



MALAYSIA

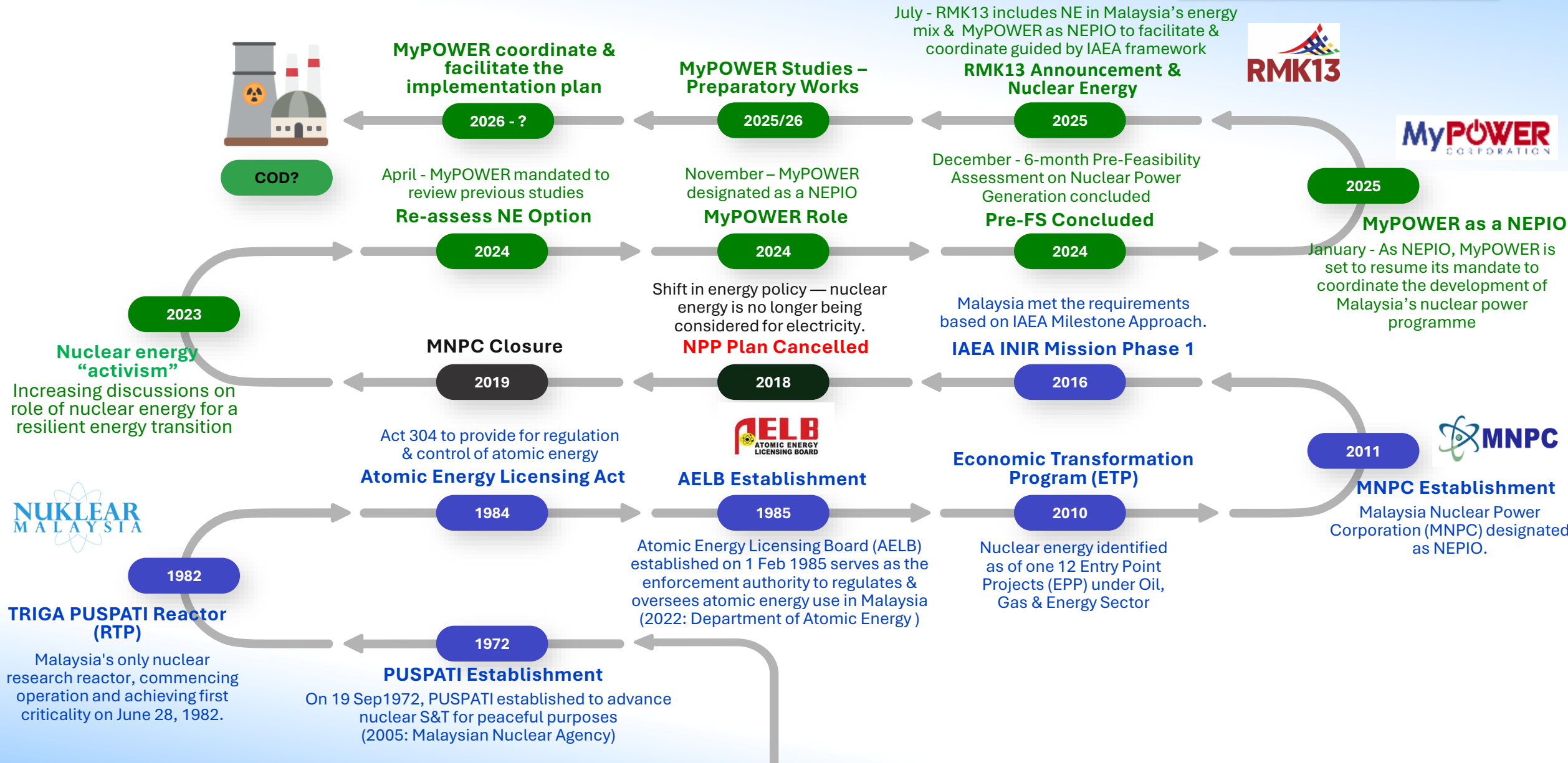
- AKMAL ZYTI YAHYA
- MyPOWER Corporation
- (NEPIO)

