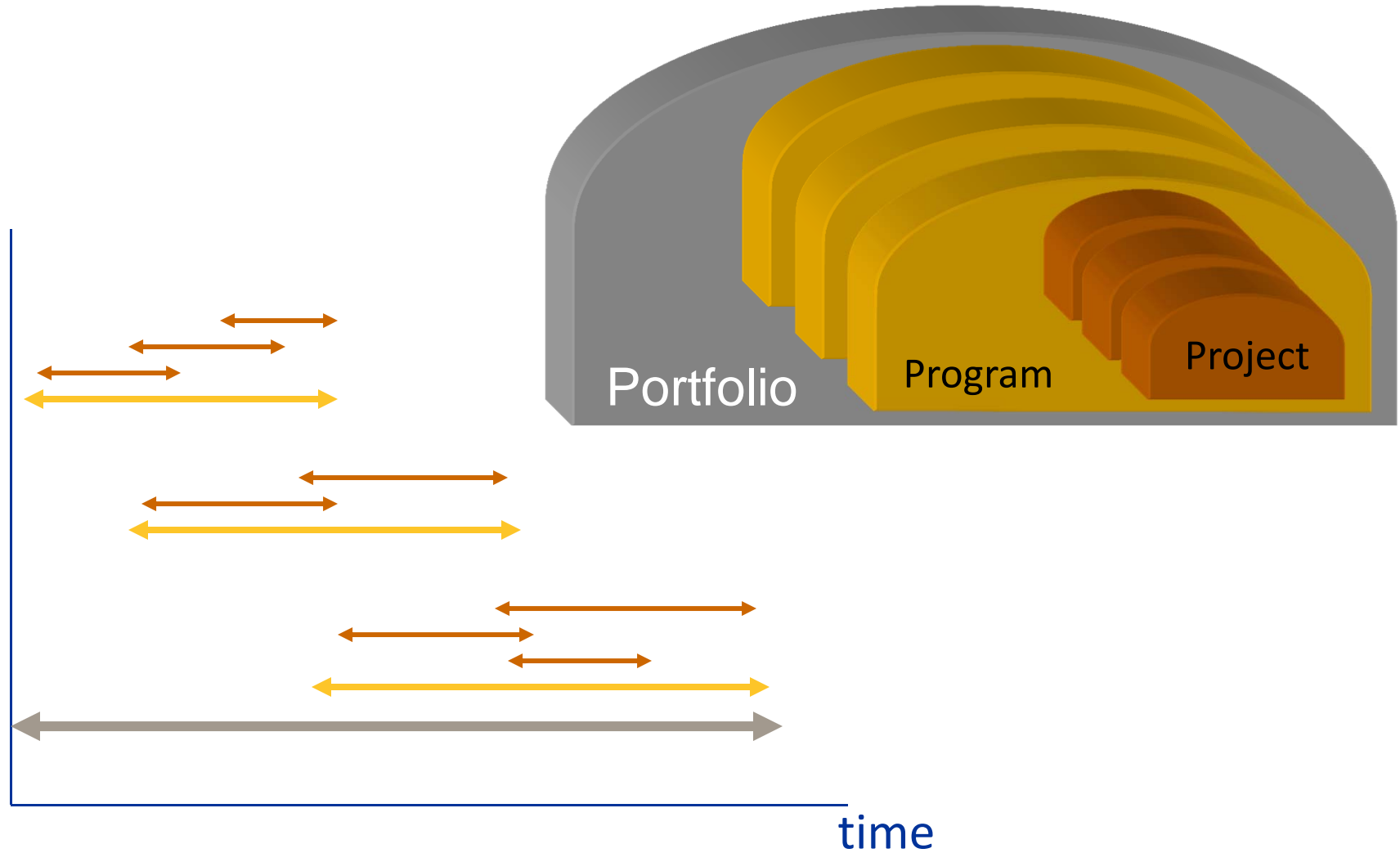
# PROGRAM MANAGEMENT

- “Program Management” is very important,
- Establish a Nuclear Program Management Organization
- Establish a sound Program Management System,
- Establish and follow PM standards,
- Develop human resources for program management,

# PROGRAM MANAGEMENT



# PROJECT, PROGRAM & PORTFOLIO MANAGEMENT



# KEY STEPS TO FOLLOW

Declaration of interest in nuclear as an option  
ENERGY PLANNING

## **Phase 1: 1-3 years**

- Development of knowledge of commitment/obligation & Assessment (national capacity, role of government..)
- **Milestone:** Formal Intention To Implement Nuclear Power Program

