

# IAEA HONG-KONG IAEA APPROACH ON NUCLEAR POWER INTRODUCTION



IAEA

International Atomic Energy Agency

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V. NKONG-NJOCK

# INTRODUCTION



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# WORLD CHALLENGES - NUCLEAR OPPORTUNITIES

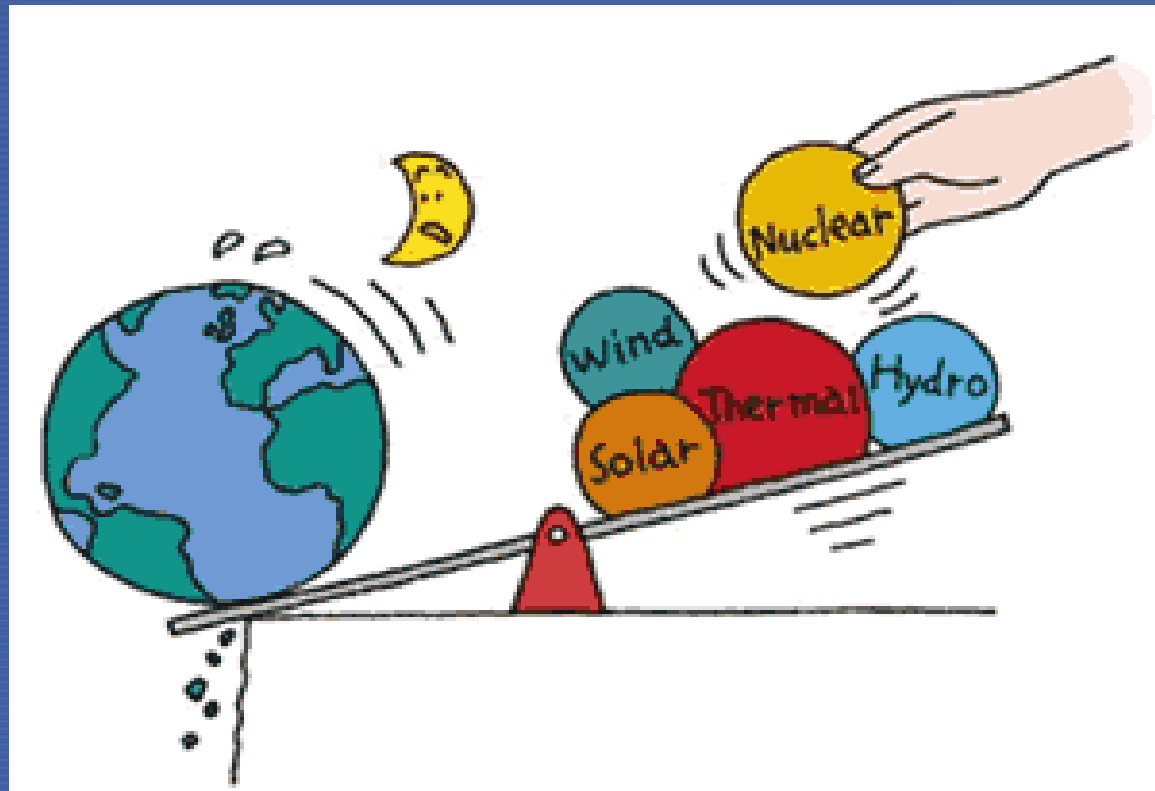
- Growing energy need
- Climate change
- Energy security
- Fossil price rise