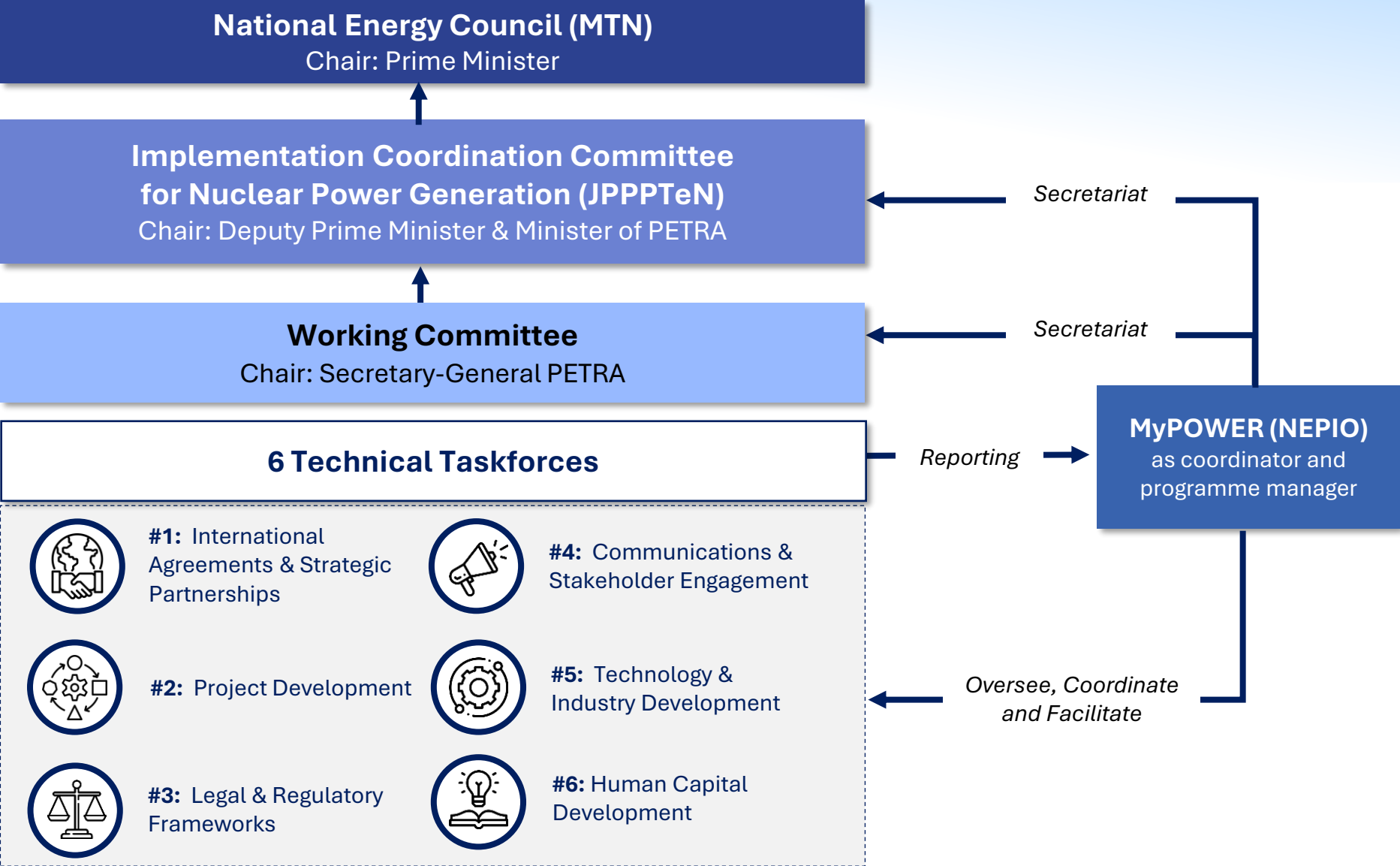


- HJH. NORAISHAH PUNGUT
- ATOM Malaysia
- (National Regulatory Body)



Malaysia: Nuclear Power Programme Updates





Key Organizations

- Coordinate the development of the national nuclear power programme, including the development of policies, strategies, infrastructure, compliance with international standards, and collaboration with stakeholders

Ministries



Academia



Main Agencies



Supporting Agencies



Industry



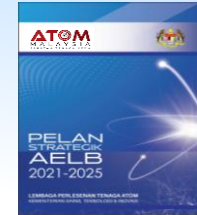
Strategic Vendor States
Bilateral Partners
Consultants

NGOs & PUBLIC

Civil society groups
Youth/STEM Outreach
Professional societies
(MNS, Win, NESS)



National Strategy on Capacity Building in Nuclear Safety



SCOPE & MAIN ELEMENTS

- **Scope:**

Management of capacity building to strengthen competency and expertise continuously and develop professional talent

- **Main Elements:**



OBJECTIVES

- **Enhance Regulatory Capability**
- **Foster a Culture Safety**
- **Protect Public Health and Safety**
- **Build International Collaboration**

REGULATORY BODY: STRATEGIC PLAN

Strategic Objective 2.1

- **Strengthen the competency and expertise continuously**
 - i. Competency analysis using SARCoN.
 - ii. Continuous and systematic competence development.
 - iii. Creation of Subject Matter Expert (SME) path.

