



IAEA

International Atomic Energy Agency
Atoms for Peace and Development

International Trends of Nuclear Power and IAEA Milestones Approach

Satoru Yasuraoka

Nuclear Infrastructure Development Section

February 2020

Contents

- 1. Intl' Trends of Nuclear Power**
- 2. IAEA Milestones Approach**
- 3. Case Studies on INIR Missions**

Trend 1: Nuclear Power as a Clean Energy Option



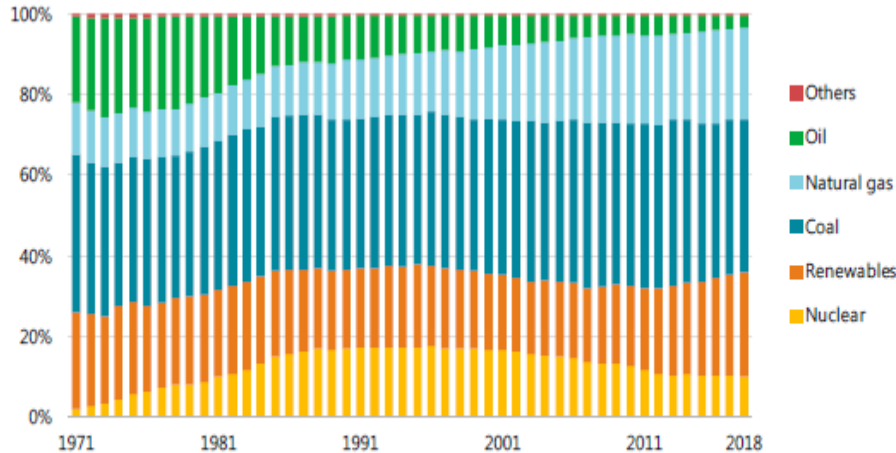
“The challenges of climate change and ensuring sufficient supplies of energy for the future are issues on which the Agency’s voice must be heard. I will take our message... to COP 25, in Madrid next week.”



“For many countries, nuclear power is a proven, clean, safe, and economical technology. And for many countries, it can play an increasingly important role in achieving energy security, reducing the impact of volatile fossil fuel prices, and mitigating the effects of both climate change and air pollution.”

What are the available options?

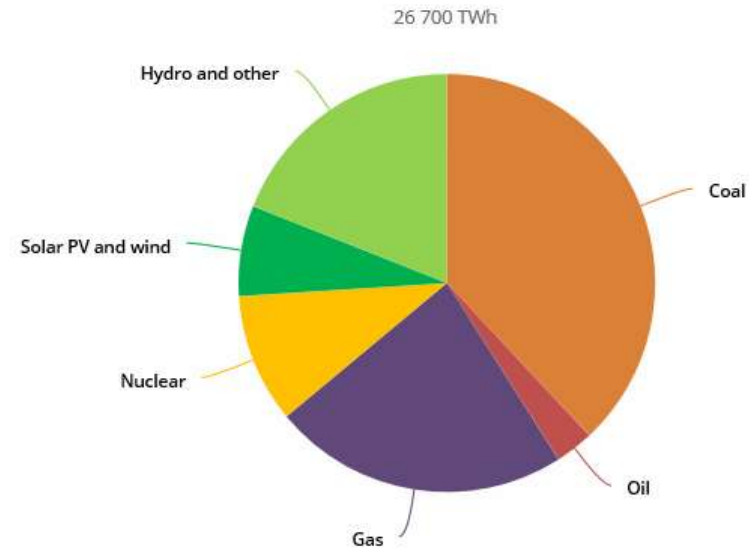
Figure 7. Share of energy sources in global electricity generation



IEA (2019). All rights reserved

The decline in nuclear power's share in electricity generation has entirely offset the growth in the share of renewables since the late 1990s.

Electricity generation mix, 2018



IEA. All rights reserved.

- Nuclear power today makes a significant contribution to electricity generation, providing 10% of global electricity supply in 2018. In advanced economies, nuclear power accounts for 18% of generation and is the largest low-carbon source of electricity.
- Despite the impressive growth of solar and wind power, the overall share of clean energy sources in total electricity supply in 2018, at 36%, was the same as it was 20 years earlier because of the decline in nuclear.

Trend 2: Nuclear stepped up



“Contrary to many perceptions, use of nuclear power continues to grow. Over the last five years, 37 nuclear power reactors have been connected to the grid.”

53 more are under construction. 4 countries have started building, or are nearing completion of, their first nuclear power plants. Around 25 others are actively considering adding nuclear power to their energy mix. Our job is to help them at every step of the way.”



“The pace of construction of new nuclear power plants will need to be stepped up if the world’s future energy needs, as well as climate change goals, are to be met. It is difficult to see other low-carbon energy sources growing sufficiently to take up the slack if nuclear power use fails to grow.”

Nuclear power 2019 – PRIS snapshot

Current Status:

449 NUCLEAR POWER REACTORS
IN OPERATION

398 887 MWe TOTAL NET INSTALLED
CAPACITY

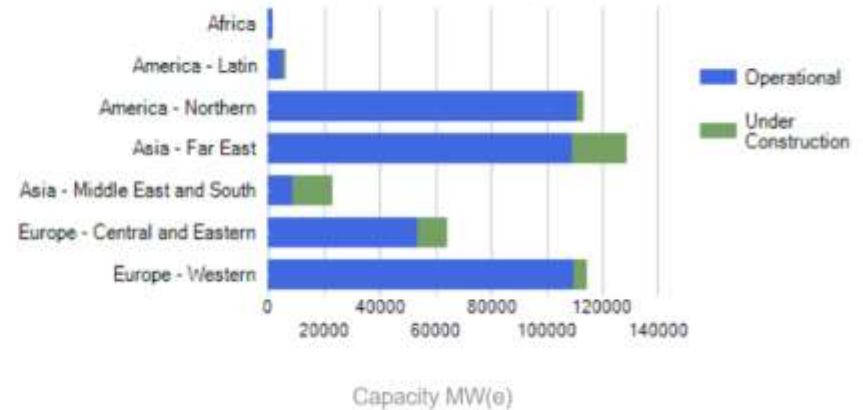
53 NUCLEAR POWER REACTORS
UNDER CONSTRUCTION

53 785 MWe TOTAL NET INSTALLED
CAPACITY

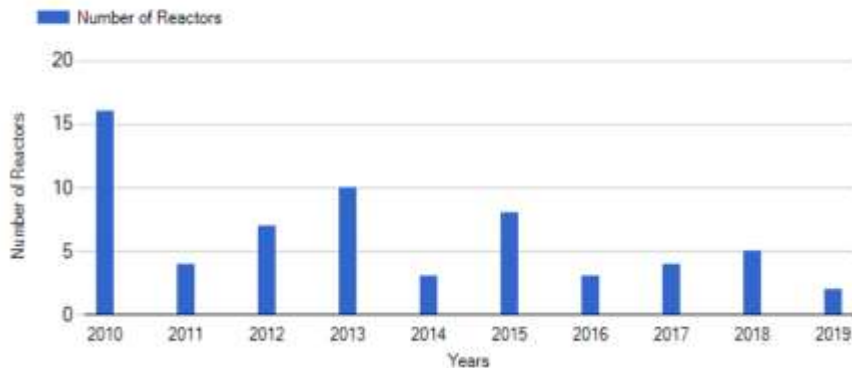
18 277 REACTOR-YEARS OF
OPERATION

Regional Distribution of Nuclear Power Capacity

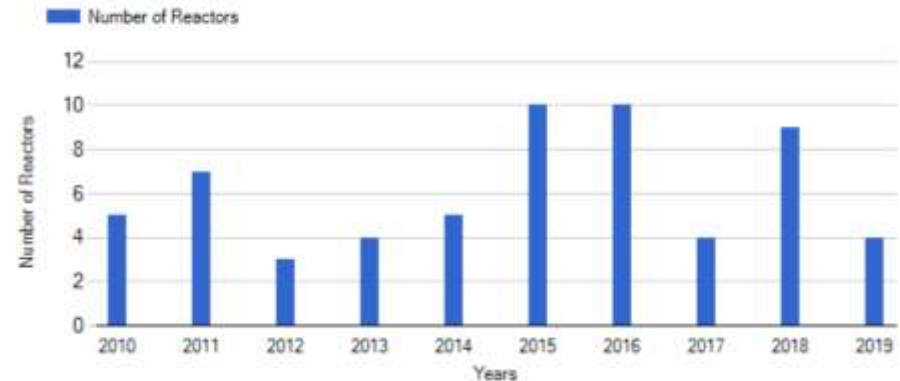
(Click on the chart for more statistics)



