General Benefits Associated With the Wider Cooperation in Decommissioning

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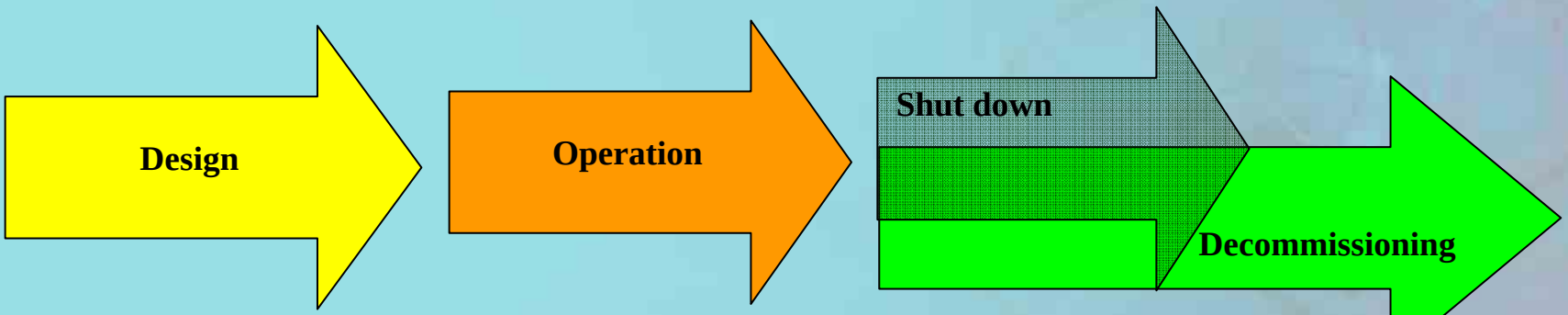
Introduction

- Decommissioning is recognized as a critical phase in the life cycle of a nuclear facility
- Decommissioning as design and authorization consideration
- Increasing demand for nuclear facilities and sites
- Renewed emphasis on sustainability and life cycle management- *How can it be allowed to construct new facilities if good environmental practice is not evident on existing facilities?*
- Public and other stakeholder demands on operators to demonstrate full life cycle control

Introduction (2)

- Approximately 100 NPRs and 250 RR and many more fuel-cycle and smaller facilities to be decommissioned soon
- Many facilities have been decommissioned successfully on a global scale – *Mature industry*
- Global decommissioning knowledge and experience has not been optimized
- Time, money and scarce resources are waste on “re-development of the decommissioning wheel”

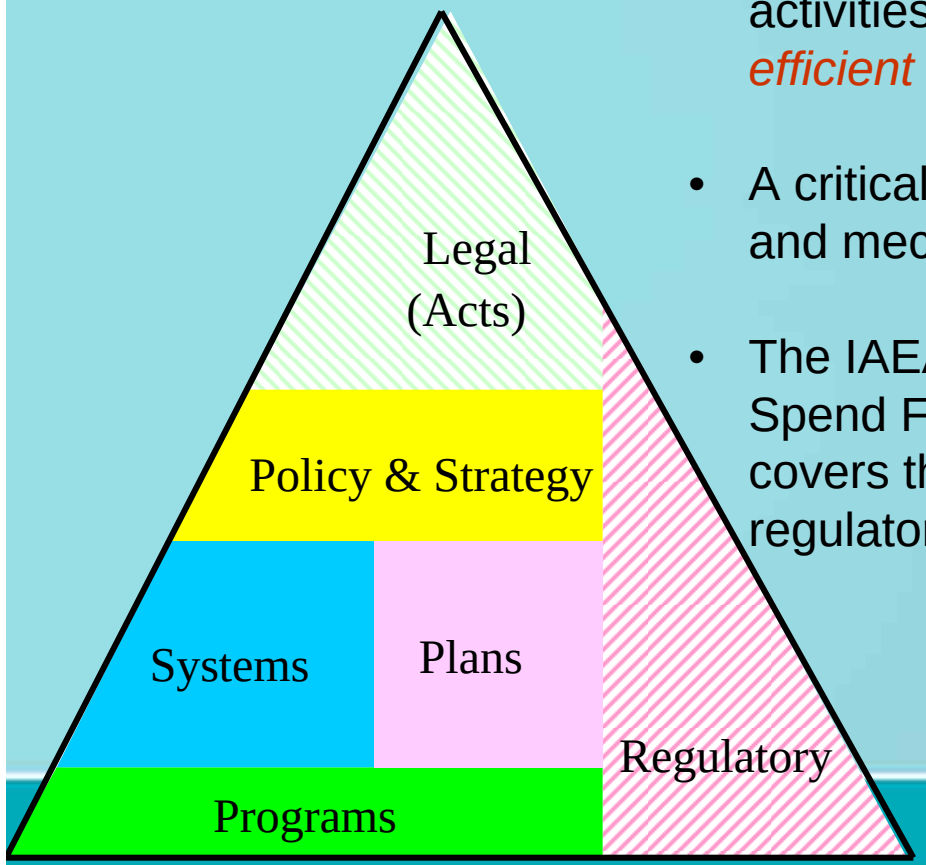
Defining Decommissioning



Decommissioning considered during design/ construction and initial Decommissioning planning	On going Decommissioning planning	Final Decommis-sioning planning	Decommis-sioning Projects