Strategic Objective 2.2

- **Enhance the implementation of KM**
 - i. Implementation of Annual Technical Colloquium/ Symposium.
 - ii. Upgrading the online KM System (iPakar) to version 2.0.
 - iii. Enhancement of knowledge sharing platform using latest technology.
 - iv. Implementation TNA.

Strategic Objective 4.1

- **Cultivating the brilliance of future STIE talent**

The goal of the certification:

To provide a high level of knowledge and skills in radiological fundamentals for Atom Malaysia's Assessors and Inspectors, including high values in understanding of the organization's mission and vision, besides practicing **safety culture** and be more strategic in planning.

Objective:

Develop **Assessors** and **Inspectors** that are technically competent, skillful and **adhered to Atom Malaysia's** high values and standards, to be an example to our licensees;

By undergoing this Program, all our technical staff will be equipped with technical knowledge necessary for them to be able to carry out their work competently and they will be assessed and evaluated so that they are able to carry out their work with confidence.

Level 1 :Level 1 Assessor/ Inspector

Level 2 :Level 2 Lead Assessor/ Inspector

Level 3 :Level 3 Expert Assessor/ Inspector

- People-centric vs organizational centric
- Competence Gap Analysis is a smaller portion of TNA Framework
- Concept “Right **Personnel** for the right **Competence** at the right **Time** with the right **Cost**”

Right Personnel: Relevant personnel with technical education background

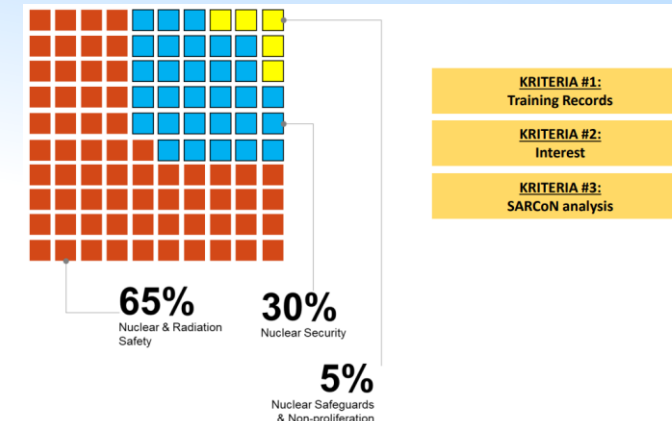
Right Competence: Technical expertise required within an organization/position

Right Time: Sustainability, short-medium term, long term

Right Cost: suitable amount of cost incurred

QUADRANT MODEL OF COMPETENCIES

[Based on IAEA Safety Reports Series No. 79: Managing Regulatory Body Competence, 2013)]



Quadrant 4 - Personal and behavioural competences

- 4.1 Analytical thinking and problem solving
- 4.2 Personal effectiveness and self-management
- 4.3 Communication
- 4.4 Team work
- 4.5 Managerial and leadership competences
- 4.6 Safety culture competence

Quadrant 1 - Competences related to the legal, regulatory and organizational basis

- 1.1 Legal basis
- 1.2 Regulatory policies and approaches
- 1.3 Regulations and regulatory guides
- 1.4 Management system

Quadrant 3 - Competences related to regulatory body's practices

- 3.1 Review and assessment
- 3.2 Authorization
- 3.3 Inspection
- 3.4 Enforcement
- 3.5 Development of regulations and guides

Quadrant 2 - Technical disciplines competences

- 2.1 Basic science and technology
- 2.2 Applied science and technology
- 2.3 Specialized science and technology

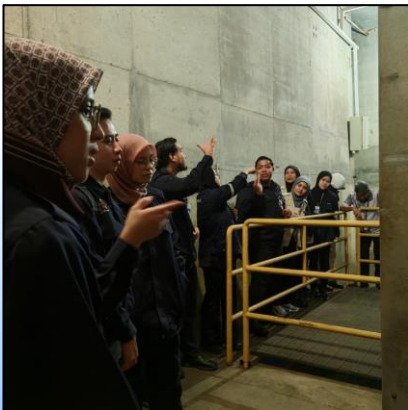
Competencies analysis is conducted based on IAEA Systematic Assessment of Regulatory Competence Needs (SARCoN)

A Systematic Approach to KM

- Annual Training Operational Plan
 - The certification course for reviewing and inspection officer
 - The refresher course for reviewing and inspection officer