## **Phase 2: 3-7 years**

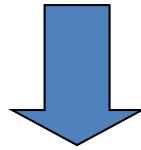
- Start implementation of INFRASTRUCTURE BUILDING PLAN...
- **Milestone:** Invitation To Bids Issued

## **Phase 3: 3-6 years**

- First Project Contract Signed: CONSTRUCTION of the FIRST NPP
- **Milestone:** Ready for Criticality and Operational Testing

# MAJOR ISSUES TO REACH MILESTONES

**In each Phase**

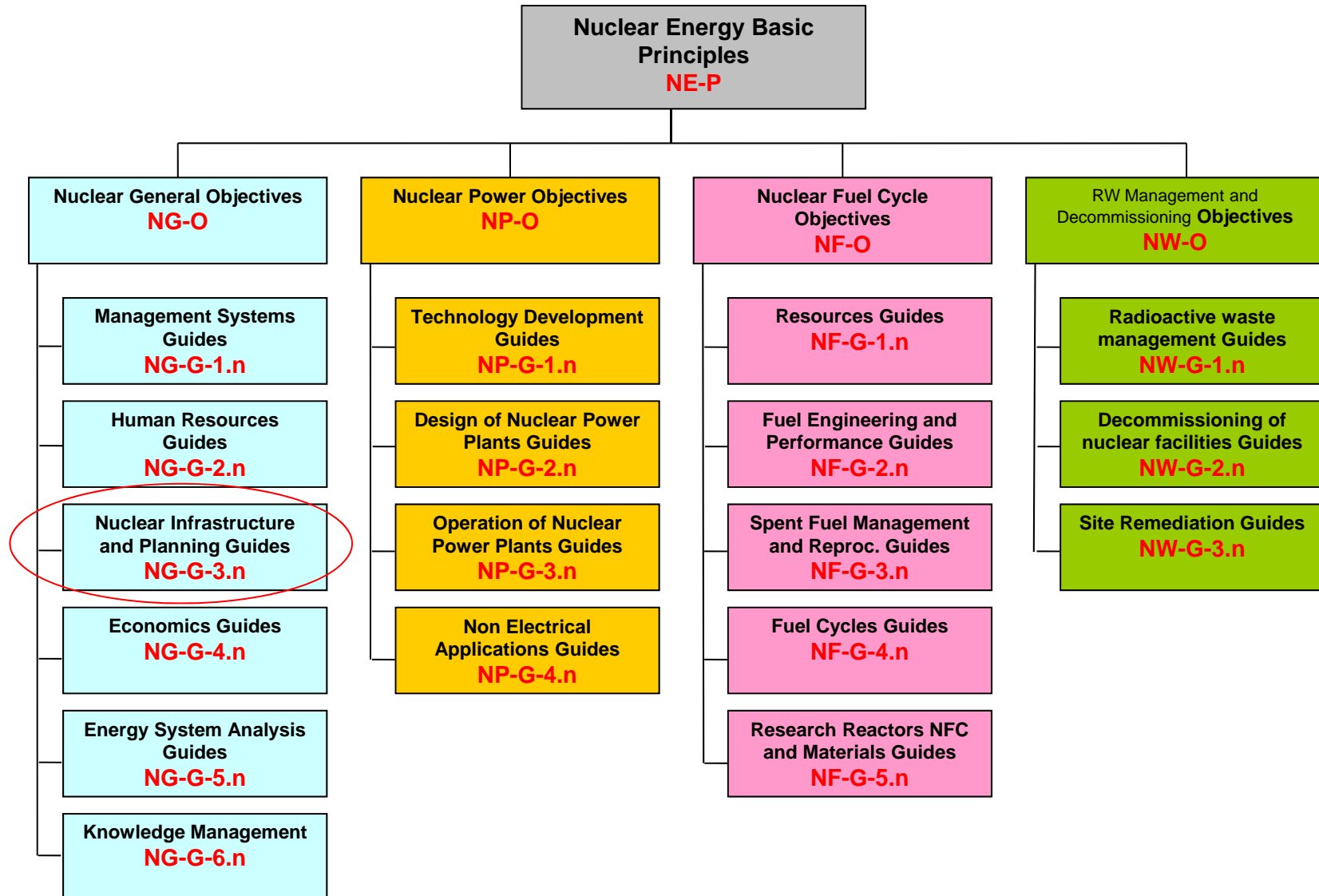


**19 major issues to fulfil  
for reaching the corresponding milestone**

**Each issue requires specific actions  
during each phase**



# DETAILS IN IAEA DOCUMENTS



# AKKUYU PROJECT CHRONOLOGY

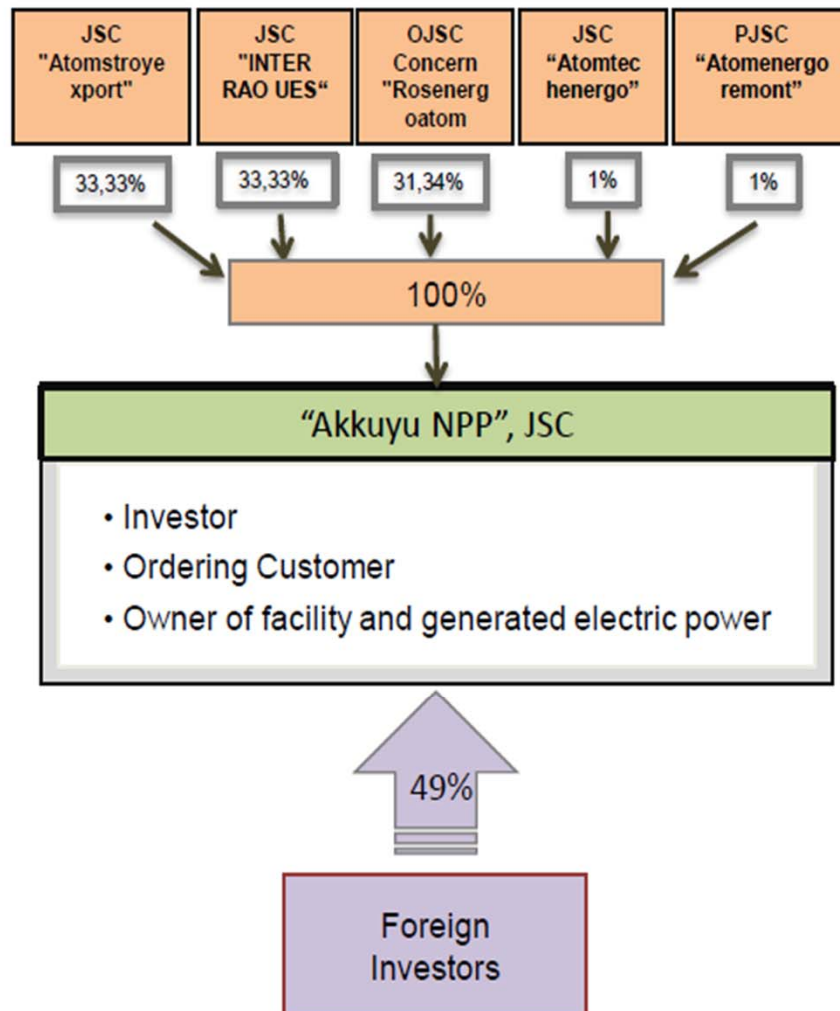
## AFTER 2010

### Status:

- 13.01.2010 Joint statement of Deputy Head of the Russian Government Igor Sechin and Minister of energy and natural resources of Turkey Taner Yildiz on cooperation to construct NPP in Turkey; start of bilateral negotiations
- 12.05.2010 Signature of Agreement between the Government of the Russian Federation and the Government of the Republic of Turkey on cooperation in relation to the construction and operation of a nuclear power plant at the Akkuyu site in the Republic of Turkey (IGA)
- 21.07.2010 **Entry into force of the Law ratifying IGA in Turkey (Law No. 27648 dated 21.07.2010)**
- 15.11.2010 Project Company shareholders identified by the Russian Government
- 13.12.2010 **Entry into force of the Law ratifying IGA in Russia**
- 13.12.2010 **Project Company, Akkuyu Electricity Generation JSC (AKKUYU NGS ELEKTRIK URETIM ANONIM SIRKETI) was established in Turkey**
- 26.05.2011 Start of full scale site survey activities
- 2011 Completion of land allocation to Akkuyu NGS AS; start of preliminary engineering design; PPA negotiations; preparations for licensing and EIA



