



Detailed Program

I2EN Master Class on
Strategic Fundamentals
for New Nuclear



06/23/2025 to 06/27/2025



I2EN
International Institute
of Nuclear Energy

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Module 1: Strategic Foundations for Launching a Nuclear Power Programme

Objective: Introduce strategic aspects of managing a nuclear power programme and key considerations in the pre-decision phase.

- **IAEA Milestones Approach:** Introduce the three phases and 19 infrastructure issues of the IAEA Milestones Approach and how this course covers it practically.
- **Roadmap and Vision Development:** Discuss creating a clear, actionable vision aligned with France's long-term nuclear strategy and export goals, and cover energy planning aspects.
- **Coordinating the Effort (the NEPIO):** Illustrate French approaches to interagency cooperation by discussing the creation of a Nuclear Energy Program Implementing Organization (NEPIO).
- **Comprehensive Report and Decision-Making:** Explain pre-feasibility studies and detail the process of assembling a comprehensive report to guide decision-making, with insights from French governmental policy and stakeholder involvement.



Module 2: Key Characteristics of Nuclear Power

Objective: Provide a foundational understanding of why nuclear power necessitates dedicated safety, security, safeguards, and emergency preparedness frameworks. Present France's approach to these issues.

- **Nuclear Safety:** Introduce the foundations for nuclear safety required to protect workers, the public, and the environment. Explain the necessity for strong regulatory oversight and continuous risk management, based on ASNR experience.
- **Emergency Preparedness and Response:** Detail why comprehensive emergency preparedness and response strategies are crucial to mitigate the potential impact of nuclear incidents, including on-site protocols and extensive off-site and international response plans.
- **Nuclear Security:** Explore France's approach to nuclear security to prevent unauthorized access and protect against sabotage highlighting the importance of robust security protocols.
- **Nuclear Non-Proliferation:** explain how France implements safeguards measures to ensure the peaceful use of nuclear materials while fulfilling its international commitments.



Module 3: Industrial Challenges and Opportunities in NPP Projects

Objective: Present expectations for an owner/operator, including organization structure, safety culture, construction and operation responsibilities, contracting and ownership models, and localization strategies.

- **Knowledgeable Owner/Operator:** Showcase EDF's model for developing an effective organization, governance, management practices, safety culture, and Design Authority.
- **Contracting and Ownership Models:** Examine contractual frameworks through the lens of French companies' international projects and illustrate the challenges of structuring contracts.
- **Supply Chain Management and Industrial Involvement:** Explore how France manages its supply chain, including technology transfer, localization, and quality assurance, to maintain high safety standards.
- **Managing the Construction of an NPP:** Focus on how France ensures efficient project execution through robust construction management practices and illustrate with lessons learned from real-life projects.



Module 4: Building the Business Case for Nuclear Power

Objective: Provide participants with essential tools to build a compelling business case for nuclear power, focusing on funding, financing, economic benefits, and public acceptance, with practical insights from France.

- **Funding Models:** Elaborate on diverse funding strategies in France, both domestically and internationally, designed to foster nuclear infrastructure development.
- **Financing Options:** Describe financing structures for nuclear projects, including ECA, and highlight successful French financing partnerships that attracted international investment.
- **Economic and Social Impact:** Illustrate job creation, infrastructure development, and long-term economic benefits associated with nuclear projects using the French case.
- **Public Acceptance and Communication:** Examine public communication strategies from EDF, emphasizing transparency and social responsibility.

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Module 5: Setting the frame: legal and regulatory aspects

Objective: Provide participants with tools to establish a comprehensive legal and regulatory framework for nuclear power programmes, leveraging France's expertise in effective governance, safety, and compliance.

- **Creating a Strong Legal Framework:** Detail essential components of a comprehensive national nuclear law, with insights from French policy framework.
- **Creating and Empowering the Safety Authority:** Present best practices drawing inspiration from ASN's independent oversight role. Outline the regulatory process using France's safety and regulatory protocols as a model.
- **Licensing Process:** Highlight the significance of an efficient licensing process, incorporating examples from France's export projects and collaborative efforts with international regulators.
- **Regulatory Inspections and Construction Oversight:** Outline best practices for regulatory inspections and oversight during construction, drawing on France's rigorous approach to ensuring compliance, quality, and safety standards.



Module 6: Setting the scene: laying the grounds

Objective: Instruct participants on addressing critical site related infrastructure and environmental considerations using French expertise.