## And Nuclear Power

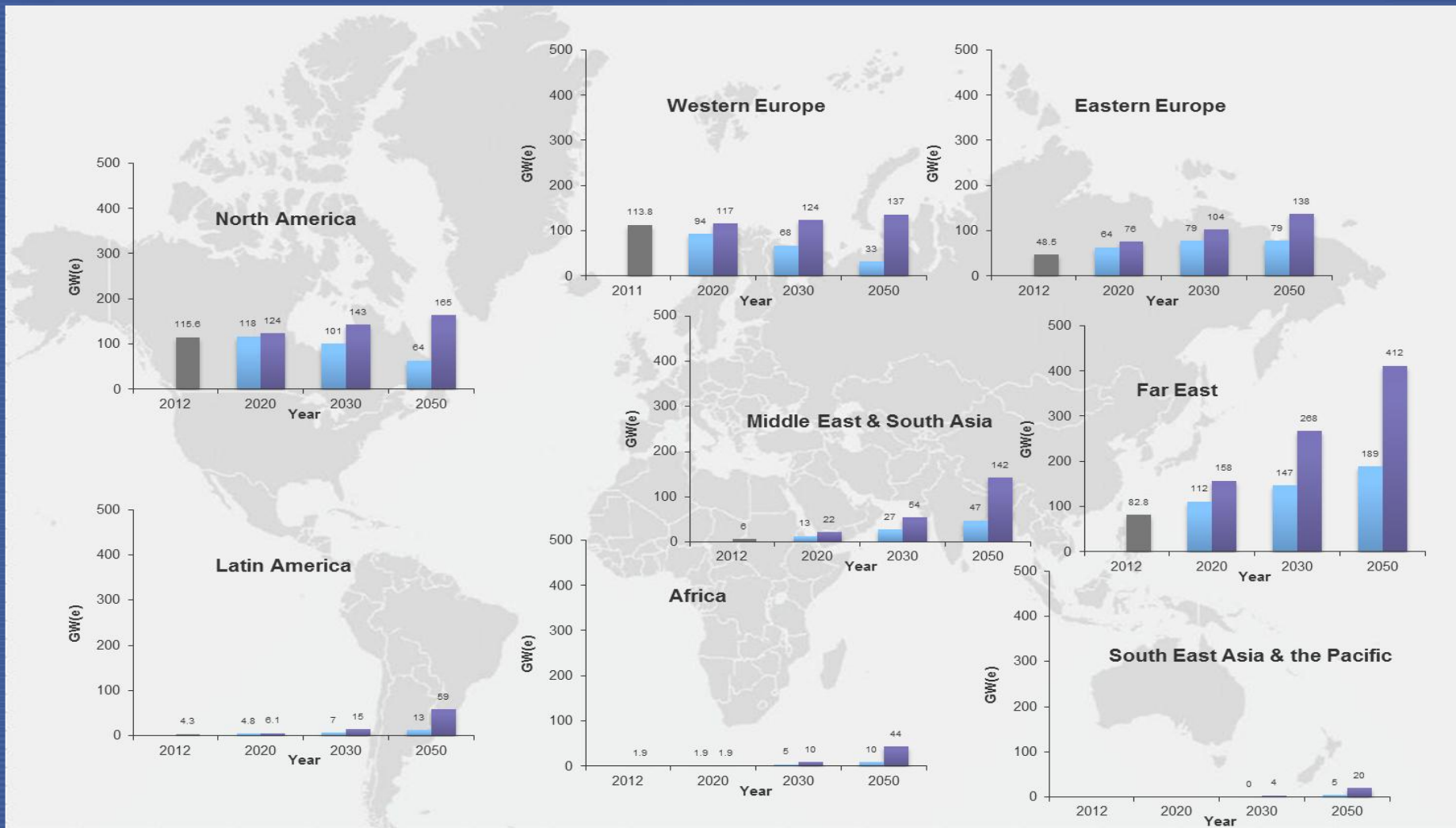
- Improved operations, good economics and safety record