Trend of Construction Starts



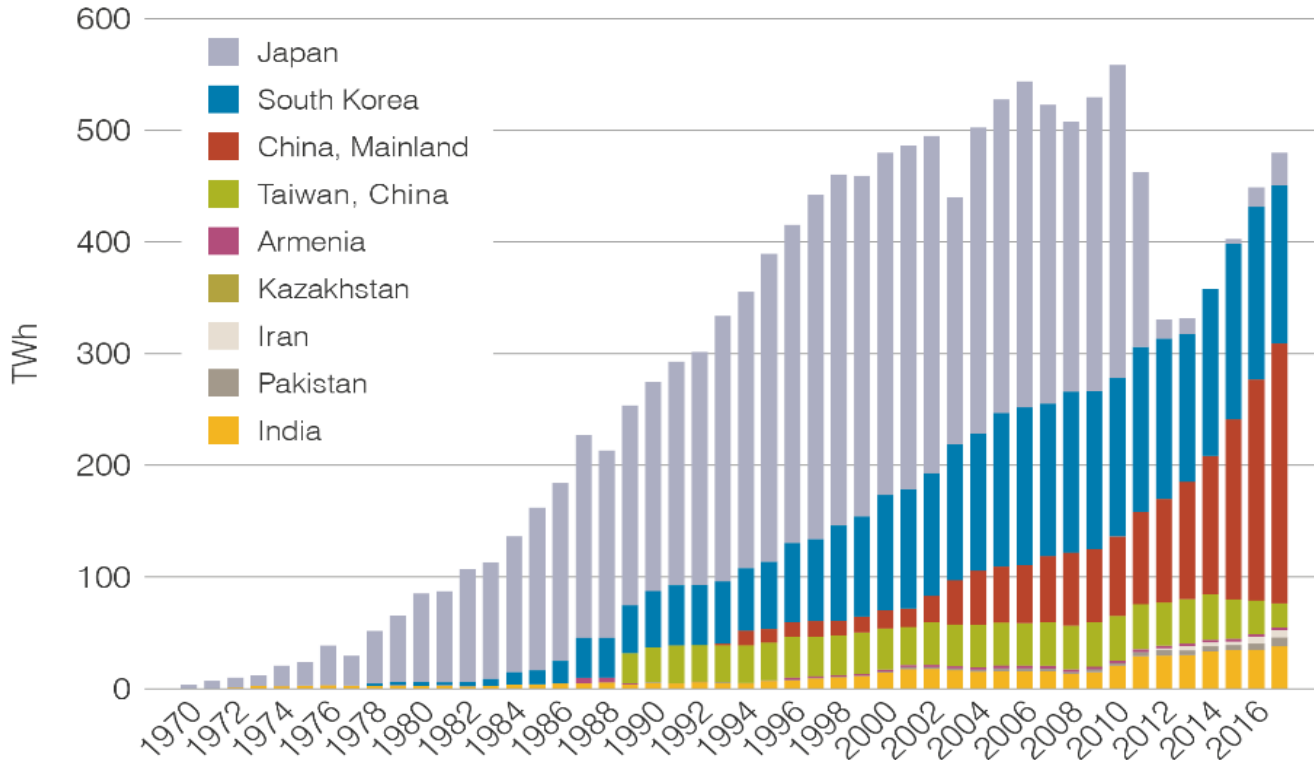
Trend of First Grid Connections



Trend 3: Geographical & Technological Shift

WORLD NUCLEAR ASSOCIATION

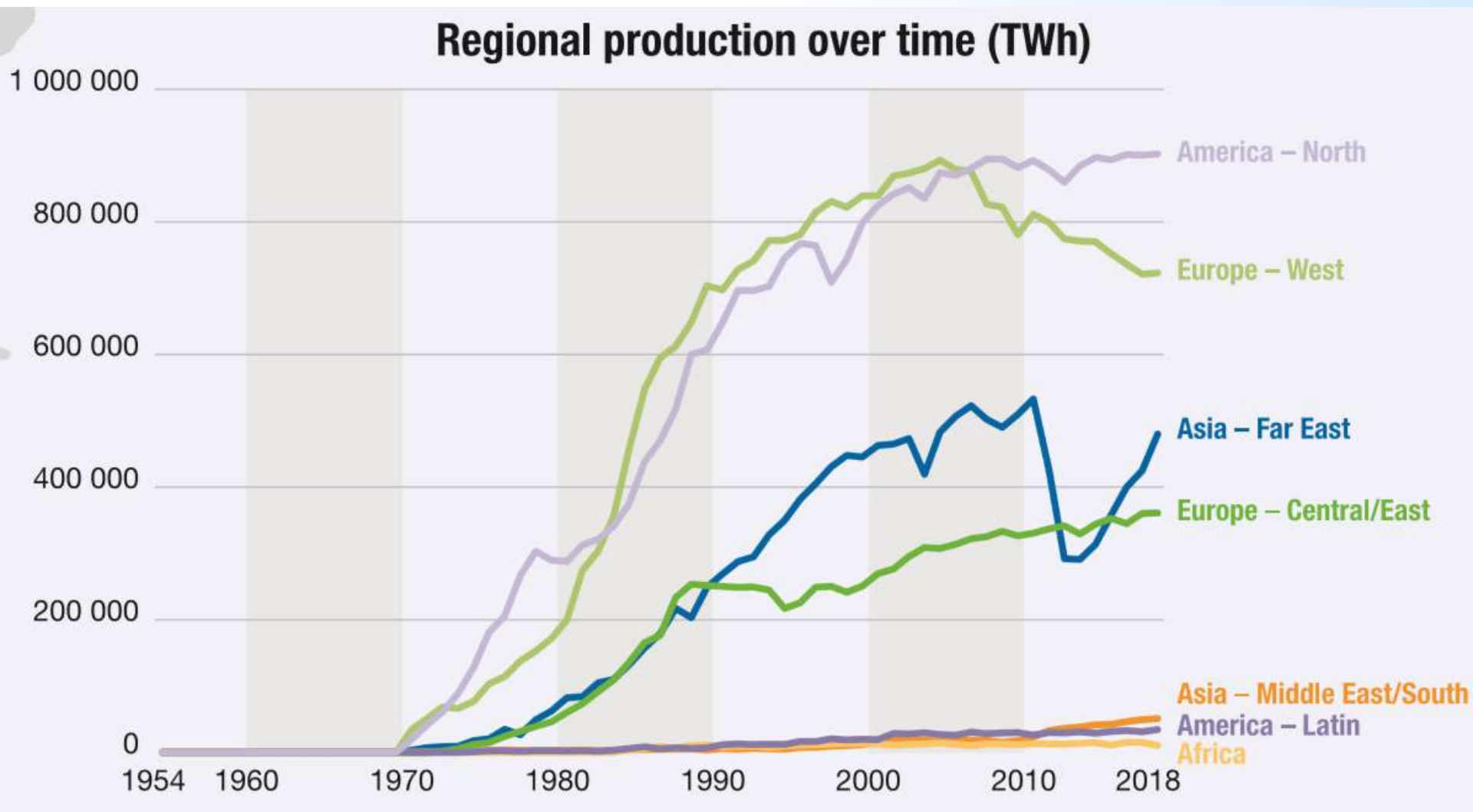
Asia Nuclear Electricity Production



Source: World Nuclear Association, IAEA Power Reactor Information Service (PRIS)