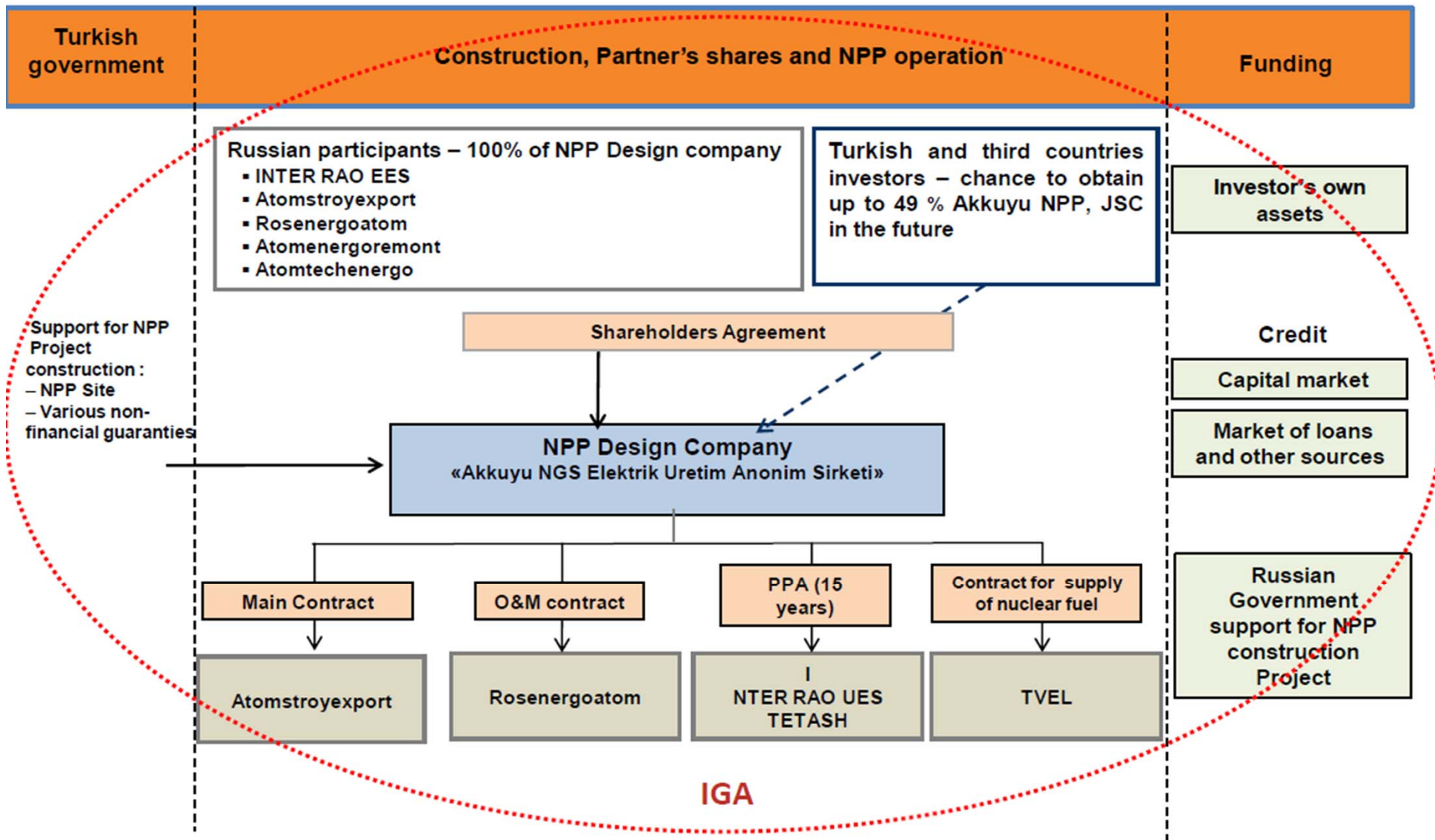
# INVESTMENT MODEL



## COMMENTS

- "Akkuyu NPP" is a tailor-made JSC incorporated in Turkey
- Initially Rosatom affiliates own 100% stake of the Akkuyu NPP, JSC and retains the majority stake during the whole lifetime of the Project (51%-100%)
- International investors are welcome to join the project at any stage of its implementation and can own up to 49% stake

# FIRST BOO NUCLEAR PROJECT IN THE WORLD (Will It Work?)



# SOME FINANCIAL DETAILS

## Key investment parameters



## Project implementation environment

- Initial financing of the project is provided by Russian party
- The Russian State provides financial support by direct and indirect measures
- The project presumes electricity export to the European and Middle East countries
- Project financing approach presumes balancing equity and debt mechanisms. The latter one includes various debt sources and instruments, it is also considered potential involvement of European export agencies

(Coface, Hermes)

PPA: contract period – 15 years for 50% of energy output,  
fixed price 12,35 US cents per kWh



**THANKS FOR  
LISTENING**