- **Siting Process and Criteria:** Discuss site selection criteria using French environmental and technical standards.
- **Environmental Impact Assessment:** Cover EIA requirements, including French environmental assessments adapted for local regulations.
- **Radiation Protection and Emergency Preparedness:** Present France's approach to radiation protection, including site-specific emergency response arrangements.
- **Grid Integration and Infrastructure Needs:** Present EDF's expertise in grid connection and compatibility, using case studies like Hinkley Point C.



Module 7: Building Human Capacity and Knowledge

Objective: Provide strategies for developing and maintaining human capacity, inspired by France's nuclear expertise.

- **Workforce Planning:** Share insights from France's best practices in analysing gaps and planning for its new programme.
- **Education, Training, and Skill Development:** Highlight key French educational programs for building capacity and knowledge transfer.
- **Human Resource and Knowledge Management:** Demonstrate how EDF sustains a skilled workforce through HR and knowledge management frameworks.
- **French Support for Knowledge Transfer:** Offer examples of knowledge-sharing agreements and capacity-building partnerships with newcomer countries.



Module 8: Fuel Cycle and Radioactive Waste Management

Objective: Provide a comprehensive understanding of sustainable fuel cycle management and radioactive waste strategies, drawing from France's nuclear industry.

- **Fuel Supply Security:** Review France's secure uranium procurement model and supply solutions for partner countries.
- **Spent Fuel Management:** Describe France's experience in managing spent fuel, including recycling and disposal solutions for international partners.
- **Radioactive Waste Management:** Discuss France's waste management strategy, including its geological repository development and support for sustainable solutions.
- **Decommissioning:** Explore strategies for safely dismantling nuclear plants, emphasizing the importance of planning for the entire lifecycle to ensure sustainability and public trust.

	Monday, June 23, 2025	Tuesday, June 24, 2025	Wednesday, June 25, 2025	Thursday, June 26, 2025	Friday, June 27, 2025
	Module 1: Strategic Foundations for Launching a Nuclear Power Programme	Module 3: Industrial Challenges and Opportunities in NPP Projects	Site Visit	Module 5: Setting the frame: legal and regulatory aspects	Module 7: Building Human Capacity and Knowledge
08:30 – 09:00	Participants arriving		Departure Visit		
09:00 – 09:20	Opening			Creating a Strong Legal Framework	Planning the Nuclear Workforce
09:20 – 09:40	IAEA Milestones Approach	The Knowledgeable Owner/Operator			
09:40 – 10:00			INSTN Saclay	Creating and Empowering the Safety Authority	
10:00 – 10:20					Education and Skill Development
10:20 – 10:40	Roadmap and Vision Development	Contracting and Ownership Models			
10:40 – 11:00	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
11:00 – 11:20		Supply Chain Management and Industrial Involvement		Licensing Process	Human Resource and Knowledge Management
11:20 – 11:40	Coordinating the Effort: the NEPIO				
11:40 – 12:00			CEA Saclay		
12:00 – 12:20		Managing the Construction of an NPP		Regulatory Inspections and Construction Oversight	French Support for Human Capacity Building
12:20 – 12:40	Comprehensive Report and Decision-Making				
12:40 – 14:00	Lunch Break	Lunch Break	Lunch Break	Lunch Break	Lunch Break
	Module 2: Key Characteristics of Nuclear Power	Module 4: Building the Business Case for Nuclear Power	Site Visit	Module 6: Setting the scene: laying the grounds	Module 8: Fuel Cycle and Radioactive Waste Management
14:00 – 14:20					
14:20 – 14:40	Nuclear Safety, the overriding priority	Funding Models and Opportunities		Siting Process and Criteria	Fuel Supply Security and Procurement
14:40 – 15:00					
15:00 – 15:20	Emergency Preparedness and Response Arrangements	Financing Options and Investor Confidence	EDF Simulator Campus Marcel Boiteux		Spent Fuel Management Solutions
15:20 – 15:40				Siting Exercise	Coffee Break
15:40 – 16:00	Coffee Break	Coffee Break	Coffee Break	Coffee Break	
16:00 – 16:20					Radioactive Waste Management and Disposal
16:20 – 16:40	Nuclear Security for a High-Profile Target	Economic and Social Impact		Environmental Impact Assessment	
16:40 – 17:00					Decommissioning
17:00 – 17:20	Exercise on Safety, Security risks		EDF Lab Paris-Saclay	Radiation Protection and FARN	
17:20 – 17:40		Public Acceptance and Communication and Stakeholder Exercise			
17:40 – 18:00	Nuclear Material and Non-Proliferation			Grid Integration and Infrastructure Needs	Closing & Departure
18:00 – 18:30			Back to Paris		
18:30 – 19:00					
19:00 – 19:30	Welcome Party		Dîner Bateau Mouche		
19:30 – 20:00					