- Centre of expansion in nuclear power has **shifted** to from US/EU to Asia
- **Developing countries are embarking** on nuclear power
- Several **small modular reactors** preparing for near-term deployment

Nuclear power 2019 – PRIS snapshot



Nuclear power 2019 – PRIS snapshot

Projections



2050

Worldwide Capacity

- Low : 371 GW(e)
- High: 715 GW(e)

Source: IAEA “Power Reactor Information System (PRIS)”

Also refer to: IAEA “Energy, Electricity and Nuclear Power Estimates for the Period up to 2050”

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1. Intl' Trends of Nuclear Power
2. **IAEA Milestones Approach**
3. Case Studies on INIR Missions

IAEA Milestones Approach: Infrastructure Development Phases

Introducing
Nuclear Power

**Phase 1
Consider**



**Milestone 1
Decide**

**Phase 2
Prepare**



**Milestone 2
Contract**

**Phase 3
Construct**



**Milestone 3
Commission**



Milestones Approach

NUCLEAR POWER INFRASTRUCTURE DEVELOPMENT

Nuclear power option included in national energy strategy

MILESTONE 1

Ready to make a knowledgeable commitment to a nuclear power programme

PHASE 1

Considerations before a decision to launch a nuclear power programme is taken

MILESTONE 2

Ready to invite bids/negotiate a contract for the first nuclear power plant

PHASE 2

Preparatory work for the contracting and construction of a nuclear power plant after a policy decision has been taken

MILESTONE 3

Ready to commission and operate the first nuclear power plant

PHASE 3

Activities to implement the first nuclear power plant

AT LEAST 10–15 YEARS

FIRST NUCLEAR POWER PLANT PROJECT

Pre-project activities

Project development

Final investment decision
Contracting
Construction

Commissioning
Operation
Decommissioning

Milestones Approach

Indonesia

NUCLEAR POWER INFRASTRUCTURE DEVELOPMENT

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FIRST NUCLEAR POWER PLANT PROJECT

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Final investment decision
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Decommissioning

IAEA Milestones Approach: Infrastructure Issues



National position



Nuclear safety



Management



Funding and financing



Legal framework



Safeguards



Radiation protection



Regulatory framework



Electrical grid



Human resource development



Stakeholder involvement



Site and supporting facilities



Environmental protection



Emergency planning



Nuclear security



Nuclear fuel cycle



Radioactive waste management



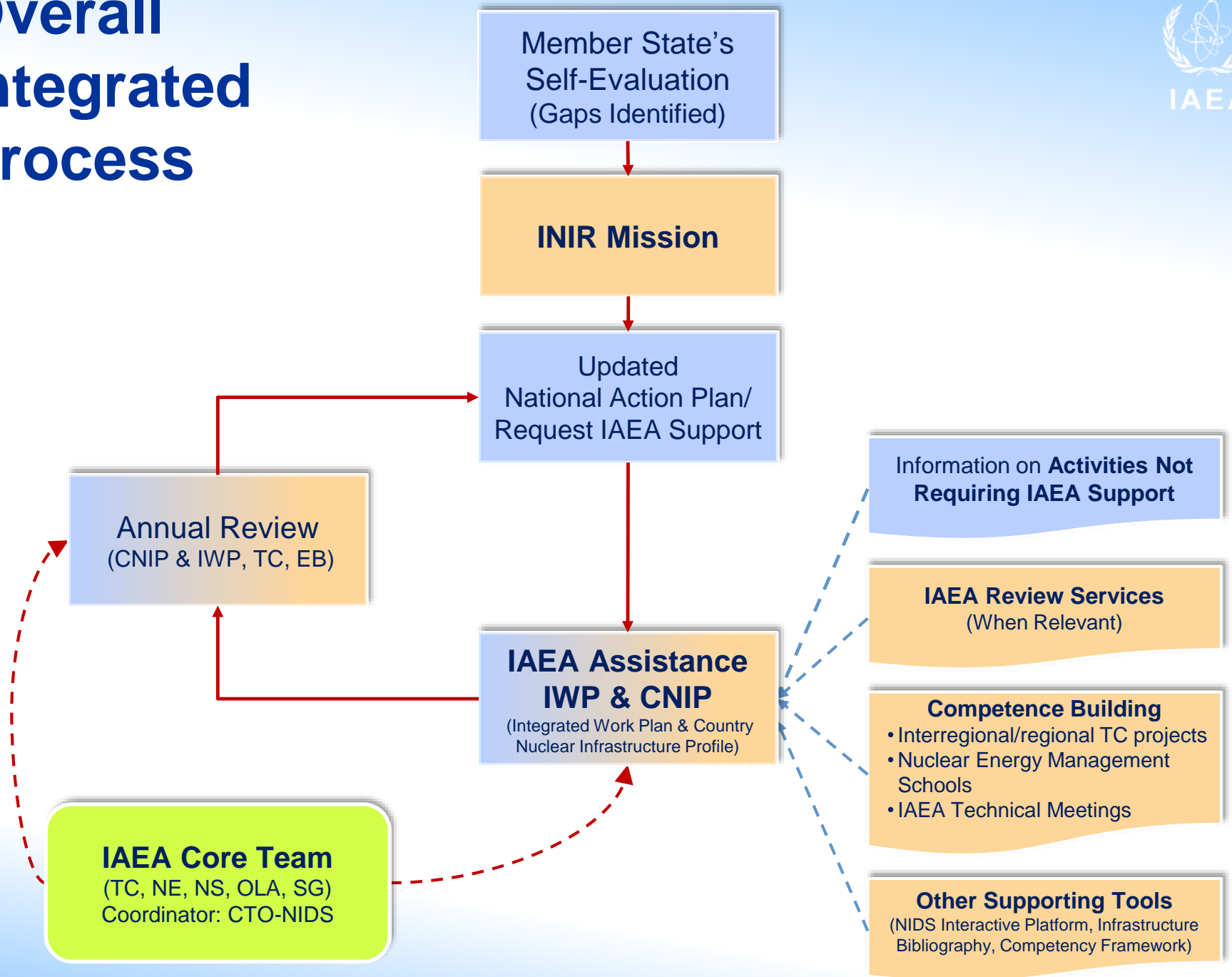
Industrial involvement



Procurement

The Milestones Approach is holistic and considers 19 specific infrastructure issues.

Overall Integrated Process



Country Nuclear Infrastructure Profile (CNIP) Objectives

- Maintain an up-to-date and validated database on **status of nuclear power infrastructure** in newcomer Member States based on
 - ✓ IAEA Milestones Approach
 - ✓ Self-Evaluation
 - ✓ Recommendations of Review Missions
- CNIP is Dynamic database maintained by NIDS/IAEA, and shared only between Member States and IAEA.