Bahagian / Cawangan / Unit	Cours e Direct	Tajuk	Objektif	Kategori Latihan	Struktur Latihan	Kedah Pelaksanaan	Lokasi	Jangka n Masa Tahapan	Jangka n Tarikh dilaksanakan	Tarikh Tamat	Tempoh Pelaksanaan	Peruntukan	Anggaran Peruntukan
SDM	SDM	Kursus Pengiraan Risiko Keselamatan	Memastikan pemahaman dan pengetahuan keselamatan nuklear khususnya berkaitan dengan fungsi dan peranan badan Atom Malaysia dalam melaksanakan dan mengawasi pelaksanaan peraturan keselamatan nuklear	Penyertaan	Asas	72000	Bayu Perdana, Jarak, Terengganu	12	25/08/2025	12/09/2025	3 minggu	MCD MCSTI	RM25,000.00
SDM	SDM	Kursus Pengiraan Risiko Keselamatan	Memastikan pemahaman dan pengetahuan keselamatan nuklear khususnya berkaitan dengan fungsi dan peranan badan Atom Malaysia dalam melaksanakan dan mengawasi pelaksanaan peraturan keselamatan nuklear	Penyertaan	Asas	72000	Bayu Perdana, Jarak, Terengganu	12	18/10/2025	08/11/2025	3 hari	Mengurus	RM10,000.00
SDM	SDM	Kursus Pengiraan Risiko Keselamatan	Memastikan pemahaman dan pengetahuan keselamatan nuklear khususnya berkaitan dengan fungsi dan peranan badan Atom Malaysia dalam melaksanakan dan mengawasi pelaksanaan peraturan keselamatan nuklear	Penyertaan	Asas	72000	Bayu Perdana, Jarak, Terengganu	12	18/04/2025	10/05/2025	3 hari	Mengurus	RM6,000.00
SDM	SDM	Kursus Pengiraan Risiko Keselamatan	Memastikan pemahaman dan pengetahuan keselamatan nuklear khususnya berkaitan dengan fungsi dan peranan badan Atom Malaysia dalam melaksanakan dan mengawasi pelaksanaan peraturan keselamatan nuklear	Penyertaan	Asas	72000	Bayu Perdana, Jarak, Terengganu	12	26/03/2025	29/04/2025	3 hari	Mengurus	RM24,000.00
SDM	SDM	Kursus Pengiraan Risiko Keselamatan	Memastikan pemahaman dan pengetahuan keselamatan nuklear khususnya berkaitan dengan fungsi dan peranan badan Atom Malaysia dalam melaksanakan dan mengawasi pelaksanaan peraturan keselamatan nuklear	Penyertaan	Asas	72000	Bayu Perdana, Jarak, Terengganu	12	26/04/2025	30/05/2025	3 hari	Mengurus	RM20,000.00

- Plan and implement training at least 7 days a year for each staff
(Item 6.2 of the IMS Manual, *Quality Objectives and Planning to Achieve Them*)



A. National Centre for Nuclear Response Management (NCNRM)

- Mobile Operation Unit
- Emergency Response
- Mobile Radiation Monitoring Station
- Radiation Detection Instruments

B. Nuclear Security Support Centre (NSSC)

- Physical Protection Laboratory
- Loaner Pool for Radiation Detection Equipment

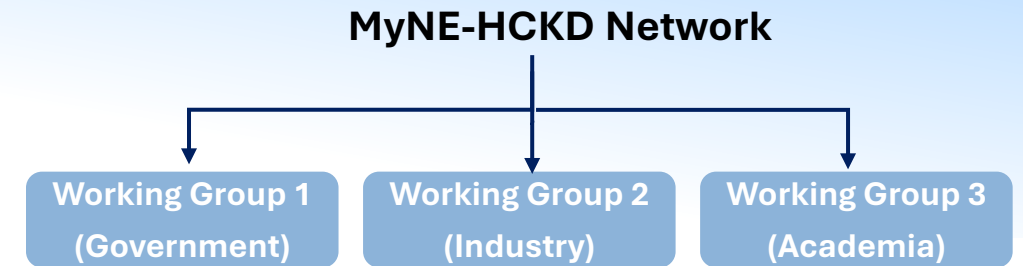
C. Nuclear Response Simulation Centre

- Aim to strengthen the competence and efficiency of Atom Malaysia's Nuclear Response Team (PTN).
- The Centre will be used to train Front Line Officers (FLO)
- The Centre's establishment aligns with the National Security Council (NSC) Directive No. 4 on the management of land borders and No. 18 on anti-terrorism which places Atom Malaysia as the leading agency.

Malaysia Human Capital & Knowledge Development (MyNE-HCKD) Network

Main Objective:

As national platform for inter-agency collaboration, strategic planning, and implementation of initiatives related to human capital development and knowledge management for Malaysia's nuclear energy programme.



Internal Guidance



Encourage an effective culture of knowledge management by establishing a conducive environment for quality improvements in terms of human capacity building.