## In spite of

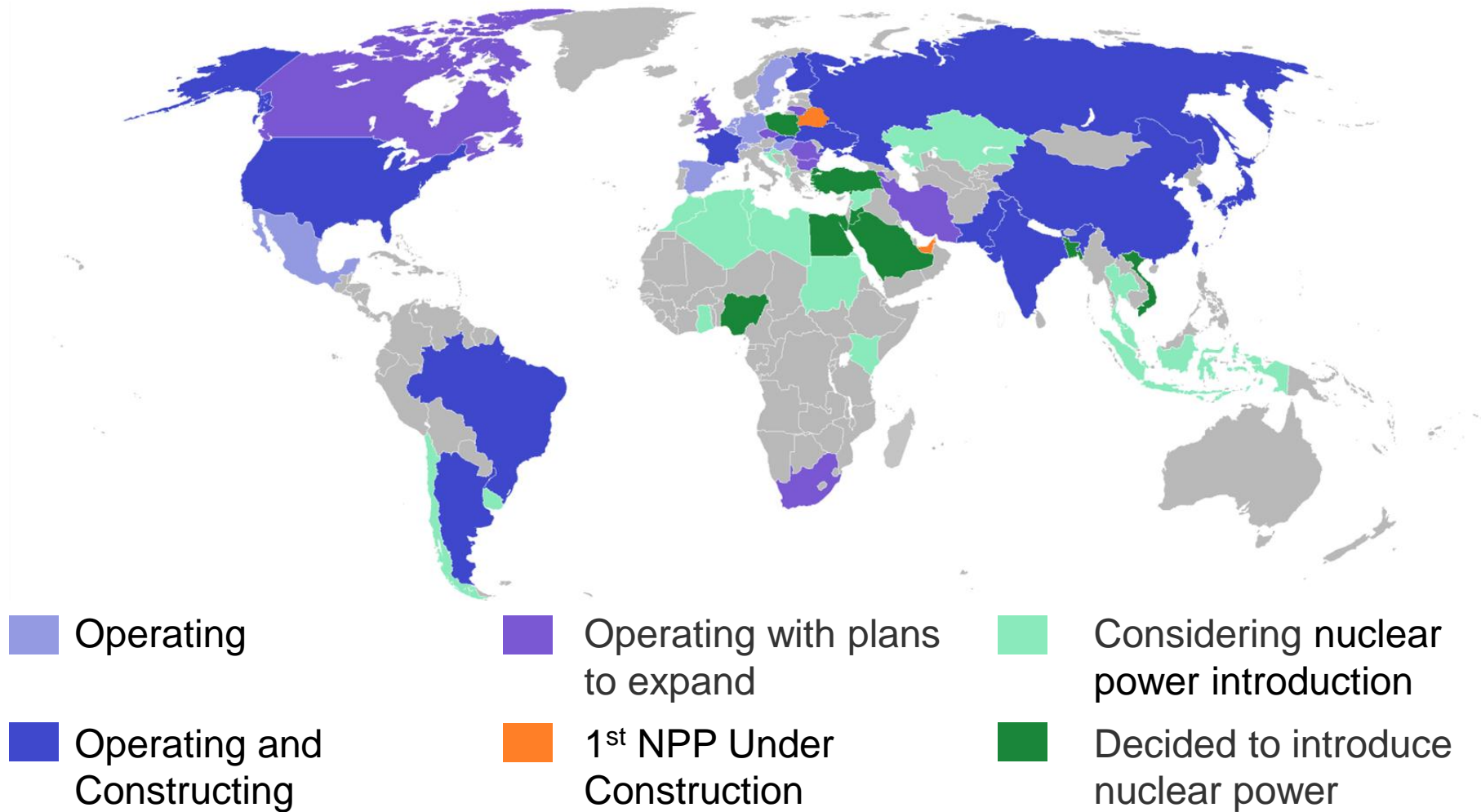
- Economic crisis
- Fukushima accident



# IAEA PROJECTIONS



# WHO ARE THE NEWCOMERS

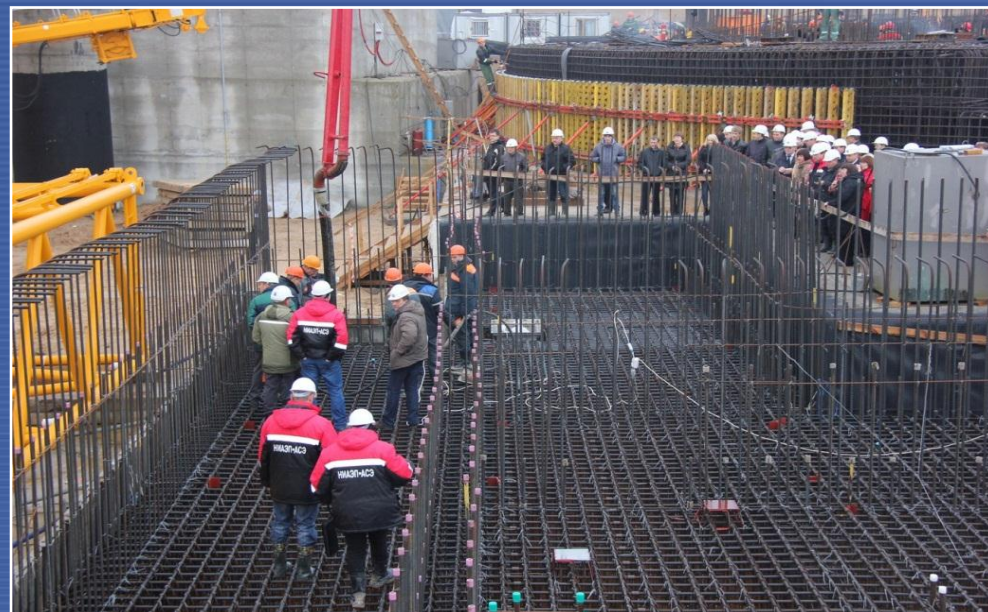
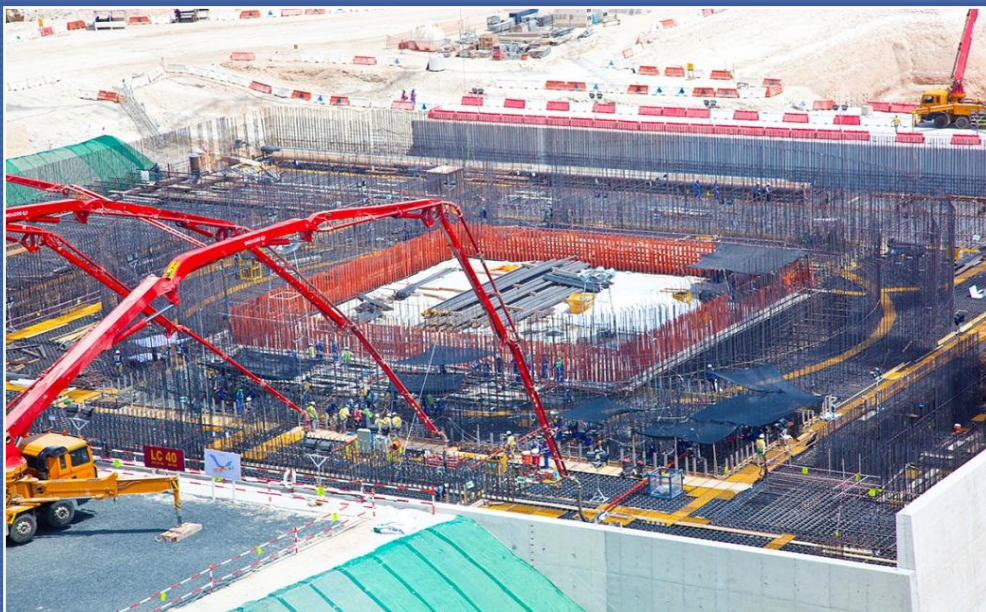




# NEWCOMERS WITH 1ST NPP UNDER CONSTRUCTION

UAE – Unit 1, July 2012  
Unit 2, May 2013

Belarus – Unit 1, Nov 2013



**As many as 6 countries could have their first reactors under construction in the next 5 years**

# WHAT MAKES NUCLEAR POWER UNIQUE

- Long-term Government commitment needed
- High level of safety and security
- Capital intensive investment
- Well-trained human resources
- Control nuclear materials
- Long-term nuclear waste management
- Public perception