Example of CNIP

General Assessment / Milestones Approach					Thematic Areas	Status	Facts
Thematic Areas	Phase 1		Phase 2		Phase 3		
1. National position	[Progress Bar]		[Progress Bar]			Completed Phase 2	<p>Condition 1.1 Government support role defined and effective:</p> <ul style="list-style-type: none"> - IGA with Russia signed in 2011. Technology know-how transfer from Russia is defined in the IGA - Ground breaking ceremony was held with Prime Minister and Rosatom. - Evidence of the strong government support. - Government adopted the concept "Digital Bangladesh - Vision 2021" (Outline Perspective Plan of Bangladesh 2010-2021) - BAER act 2012 clearly assigns the role responsibilities on safety, security and safeguards. BAERA has responsibility on those issues. Safeguards is assigned to BAERA. <p>Condition 1.2 Overall strategic approach for contracting for the NPP established:</p> <ul style="list-style-type: none"> - The government of Bangladesh published two official reports: <ol style="list-style-type: none"> a) The "Power System Master Plan-2010" projected 2000MWe from nuclear by 2021 (see Electric Grid, Bangladesh 2010-2021) b) Draft Perspective Plan of Bangladesh for the period 2010-2021. A decision on early implementation of nuclear power was taken by the National Parliament of Bangladesh. - On 25 December 2015, BAEC and Atomstroyexport signed main EPC contract ("General Contract"). - National nuclear action plan (BANPAP2000) is being updated to reflect actual status of the programme.
2. Nuclear safety	[Progress Bar]		[Progress Bar]				
3. Management	[Progress Bar]		[Progress Bar]				
4. Funding and Financing	[Progress Bar]		[Progress Bar]				
5. Legal framework	[Progress Bar]		[Progress Bar]				
6. Safeguards	[Progress Bar]		[Progress Bar]				<p>Condition 2.1 Contract specifications and evaluation criteria determined:</p> <ul style="list-style-type: none"> - Contract with vendor on technical specification and negotiation with vendor has been completed. The Technical specification for RNPP is finalized and it is an integral part of the general contract. - Experienced Bangladeshi experts from concerned Ministries and organizations including conventionally licensed in the vendor country and based on this criteria chose a VVER-1200 AES2006 design with Nuclear Safety and Safeguards (NSS) design. - Bangladesh had originally proposed to introduce VVER-1000 reactors. However, during the development of the contract, the vendor proposed to introduce VVER-1200 reactors. The vendor was licensed in the vendor country and based on this criteria chose a VVER-1200 AES2006 design with Nuclear Safety and Safeguards (NSS) design.
7. Regulatory framework	[Progress Bar]		[Progress Bar]				<p>Condition 3.2 Owner/operator competence for procuring and managing the NPP contract:</p> <ul style="list-style-type: none"> - PMU (Project management unit established in 2013 for preparatory construction project) and NPCBL (Nuclear Power Plant Construction Board) are established. - PMU is being upgraded to take responsibility for main stages of construction. PMU has been steadily expanding its number of sections. The general contract includes training of 1100 staff covering a wide range of functions. - Bangladesh had established a negotiating committee consisting of 40 persons, representing various stakeholders.



- **3/3** - when the country has **reached the Milestone** in that infrastructure issue.
- **2/3** - when there is a **gap** and/or a recommendation given by INIR **not implemented**.
- **1/3** - when there is a **major gap** and/or one or more recommendations given by INIR **not implemented**.
- **0/3** - when the country has **not started** preparing infrastructure for that issue.

Page

Integrated Work Plan (IWP) Objectives

- Joint working document for
 - ✓ Planning to facilitate the delivery of IAEA assistance
 - ✓ Agreed timeline and funding
 - ✓ Reference for determining required national resources or bilateral support