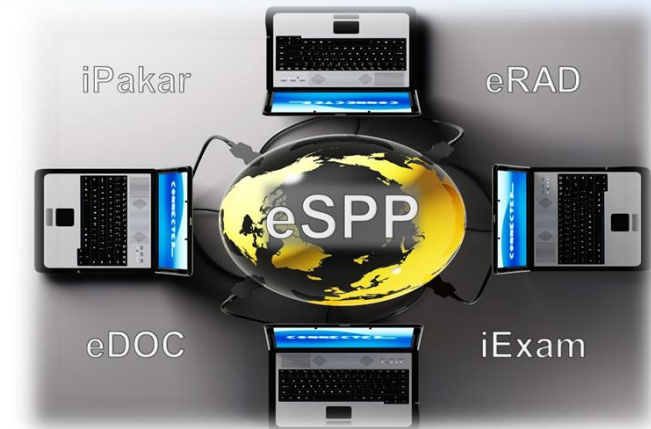
Policy

- Supportiveness, encouragement and continuous monitoring are the main roles of organization's leaders/management in ensuring an effective KM system.
- Building human capacity that cultivates work culture based on KM.
- Cultivating the culture of information/knowledge sharing among technical staff.
- Creating appropriate environment/infrastructure for effective KM.
- Optimizing technologies (ICT, mobile app. Etc) in utilization for KM.
- Continuous evaluation on initiatives done towards improving KM.