# 1. NUCLEAR ENERGY & IAEA APPROACH



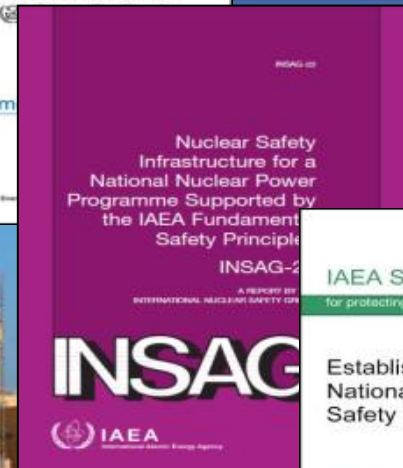
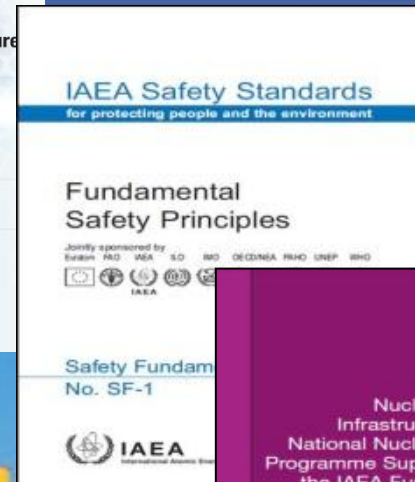
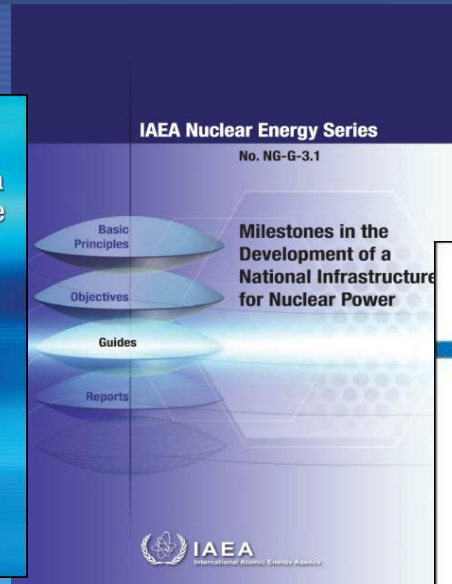
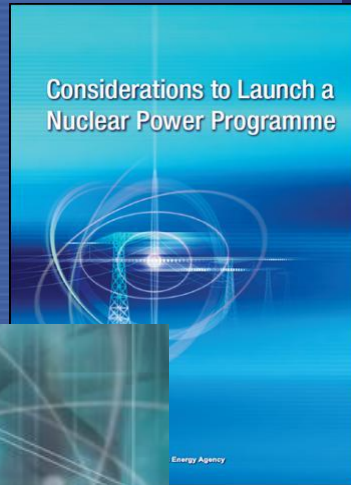
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# MILESTONES APPROACH TO NUCLEAR POWER

- Phased
- Comprehensive
- Integrated



# MILESTONES APPROACH TO NUCLEAR POWER

## Phase 1: **Decide!**



## Phase 2: **Prepare!**



## Phase 3: **Construct!**



10 – 15 years

# PREPARATION & DEVELOPMENT OF THE NUCLEAR POWER INFRASTRUCTURE

The success of a NP programme depends upon considering all of the issues in an integrated manner

National Position				
Safeguards	Nuclear Safety	Management	Funding and Financing	Legislative Framework
Stakeholder Involvement	Regulatory Framework	Radiation Protection	Electrical Grid	Human Resources Development
Nuclear Fuel Cycle	Site and Supporting Facilities	Environmental Protection	Emergency Planning	Security and Physical Protection
	Radioactive Waste	Industrial Involvement	Procurement	