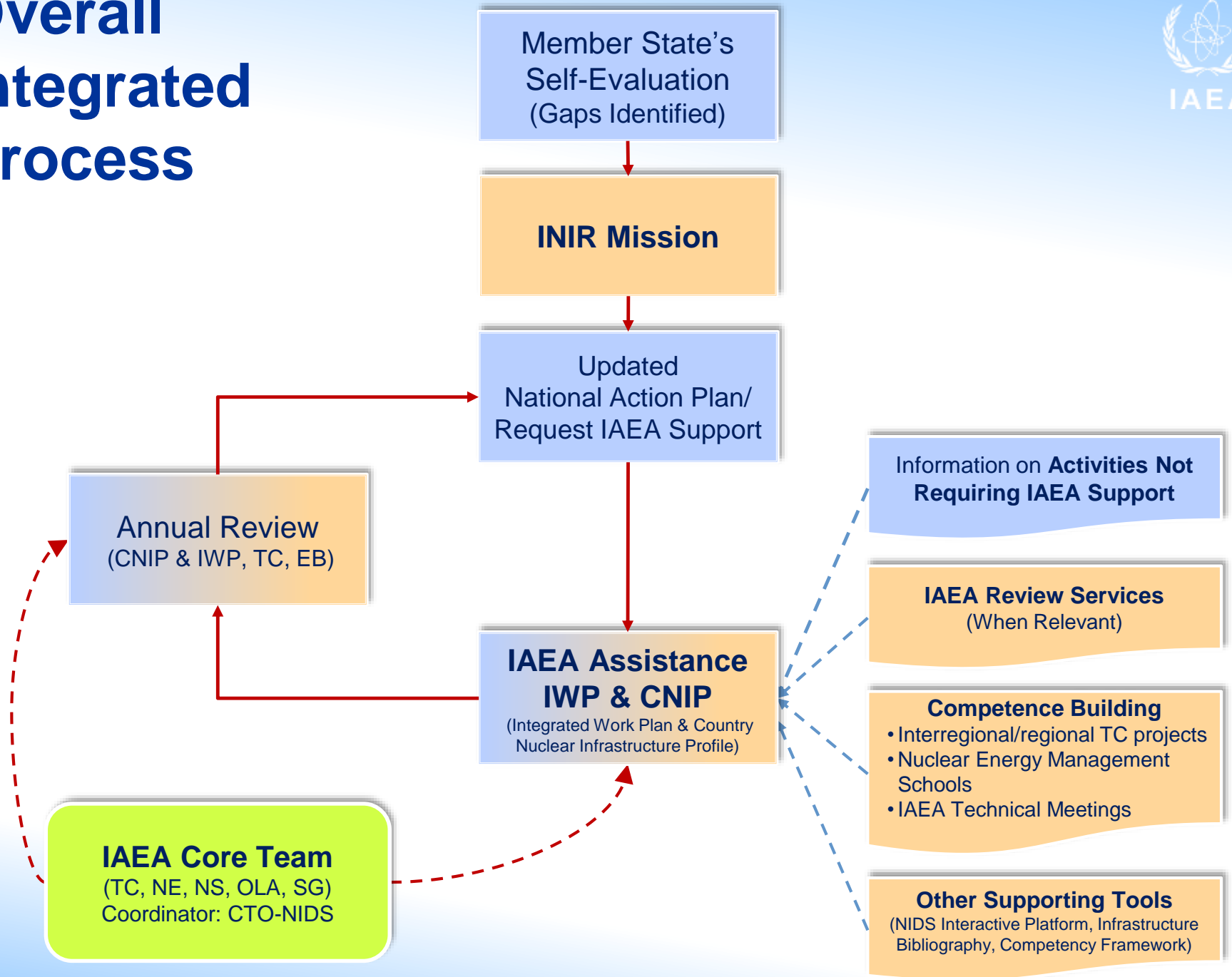


Example of IWP

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Item No	Infrastructure Issue	Links to Country Project Schedule/ Deliverables (based on the Timeline in CNIP if available)	Type of Assistance	Activity/ Event Title	Recipient Organization/ Host Participant	Venue	Responsible Counterpart	Responsible IAEA DDSU	Begin	End	Month	Year	Funding Source	Estimated Cost (Euro)	Preparatory Steps/ Requirements/ Pre-requisites	Start
12.3	Site and supporting facilities		procurement	Geotechnical/geophysical equipment	NPI		NPI	NENF-NDS, NSNI-EESS			Q1	2016	new TC project			
12.4	Site and supporting facilities		EM	SEED expert mission to review draft siting guidelines	NRA		NRA	NSNI-EESS			Q4	2016	new TC project			
13.1	Site and supporting facilities		WS	Workshop on external hazards	NPI, NRA, VRA		GAEC-NPI	NSNI-EESS			Q3	2016	new TC project			
14.1	Emergency planning		HBA+EM	review suitability of revised NNREPP for nuclear power	NADMO, NRA, NPL, VRA, NSC		NADMO	NS-IEC				2019				
15.1	Nuclear security		Regional WS	Regional workshop on National Response Plans for Nuclear Security Events - Methodology and Capability	NRA		NRA	NSNS	12	16	June	2017				
15.2	Nuclear security		Regional WS	Regional workshop on Threat Assessment and Development of a Design Basis Threat	NRA		NRA	NSNS	2	5	October	2017	NSF			
15.3	Nuclear security		HBA	Review GNFPO document on security considerations for siting against NSS-19				NSNS			Q4	2017	NSF		Ghana to send request to Divison Director NSNS	
15.4	Nuclear security		Mission	INSSP Review Mission	NRA, NSC, GNFPO		NRA	NSNS			Q3	2016	NSF		organize national stakeholder meeting/review in advance and propose actions for discussion	
15.5	Nuclear security		Regional project	Participate in the Regional Project for				NSNS								
15.6	Nuclear security		National assistance													
15.7	Nuclear security		bilateral assistance													
16.1	Nuclear fuel cycle		WS													

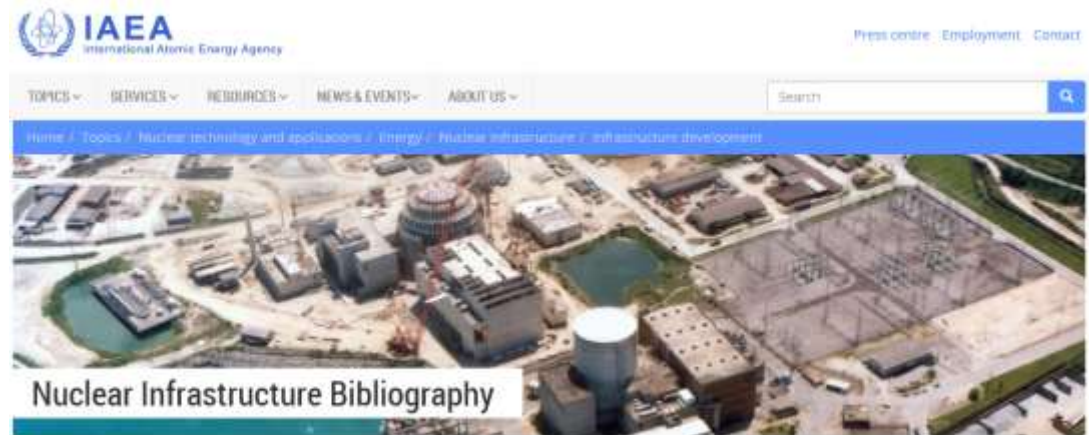
- Grouped by 19 infrastructure issue
- Support can include workshops, meetings, document review, training courses, expert missions, etc.
- Determined “when”, “who”, “where”, “what” and “how” in each activity.

Overall Integrated Process



Nuclear Infrastructure Bibliography

□ Supporting documentation exists for the **19 Infrastructure Issues**



- ◀ Infrastructure development
- ▶ Milestones Approach
- ▶ Nuclear Infrastructure Bibliography
- ▶ E-learning for Nuclear Newcomers

The IAEA guidance publication *Milestones in the Development of a National Infrastructure for Nuclear Power* outlines 19 infrastructure issues that need to be addressed in developing a new nuclear power programme. This bibliography is categorised according to these issues, listed below.

Click on any of the topics below to see the list of relevant IAEA publications. Further technical publications can be found on IAEA Publications.

- | | |
|--------------------------|------------------------------------|
| 1. National Position | 10. Human Resource Development |
| 2. Nuclear Safety | 11. Stakeholder Involvement |
| 3. Management | 12. Site and Supporting Facilities |
| 4. Funding and Financing | 13. Environmental Protection |
| 5. Legal Framework | 14. Emergency Planning |
| 6. Safeguards | 15. Nuclear Security |
| 7. Regulatory Framework | 16. Nuclear Fuel Cycle |
| 8. Radiation Protection | 17. Radioactive Waste Management |
| 9. Electrical Grid | 18. Industrial Involvement |
| | 19. Procurement |

Related Resources

- 📄 IAEA Milestones Approach: Developing the National Infrastructure for Nuclear Power (Brochure)
- 📄 IAEA Milestones Approach: Developing the National Infrastructure for Nuclear Power (Video)
- 📄 IAEA Scientific and Technical Publications
- 📄 Nuclear Infrastructure Development Section
- 📄 Department of Nuclear Energy
- 📄 Department of Nuclear Safety and Security

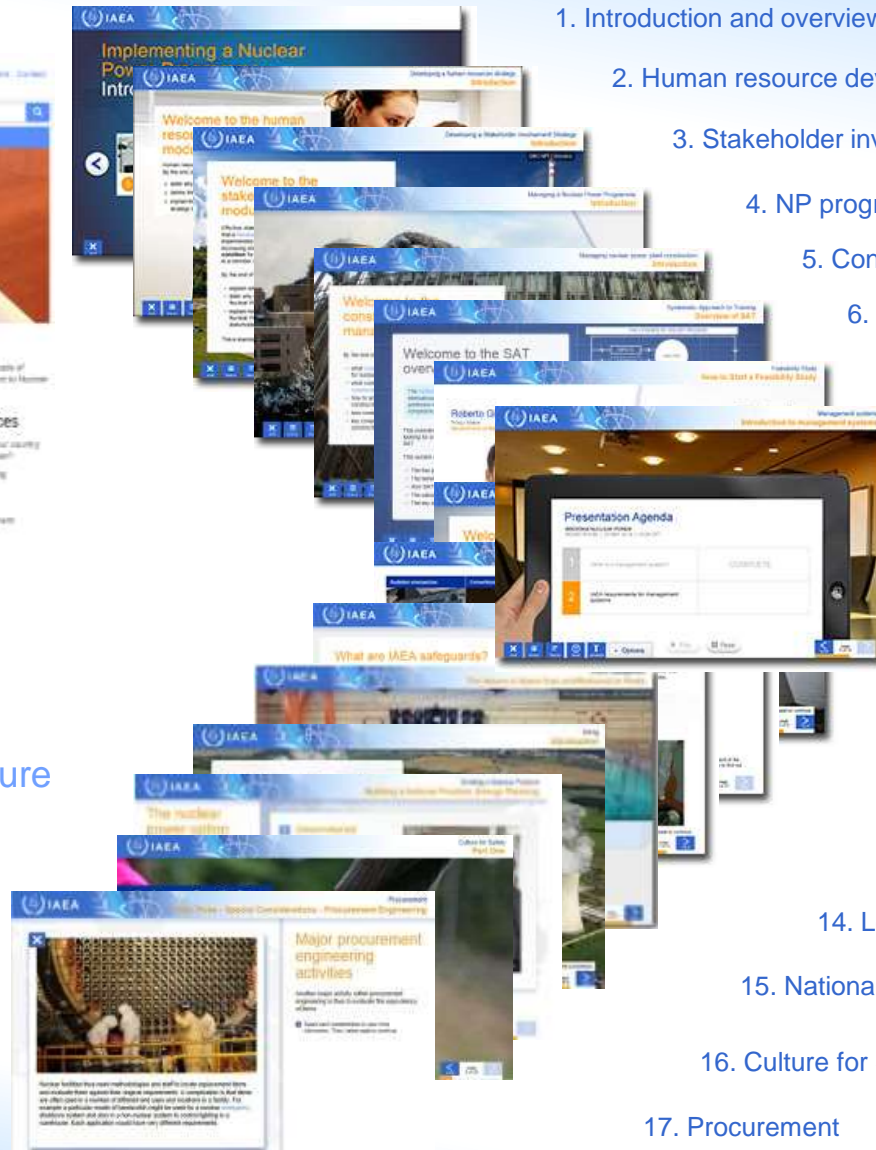
<https://www.iaea.org/topics/infrastructure-development/bibliography>