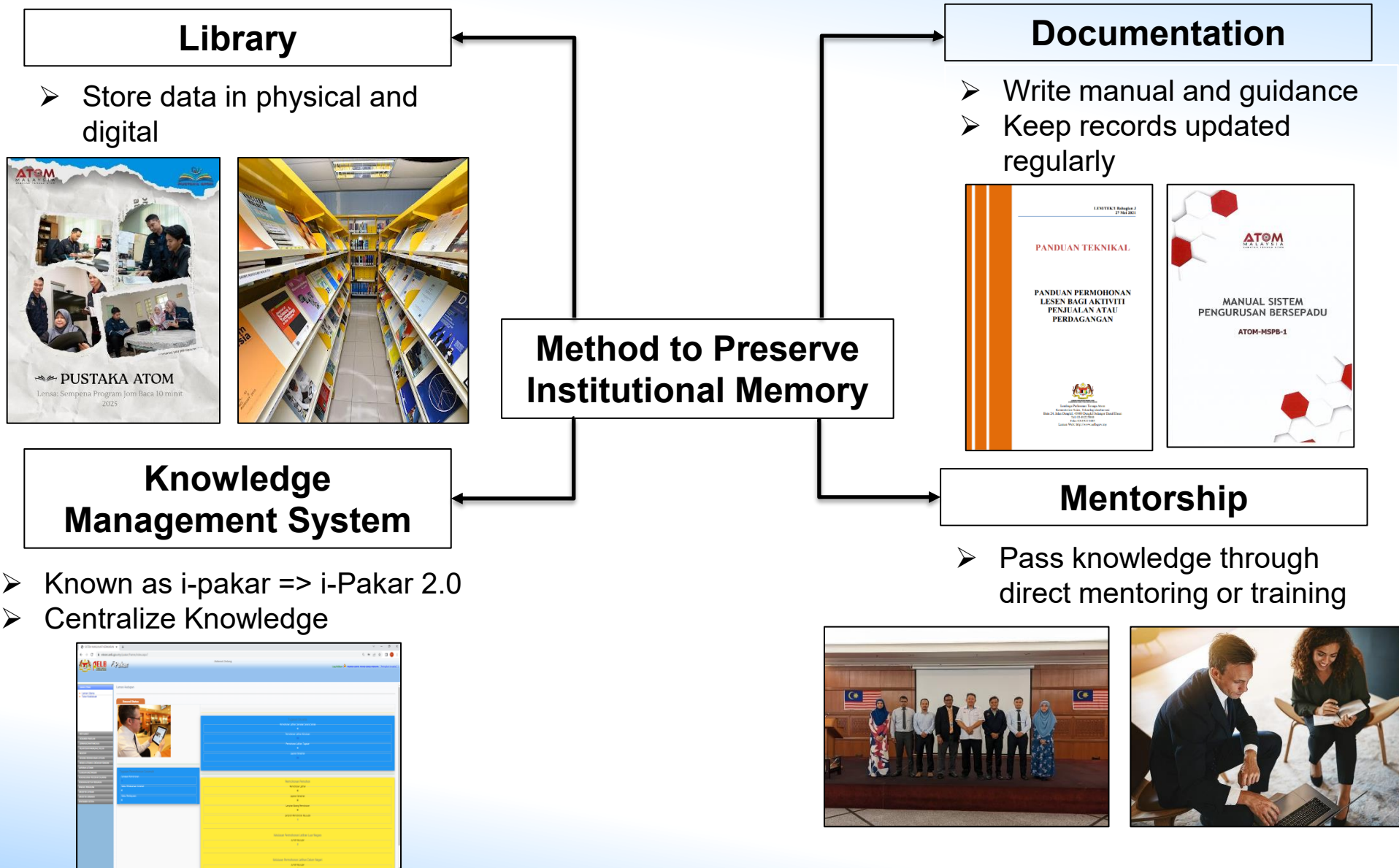
Strategy



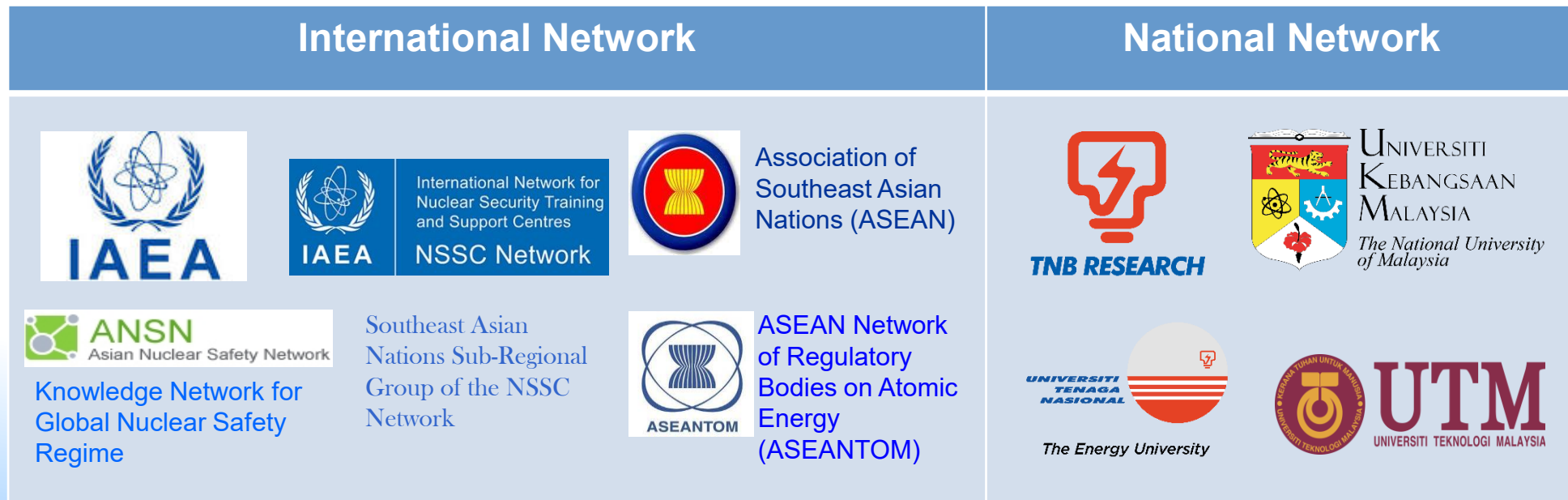
Implementation



- In-house competency program for regulatory staff, focusing for assessor and inspector.
- Online management system, integrating knowledge repository platform.
- Annual national conferences on regulatory issues.
- On-going engagement thru social media platform.
- Competency gap evaluation thru SARCON tools - update



- KN - established to **promote the pooling, analysis and sharing** of nuclear safety and security, technical knowledge and experiences at national, regional and international levels.
- **New centres, systems and networks** are developed through bilateral and multilateral cooperation to expand the framework for capacity building primarily at the institutional level for safe and secure atomic energy activities.
- Regional: Contributions to ASEANTOM for shared capacity building in **Southeast Asia**.