## 2. SAFETY & SECURITY



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# FUNDAMENTAL SAFETY PRINCIPLES

- **Principle 1:** Responsibility for safety
- **Principle 2:** Role of government
- **Principle 3:** Leadership and management for safety
- **Principle 4:** Justification of facilities and activities
- **Principle 5:** Optimization of protection
- **Principle 6:** Limitations of risks to individuals
- **Principle 7:** Protection of present and future generations
- **Principle 8:** Prevention of accidents
- **Principle 9:** Emergency preparedness and response
- **Principle 10:** Protective actions to reduce existing or unregulated radiations risks must be justified and optimized

*Ten safety principles form the basis on which safety requirements are developed and safety measures are implemented to achieve the primary safety objective.*



# NATIONAL COMMITMENT TO THE GLOBAL NUCLEAR SAFETY AND SECURITY FRAMEWORK



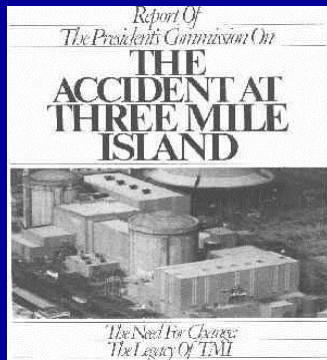
- Safety is an essential condition for a sustainable and successful nuclear power programme
- Safety is an integral component in all infrastructure issues
- Safety cannot be outsourced
- A safety culture starting with strong and effective leadership is essential
- Weak links need to be identified and strengthened
- A security culture and synergies between Safety and Security is now essential
- Handling information (transparency versus restricted)

# MAJOR CHALLENGES

- Independence of the Regulatory Body
- Regulating Multiple Reactor Technologies
- Establishing a Strong Safety Culture
- Openness with External Stakeholders
- Competence of the Regulatory Body
- Sufficient Resources for the Regulatory Body
- Schedule Pressure on the Regulatory Body

# NUCLEAR SAFETY LESSONS

28 March 1979  
Three Mile Island Accident  
Unit 2



26 April 1986  
Chernobyl Accident  
Unit 4



11 March 2011  
Fukushima Daiichi Accident  
Units 1 - 4







# Working to Protect People, Society and the Environment



IAEA Safety Standards  
Classification of Radioactive Waste  
General Safety Guide  
No. GSG-1  
IAEA

CAUTION  
THRESHOLD  
ONLY

IAEA

IAEA Action Plan  
Making Nuclear Power Safer  
IAEA

MAKING NUCLEAR POWER  
**SAFER**  
The IAEA Action Plan

# IAEA ACTION PLAN FOR NUCLEAR SAFETY

- Safety Vulnerabilities
- Peer Reviews
- Emergency Preparedness and Response
- Regulatory Bodies
- Operating Organisations
- IAEA Safety Standards
- Legal Framework
- Embarking countries
- Capacity Building
- Protection of People and Environment
- Communication
- Research and Development