Areas of Cooperation

Decommissioning Policies and Regulation



- Legal framework covering decommissioning activities, resources and structures -*prerequisite for efficient decommissioning*
- A critical aspect to be addressed is requirements and mechanisms for ensuring sufficient funding
- The IAEA launched The Convention on Safety of Spend Fuel and Radioactive Waste in 1997 which covers the obligation to establish and maintain regulatory frameworks

Life Cycle Management

- A number of systems, structures and arrangements are required to ensure the management of decommissioning throughout the life cycle of nuclear facilities:
  - *Guidelines and standards for decommissioning in design phase*
  - *Guidelines and requirements for the progressive development of decommissioning plans*
  - *Guidelines regarding decommissioning organization, responsibility and managements systems*
- Countries with mature decommissioning organizations and programs could provide valuable experience and guidance

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Decommissioning Strategies

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Decommissioning Strategies

Decommissioning Strategies

- Although decommissioning strategies depend on facility and wider (national) factors, it is important to consider all relevant factors to derive the optimum strategy
- The IAEA launched an initiative to capture experience related to decommissioning strategy development *(TEGDE)*
- Decommissioning plans need to be kept relevant in order to reflect the selected strategy and other related developments e.g. decommissioning technologies and waste and material handling options
- In terms of cooperation, the emphasis should be on the strategy development and planning methodologies

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Decommissioning Waste Management

- Decommissioning is associated with unique waste streams and material categories and processes employed during the operational phase of the facility- *not necessarily sufficient*
- Radioactive waste streams and material categories are distinguishable by factors e.g. radiological characteristics and processes available
- Techniques and technologies for characterization, material categorization and waste processing have been refined in countries with mature decommissioning programs
- Benefit to countries entering the nuclear industry

Decommissioning Cost

- Decommissioning Cost and Financial Provision- critical aspect of decommissioning.
- Extensive experience exists in the prediction or securing of funding.- *Tried and tested models* are used in countries with mature decommissioning programs
- The IAEA's initiative to capture the experience, regarding financial aspects of decommissioning *(TEGDE)*

Safety Assessment Methodologies

- Licensing requires an activity specific safety assessment to demonstrate compliance with regulatory criteria
- Safety assessment for decommissioning could be simpler than operational safety assessments.- *Designed around specific decommissioning activities*
- Experience related to safety assessments methodologies for decommissioning, is reflected in IAEA guidelines as developed by the International Project on *Evaluation and Demonstration of Safety for Decommissioning of Nuclear Facilities (DeSa)*

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Clearance of Material and Release of Sites

- Key aspects of decommissioning - *ability to maximize the quantity of clearable material* and the *ability to release a site after decommissioning*.
- Clearance criteria and guidance is essential in view of the sensitive and technical nature of these activities

Clearance of Material and Release of Sites

- Necsa benefited by the application on the IAEA guidelines related to clearance criteria. A high percentage of the total quantity of material generated during the decommissioning of nuclear fuel cycle facilities has been cleared

Redevelopment and Reuse

- Emphasis on redevelopment and reuse of decommissioned nuclear facilities and sites. - *Promoted option with inherent benefits*
- Vast experience exists globally regarding redevelopment and reuse of nuclear facilities and sites
- The experience includes reuse option specific considerations and constraints
- The IAEA is active in the promotion and development of the technical field related to redevelopment and reuse

Redevelopment and Reuse

- The experience of Necsa regarding the redevelopment and reuse of a multi-facility site is documented and include:
  - *PIE facility converted to a commercial medical isotope production facility*
  - *Enrichment facility reused as a waste processing and storage facility*

Current IAEA Cooperation Initiative

- IAEA took the initiative to bring experts together to develop requirements and practical guidance documents. A wide range of decommissioning topics and processes are covered
- Recently the IAEA established an International Decommissioning Network *(IDN)* to create a network of organizations with an interest in and experience of decommissioning
- Emphasis on those participants or member/States with less developed decommissioning industries

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Current IAEA Cooperation Initiative

- The IDN aims to provide to:
  - *Specialist advice and technical guidance*
  - *A Forum for the exchange of information to pursue the promulgation of good practices and the longer term retention of knowledge in support of decommissioning planning*
  - *Training and demonstration activities, mainly demonstration projects with regional or thematic focus providing hands-on, user orientated experience*.

Conclusions

- Decommissioning is an important phase in the life cycle of nuclear facilities
- Regulatory requirements and good practice demands are as applicable to decommissioning as to any other phase in the life cycle of nuclear facilities
- Besides compliance, a high standard of decommissioning management is required in support of stakeholder perception and the sustainability of the nuclear industry
- *The standard of decommissioning could increase if successful cooperation between countries with matured decommissioning programs and developing countries could be established- aligned with TOR of IDN*

Thank You