Status of PROMIS Indicators

PROMIS Indicators

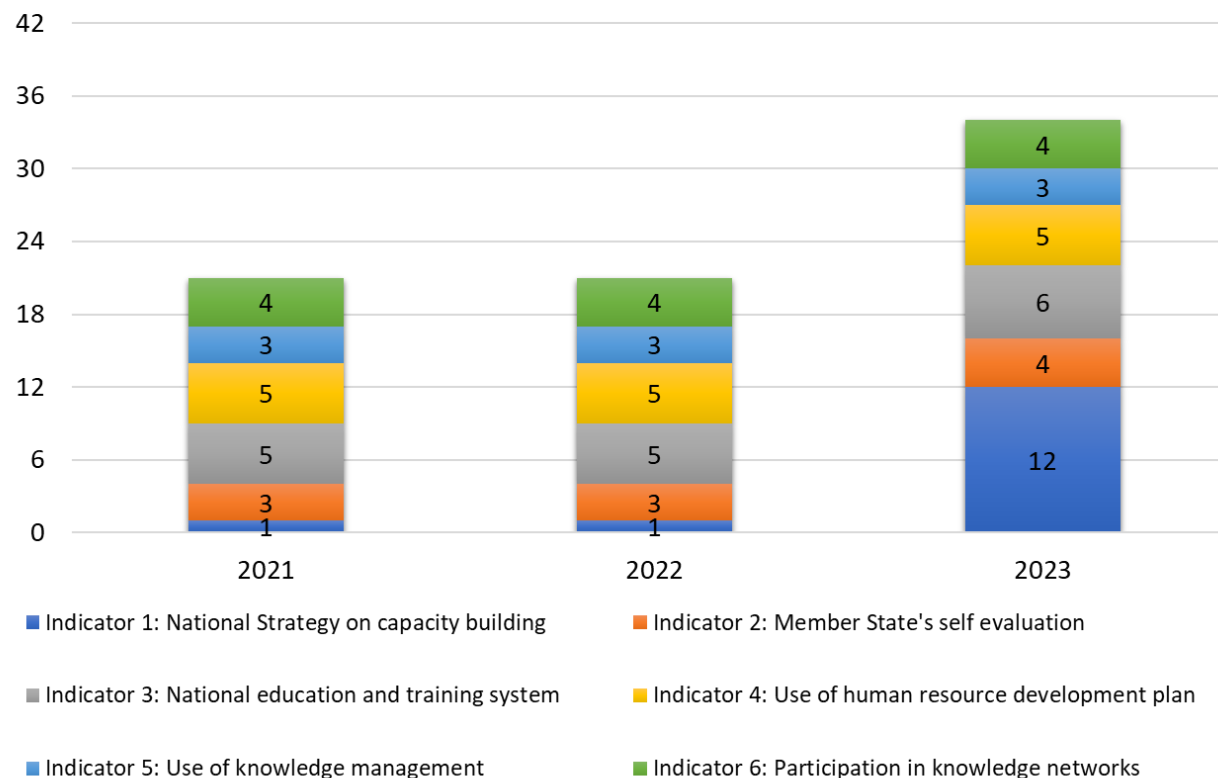
Process of evaluating the PROMIS indicators

- Review Guidance:** Understand the scoring criteria.
- Assess National Strategies:** Evaluate documents like the HRD strategy for alignment.
- Assign Points:** Score based on available evidence.
- Provide Justification:** Reference relevant documents.
- Upload Supporting Documents:** Submit or link proof.
- Identify Gaps:** Highlight areas for improvement.

This ensures a clear, evidence-based evaluation of capacity-building efforts

PROMIS Value for 2023

Malaysia: summary of progress in capacity building



Activities & Achievements (1)



Nuclear Energy in 13th Malaysia Plan (RMK-13)



- Establishment and operationalize of NEPIO
- Cabinet decision: Governance structure (TF, JPPPTeN), strategic partnerships
- 4 Studies addressing 22 Pre-FS Recommendations



Southeast Asia Round Table on Managing Competency and Training for Nuclear Security



- Promote regional dialogue among SEA countries
- Share national best practices
- Identify gaps & challenges within nuclear security in the region
- Strengthen CB efforts



Multilateral Nuclear Security Detection Exercise, Malaysia-Indonesia-Thailand-Singapore (MITSATOM)



- Test agency readiness in handling nuclear security threats
- Showcase cross-agency & cross-border coordination
- Follow-up to the Tabletop Exercise (TTX)

Activities & Achievements (2)



Researchers Industry Scientific Exchange (RISE) (6 programs)



Foster collaboration and knowledge exchange between regulator and industry professionals:

- i. drive innovation,
- ii. enhance research applicability
- iii. support technology transfer.



Nuclear Safety and Security Culture Seminar 1-2 July 2025



- Promote regional dialogue among SEA countries
- Share national best practices
- Identify gaps & challenges within nuclear security in the region
- Strengthen CB efforts



15th Nuclear Energy Cooperation Sub-Sector Network (NEC-SSN) Meeting



- Formulate strategies for the Civil Nuclear Energy (CNE) sector under APAEC 2026-2030
- Explore potential for LCR,s and SMRs emphasizing safety, regulatory frameworks, and human capacity building aligned with IAEA standards.

Activities & Achievements (3)



Integrated Nuclear Security Sustainability Plan (INSSP)

10-13 February 2025



- Share experiences & lessons learned in INSSP implementation
- Identify areas for improvement in nuclear security infrastructure
- Enhance regional & national collaboration



Nuclear Power Plant Visits (5 programs)



Technical visits by Malaysia delegations which consists of Ministers, BoDs of RB, senior officials.

- Russia
- Japan
- France
- China



Nuclear Knowledge Sharing Sessions: Energy Commission (EC)



- Session provided early insights into the role of EC as RB (non-nuclear).
- Emphasized the importance for EC personnel to stay informed about technological advancements and current policies within the nuclear industry.