## 12 Point Plan

- Adopted by Board of Governors
- Endorsed by All Member States

## Actions on

- IAEA Secretariat
- Member States
- Other Relevant Stakeholders

# IAEA FUKUSHIMA REPORT

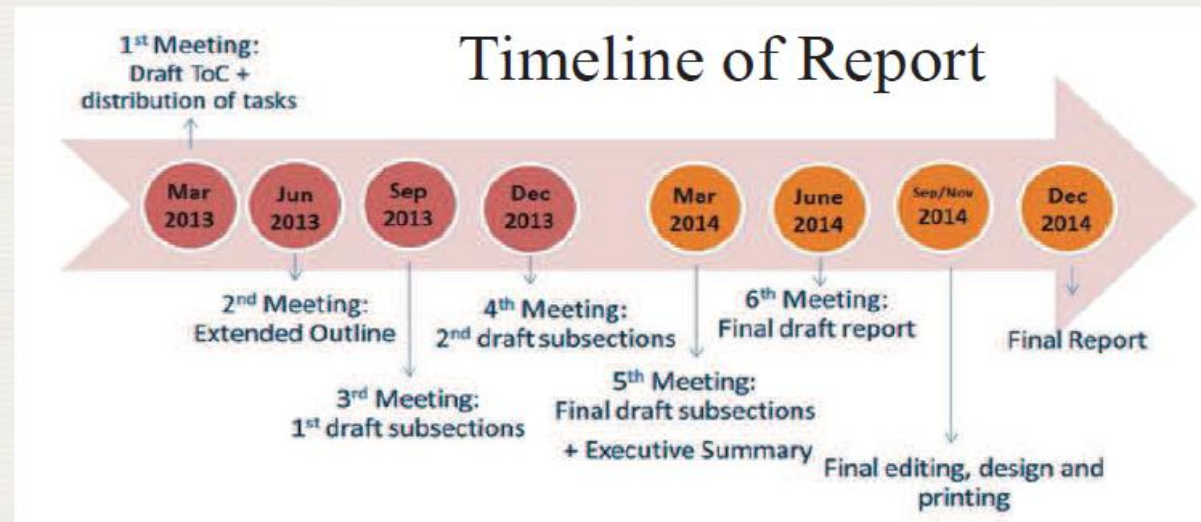
## Chapter

1. Description and context of the accident
  2. Safety assessment
  3. Emergency preparedness and response
  4. Radiological consequences
  5. Post-accident recovery
- Lessons learned
  - Conclusions

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Fukushima Comprehensive Report





# CONCLUSION



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# GETTING INFORMED ABOUT NUCLEAR

## Website: IAEA and Newcomers

<http://www.iaea.org/NuclearPower/Infrastructure>

## E-learning about Nuclear Power

<http://www.iaea.org/NuclearPower/Infrastructure/elearning/index.html>

The screenshot shows the IAEA Nuclear Power (NENP) website homepage. The header includes the IAEA logo, navigation tabs (About Us, Our Work, News Centre, Publications, Nucleus), and a search bar. The main content area features a large banner for the 'Integrated Nuclear Infrastructure Group' with a 'Read more >' link. Below the banner are sections for 'News' and 'Videos'. The 'News' section highlights the 'IAEA Nuclear Power Newsletter - January 2014' and 'How to Manage Spent Fuel and Radioactive Waste in New Nuclear Power Programmes'. The 'Videos' section features 'Progress and Development Through the IAEA Peaceful Uses Initiative'. A sidebar on the left lists various services and resources, including 'Home', 'Milestones Approach', 'INIR Missions & Reports', 'Catalogue of Services', 'Assistance Package for Future Owner/Operator', 'E-learning', 'Training', 'Technical Working Group', 'Meetings', 'Infrastructure Bibliography', 'Meetings', 'Publications', 'Information Systems & Databases', and a social media link for '@IAEANE'.

The screenshot shows the IAEA Nuclear Power (NENP) e-learning page. The header is identical to the homepage. The main content area features a section titled 'E-learning for Nuclear Newcomers' with the text 'Is your country considering nuclear power?' and 'The IAEA is here to help!'. Below this is a video player with a play button and the text 'Is your country considering nuclear power?'. The page also features a section for 'E-learning Modules' with four modules listed: 'Module 1: Implementing a Nuclear Power Programme Introduction', 'Module 2: Developing a Human Resource Strategy', 'Module 3: Introduction to the Infrastructure Development Strategy', and 'Module 4: Introduction to the Infrastructure Development Strategy'. A sidebar on the left lists various services and resources, including 'Home', 'Milestones Approach', 'INIR Missions & Reports', 'Catalogue of Services', 'Assistance Package for Future Owner/Operator', 'E-learning', 'Training', 'Technical Working Group', 'Meetings', 'Infrastructure Bibliography', 'Meetings', 'Publications', 'Information Systems & Databases', and a social media link for '@IAEANE'.



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• V. Nkong-Njock  
• V.Nkong-Njock@iaea.org

*Thank you for your attention!*