E-Learning Modules

1. Introduction and overview
2. Human resource development
3. Stakeholder involvement
4. NP programme management
5. Construction management
6. Systematic approach to training
7. Feasibility study
8. Management systems
9. Safety infrastructure
10. Emergency preparedness and Response
11. Safeguards
12. Spent Fuel and Radioactive Waste Management
13. Siting
14. Legal framework
15. National position
16. Culture for Safety
17. Procurement
18. Industry Involvement



<https://www.iaea.org/topics/infrastructure-development/e-learning-for-nuclear-newcomers>



Integrated approach for building capacity in countries embarking on nuclear power

assessment

**Self Evaluation Report
INIR missions
National Action Plan**

assistance

Competence Building

- ✓ Nuclear Infrastructure bibliography – IAEA publications
- ✓ Nuclear Infrastructure Competency Framework

Capacity Building events

- ✓ E-learning
- ✓ Interregional Trainings
- ✓ National Integrated Work Plans and CNIP
- ✓ Management Systems and NPHR modeling



IAEA

International Atomic Energy Agency
Atoms for Peace and Development

Case Studies on Integrated Nuclear Infrastructure Review (INIR) Missions

Satoru Yasuraoka

Nuclear Infrastructure Development Section

February 2019

19 Infrastructure Issues



National position



Nuclear safety



Management



Funding and financing



Legal framework



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Site and supporting facilities



Environmental protection



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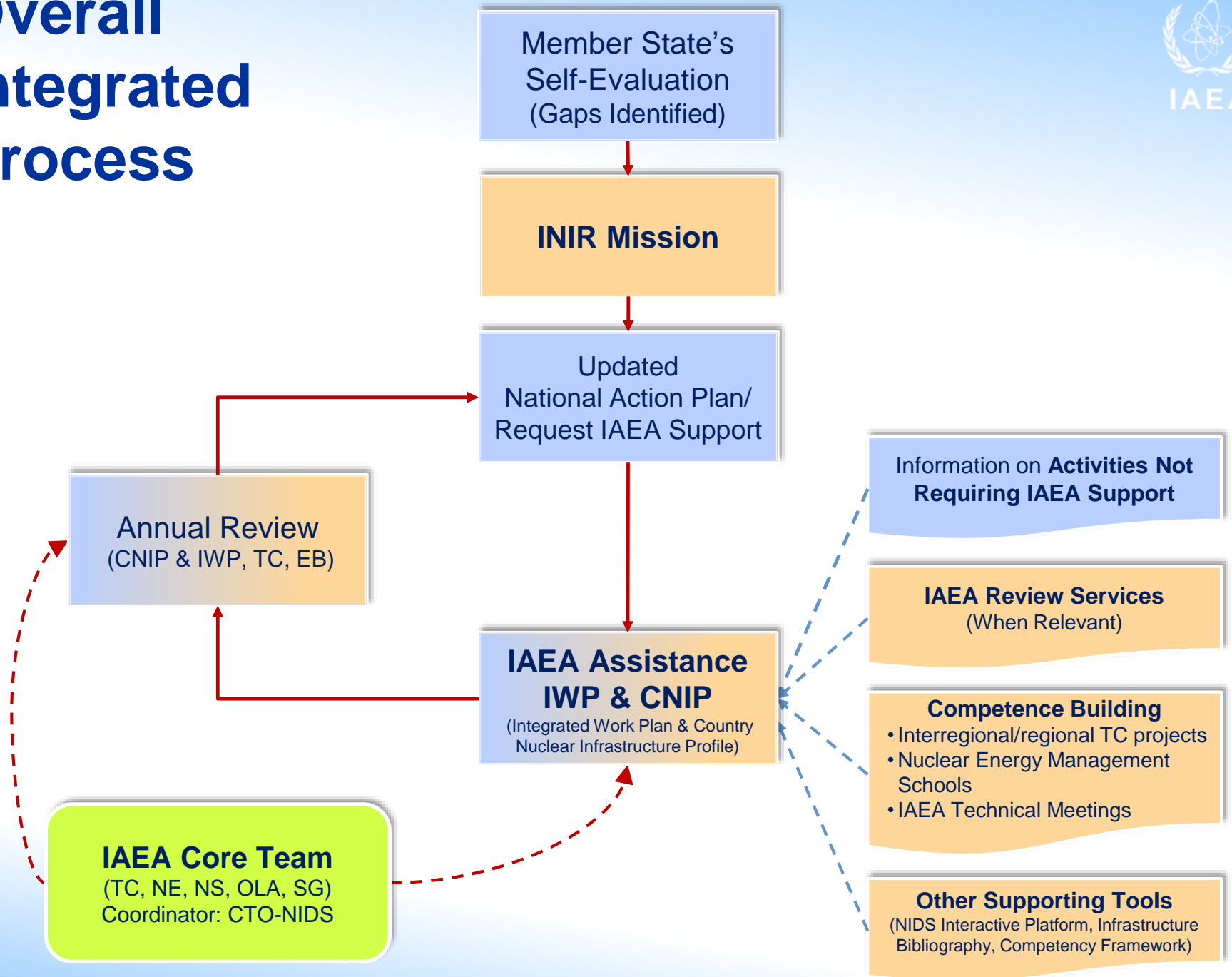


Industrial involvement



Procurement

Overall Integrated Process



Integrated Nuclear Infrastructure Review (INIR)



- INIR missions help:
 - ✓ Provide a comprehensive review of the status of all infrastructure issues
 - ✓ Align all the players
 - ✓ Member States receive practical recommendations and suggestions to move forward
- Observations from INIR missions and lessons learned well documented

27 INIR Missions in 20 Member States (2009-2019)



1. Jordan (Phase 1)	2009
2. Indonesia (Phase 1)	2009
3. Viet Nam (Phase 1)	2009
4. Thailand (Phase 1)	2010
5. UAE (Phase 2)	2011
6. Bangladesh (Phase 1&2)	2011
7. Jordan follow-up	2012
8. Belarus (Phase 1&2)	2012
9. Viet Nam (Phase 2)	2012
10. Poland (Phase 1)	2013
11. South Africa (Phase 2)	2013
12. Turkey (Phase 2)	2013
13. Jordan (Phase 2)	2014
14. Viet Nam follow-up	2014
15. Nigeria (Phase 2)	2015
16. Kenya (Phase 1)	2015
17. Morocco (Phase 1)	2015
18. Bangladesh follow-up	2016
19. Poland follow-up	2016
20. Kazakhstan (Phase 1)	2016
21. Malaysia (Phase 1)	2016
22. Ghana (Phase 1)	2017
23. Niger (Phase 1)	2018
24. UAE (Phase 3)	2018
25. Saudi Arabia (Phase 2)	2018
26. Sudan (Phase 1)	2018
27. Philippines (Phase 1)	2018
28. Ghana follow-up	2019
29. Egypt (Phase 2)	2019



- 29 INIR missions in 21 Member States between 2009 and 2019
- 5 missions requested in 2020:
 - Belarus (Phase 3), Kenya (Phase 1 Follow-Up), Uganda (Phase 1), Uzbekistan (Phase 2), Sri Lanka (Phase 1)

Summary of the Key Areas for Further Actions

(commonly noted in reports of other Member States)



1. The government should **complete a national policy** for the nuclear power programme.
2. The regulatory framework to support the introduction of nuclear power needs enhancement.
3. Management of the nuclear infrastructure development requires strengthening.
4. **A comprehensive nuclear energy law** should be developed. The relevant international legal instruments should be adhered to and implemented.
5. An integrated approach to human resource development is needed to support the national nuclear power programmes.