Challenges: Capacity Building

National

Policy & Framework

1. **Absence** of a comprehensive **national nuclear power policy** & framework integrating nuclear 3S within existing **energy and environmental policies**.
2. **Lack** of a **national competency framework specifying the skills, qualifications, and institutional capacities** required for each phase of the programme (**policy, regulation, operation, emergency response, and waste management**)

HR

1. **Limited pool of SMEs in nuclear law, safety assessment, site evaluation, and licensing preparation within NEPIO.**
2. Shortage of **qualified regulatory officers** with practical experience in nuclear power plant licensing, design review, and safety case assessment.
3. Need for a comprehensive CB mechanism, including **national training frameworks, regulatory career pathways, and HRD planning integrated** with future NPP phases.

Funding

1. **Insufficient funding allocation** for regulatory capacity development and long-term human resource planning – competing with other industries (eg RE, hydrogen)

KM

1. **Coordination gaps** between **nuclear and non-nuclear** regulators (e.g. environment, occupational safety, emergency response, **maritime** and **electricity regulator**) in establishing an integrated safety and security framework
2. **Lack of harmonized data systems** (HRIS, regulatory database, nuclear knowledge management systems) to support long-term capacity tracking and planning

Organizational

Man

1. Difficulties in decision-making due to **overlapping roles and limited coordination**
2. Retention and development of new expertise.
3. Lack of structured knowledge transfer between senior and junior officers' risks losing institutional experience
4. **Limited digital literacy and data management skills** among officers
5. Without firm government direction, management sees little urgency to upskill or train staff for a future nuclear programme

Method

1. Many **monitoring and inspection** processes are still **manual and time-consuming**.
2. **Weak system integration** leads to duplicate work and slow data retrieval.
3. **Documentation** and work procedures **need updating** to meet current nuclear safety and security standards.
4. Application of **artificial intelligence** in regulatory activities.

Machine

1. **Limited access to modern equipment** and technology affects task execution and productivity.
2. **Lack of specialized software systems** (e.g. regulatory information management system, licensing database, safeguards tracking tools, inspection planning software) limits digital transformation and integration across agencies

Material

1. **Lack of systematic data collection** and analysis across departments.
2. Need for a more strategic and coordinated approach to data management to support accurate & timely decision making

Moving Forward



Lessons Learnt

National Level

- Strong inter-ministerial and agencies coordination to avoid overlap between policy, NEPIO, and regulatory functions.
- Capacity building and institutional capacity must come before infrastructure development
- Embedding nuclear 3S in higher-education curricula accelerates national readiness and creates a future talent pipeline.
- Collaboration and peer learning with established regulators (e.g. KINS, JAEA, ARN) provide valuable benchmarking and accelerate national competence.

Organizational Level

- The independence of the regulatory body is critical, where early separation of promotional and regulatory functions builds international confidence.
- Regular staff rotation and knowledge-transfer programmes are essential to retain institutional memory.
- Early engagement of non-nuclear regulators (ST, DOE, DOSH) to harmonize safety, environmental, and emergency frameworks with nuclear standards.

Future Plans & Priorities

National Level

- Develop a National Strategic HCD & WP Roadmap and a National Policy and Strategy on Capacity Building for nuclear safety, security, and safeguards.
- Strengthening 3S module in education curriculum (school and university).
- Improving coordination and cooperation among main national institutions involved in capacity building mainly in nuclear and radiation safety; research institutes, universities, and regulatory bodies.
- Integrate AI and digital tools into knowledge management (KM) and decision-making systems for nuclear infrastructure planning.

Organizational level

- Finalize the RB 2026–2030 Strategic Plan cycle.
- Development of National Nuclear Training Centre for Regulatory Body
- Review and develop a sustainable capacity building program.
- Create a path for SME.
- Upgrade and improve the online KM System
- Develop e-Learning platform (in progress).
- Strengthen collaboration with non-nuclear regulators
- Strengthen TSO capability for independent safety assessment and review.

Opportunities & Request for Support

IAEA & Member States:

- i. Review and technical guidance on Malaysia ongoing HCD Roadmap & Framework
- ii. Support in regulatory framework modernization
- iii. Support for establishing national TSO networks, peer reviews, and digital inspection tools.

Regional Networks:

- i. Facilitate train the trainer programme & regional exchange for nuclear leadership & policy coordination
- ii. Joint exercises on nuclear emergency preparedness & response (EPR) involving non-nuclear regulators

Bilateral Partners/Donor Countries:

- i. Collaboration in digital knowledge systems, e-learning platforms, and AI integration for nuclear planning and risk analysis.
- ii. Technical assistance in environmental radiation monitoring, waste management etc.
- iii. Partnerships with international expert bodies e.g. INSAG, WANO for peer learning, safety culture development, and organizational benchmarking



IAEA

Atoms for Peace and Development

Thank you!