Quotes from INIR mission report to Indonesia (2009)



1. National Position		Phase 1
Conditions		Status
National Position	1 Safety, security and safeguard committed	
	2 National position declared	Launching Nuclear Power programme is not yet declared.
1.2.	The NEPIO established and staffed	National implementation programme not yet established
1.3.	National strategy defined	National implementation programme not yet established

Quotes from INIR mission report to Indonesia (2009)



3. Management	Phase 1
Conditions	Status
3.1. Energy strategy and nuclear power compatibility analyzed	Continuous updating of viability is needed
3.2. Unique Member State conditions evaluated	
3.3. Available nuclear technologies identified	
3.4. Ownership options and operational responsibilities considered	Need to be identified
3.5. Authorities and responsibilities established	
3.6. Appropriate expertise and experience involved	
3.7. Commitment to management systems that promote and support a strong safety culture, evident	

Quotes from INIR mission report to Indonesia (2009)



11. Stakeholder Involvement	Phase 1
Conditions	Status
11.1. Strong public information and education programme initiated	Well-structured programme needs to be established
11.2. Need for open and timely interaction and communication regarding the nuclear power programme addressed	Needs to determine on public participation in decision-making process

18. Industrial Involvement	Phase 1
Conditions	Status
18.1. National policy with respect to national and local industrial involvement considered	Under consideration
18.2. Need for strict application of quality programs for nuclear equipment and services recognized	

Recommendations & Suggestions in “National Position” in Phase 1 (noted in reports of other member state’s)



- ✓ Basic principles regarding the safe, secure and peaceful uses of NP for the long term should be demonstrated either specifically by the revision of the Nuclear Law/Atomic Energy Law or other appropriate official government statement.
- ✓ The country should take steps to strengthen coordination, especially between the NEPIO, the regulatory body and the future owner/operator, with due respect to the regulatory body independence.
- ✓ Define the responsibilities of organizations to be involved in Phase 2, by clarifying who is responsible for what part of the nuclear energy programme.
- ✓ Create an inter-agency team to oversee and steer infrastructure development work.
- ✓ The national energy planning should be periodically updated for incorporation of the new development (economics data, grid interconnections, etc.) and continuous communications with IAEA will be kept.
- ✓ Clarify the planning and decisions needed for a nuclear power programme and identify owner/operator.

Examples of NEPIO in other Member States



Country	NEPIO
Jordan	Jordan Atomic Energy Commission (JAEC)
Niger	Comité d'orientation stratégique pour le programme électronucléaire (COSPEN)
UAE	Emirates Nuclear Energy Corporation (ENEC)
Morocco	Nuclear Power and Seawater Desalination Committee (CRED)
Poland	Nuclear Energy Department (NED) in the Ministry of Economy, and the Committee for Nuclear Power
South Africa	National Nuclear Energy Executive Coordination Committee (NNEECC)
Turkey	Nuclear Energy Project Implementation Department (NEPID) in the Ministry of Energy and Natural Resources (MENR)
Bangladesh	Bangladesh Atomic Energy Commission (BAEC), National Committee on Rooppur NPP

Recommendations & Suggestions in “Management” in Phase 1

(noted in reports of other member state’s)



- ✓ Identify owner/operator of NPP(s) and determine its responsibilities in the development of the nuclear power infrastructure.
- ✓ A plan for the implementation of the integrated management system in the involved organizations in the nuclear power programme (future NPP owner/operator, regulatory body, etc.) should be developed by each involved organization.
- ✓ The government should start to prepare detailed plans and support for the transformation of the investment organization into the utility organization that will be in charge of the construction and operation of the first NPPs, with clear responsibilities for safety outlined.
- ✓ Continuously update national energy strategy using the latest information.
- ✓ A quality management group should be included in the Atomic Energy Commission organization chart reporting directly to the chairman, and having the main responsibility to develop policies for the Atomic Energy Commission Management System and to monitor the implementation.

Recommendations & Suggestions in “Stakeholder Involvement” in Phase 1 (noted in reports of other member state’s)



- ✓ A plan for interaction with the public, opinion leaders and other stakeholders, including neighbouring countries should be developed.
- ✓ Country should implement a programme of education to explain the role and benefits of nuclear energy for the next generation.
- ✓ Specific plans on how to involve the relevant stakeholders, including local communities, should be developed.
- ✓ Evaluate if public participation should be included in the decision making process, such as reactor licensing by the regulatory body.
- ✓ Develop and implement comprehensive programmes for stakeholder involvement and public communication.
- ✓ Involve professional communicators in the development and implementation of plans.
- ✓ Implement national opinion surveys to determine the degree of public knowledge and attitudes towards nuclear power and evaluate effectiveness of communication efforts.

Case Study in Poland (INIR phase 1 & follow-up)



2009 Gov decided to launch a NPP

NEPIO (Department of Nuclear Energy in Ministry of Energy) was established in May 2009.

Approx. 3,000MWe of nuclear capacity was planned, the 1st unit expected to be online by 2025. (at that time)



2013 INIR Mission (Phase 1)

Recommendations

R-1.3.1 Poland should complete its planned update of the draft Polish Nuclear Power Programme to reflect the latest considerations and proposed national policies, as well as Poland's commitment to nuclear safety, security and non-proliferation prior to its submission to the Council of Ministers for approval.

Good Practices

GP-11.1.1 Defining the draft PNPP, and using it to consult at local, national and trans boundary levels is a means for building confidence in the programme.

Case Study in Poland (INIR phase 1 & follow-up)



2014 Polish Nuclear Power Programme approved

key goals resulting from the Energy Policy of Poland until 2030 are:

- ✓ Assuring long-term security of electricity supply
- ✓ Maintaining electricity prices at levels acceptable by the national economy and the society
- ✓ Reducing emissions of CO₂ and other air pollutants

2016 INIR Mission (Follow-up)

Action taken since the 2013 INIR mission (in R-1.3.1)

- ✓ Poland updated the Polish Nuclear Power Programme (PNPP) and the Council of Ministers adopted it in January 2014. The final version includes a section entitled Foundations of the PNPP, which shows Poland's commitment to safety, security and non-proliferation.
- ✓ The updated document also includes policy statements on topics such as radiological protection, energy security and waste management.

Recommendation status: Complete

Poland Progresses in Developing Infrastructure for its Nuclear Power Programme, IAEA Review Concludes

Elisabeth Dyck, IAEA Department of Nuclear Energy

JUL
1
2016



Józef Sobolewski, Director of Nuclear Energy Department in Poland's Ministry of Energy, during discussions with the INIR follow-up mission team in Warsaw, 21 June 2016. (Photo: J. Strojny/Ministry of Energy, Poland)

Poland has implemented all the recommendations and suggestions of a 2013 IAEA Integrated Nuclear Infrastructure Review (INIR) mission, a team of experts concluded last week. In addition, the experts found that Poland is already implementing many of the actions that are expected for the next phase of developing its nuclear power programme.

<https://www.iaea.org/newscenter/news/poland-progresses-in-developing-infrastructure-for-its-nuclear-power-programme-iaea-review-concludes>

Related Stories

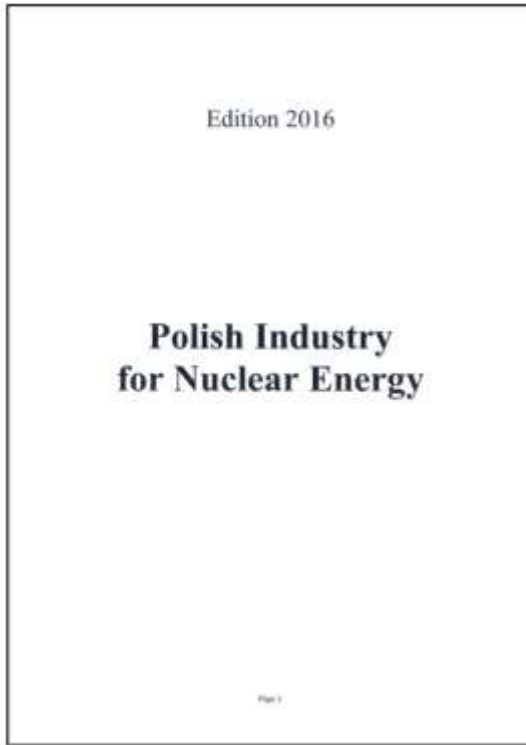


IAEA Reviews Progress of Bangladesh's Nuclear Infrastructure Development

Related Resources

-  [Integrated Nuclear Infrastructure Review Missions](#)
-  [The IAEA Milestones Approach](#)
-  [IAEA Division of Nuclear Power](#)
-  [In Focus: Nuclear Power](#)

2016 Released the 1st ed. of Industrial Catalogue



...and now periodically reviewing/updating the CNIP after IWP meeting between IAEA and Poland counterparts....

INIR process

- ✓ The integrated nuclear infrastructure review is comprised of the following **4 steps**:
 - Step 1: Self Evaluation Report (SER) review
 - Step 2: Pre-INIR mission
 - Step 3: INIR mission
 - **Step 4: INIR Follow-up mission**
- ✓ The INIR is conducted upon formal request from the Member State, and consists of all 4 steps
- ✓ The timing of each of the 4 steps is agreed with the Member State

Ref. Guidelines for Preparing & Conducting INIR

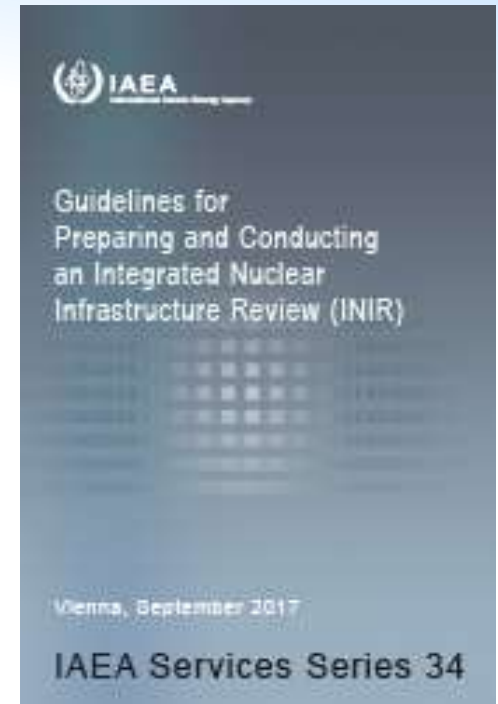
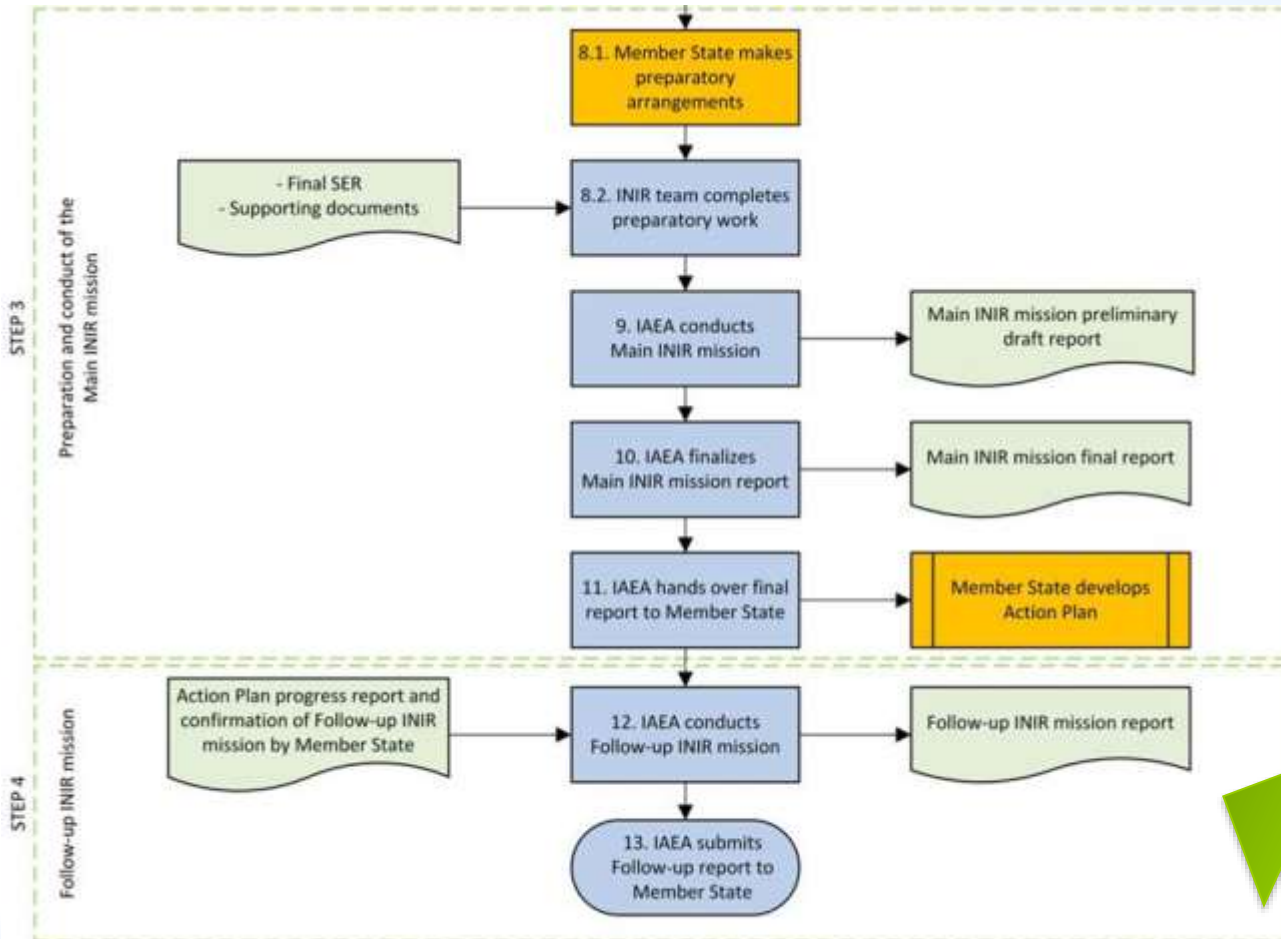


FIG. 1. Flowchart for INIR Service.

Ref. Guidelines for Preparing & Conducting INIR



- ✓ The follow-up INIR mission will focus on the response to the main INIR mission's recommendations and suggestions.
- ✓ At least one month prior to the conduct of the follow-up INIR mission, the host counterpart should submit the Member State's action plan progress report together with the supporting documents.
- ✓ The team leader will distribute the action plan progress report for review to the follow-up mission team members and concerned IAEA staff and will collate the feedback before the follow-up mission.

APPENDIX V

TEMPLATE FOR MEMBER STATE'S ACTION PLAN PROGRESS REPORT

Recommendation/suggestion	Actions taken by Member State	Status	Evidence	IAEA assessment
National position				
[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]				
Nuclear safety				
[Copy and paste all the recommendations and suggestions as they are written in the main INIR mission report]				

Source: IAEA "Guidelines for Preparing and Conducting an Integrated Nuclear Infrastructure Review (INIR)" (2017)

https://www-pub.iaea.org/MTCD/Publications/PDF/SVS-34_web.pdf



Thank you for your attention!

and

next case is from South Africa...