



Webinar #3

Resource Requirements for Nuclear Power Infrastructure Development

Webinar Series: Nuclear Infrastructure Publications Updates



Nuclear
Infrastructure
Development



February 2023

Resource Requirements for Nuclear Power Infrastructure Development

Housekeeping



The webinar is recorded



Materials and recording will be posted on the webinar web-page



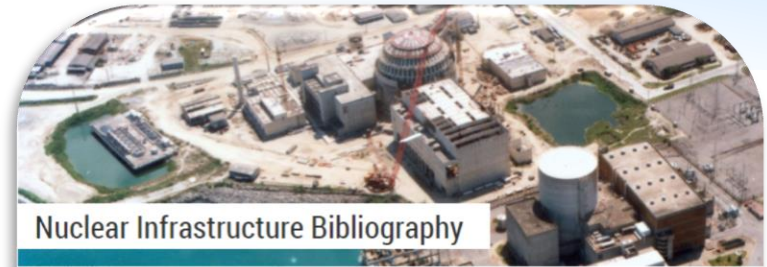
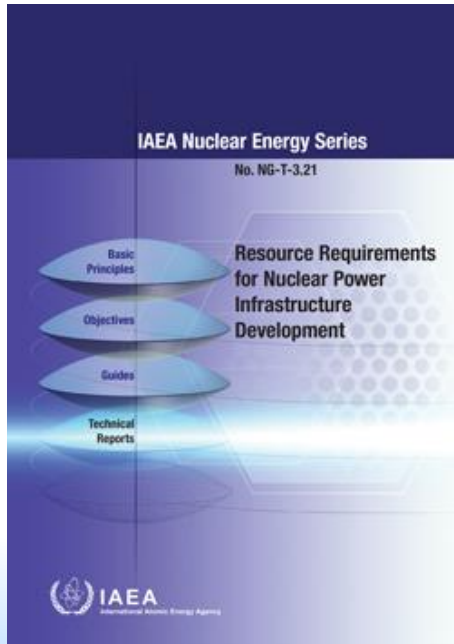
Q&A button for all questions

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Resource Requirements for Nuclear Power Infrastructure Development

Infrastructure Bibliography



Nuclear Infrastructure Bibliography

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



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Resource Requirements for Nuclear Power Infrastructure Development



Objectives

- Introduce the new publication by the IAEA to support resource Requirements for new nuclear power programmes
- Provide to Member State an overview of the methodology to develop the content of the publication and present the overall resource requirements in each phase and for each of the key organizations involved in the development of nuclear infrastructure
- Provide an opportunity to share Member States experience with estimating the resource requirements for the development of their specific nuclear power programmes



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Resource Requirements for Nuclear Power Infrastructure Development



Our speakers today



Liliya Dulinets
NIDS, IAEA



Anthony Stott
NIDS, IAEA



Nancy Mberia
NuPEA, Kenya

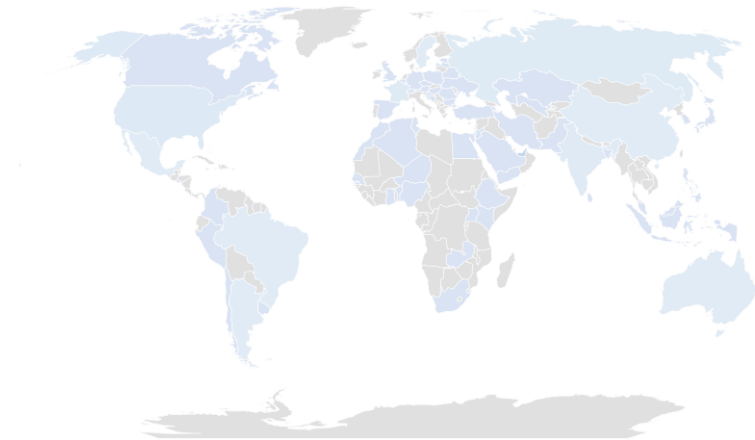


Seth Debrah
GAEC-NPI, Ghana



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Resource Requirements for Nuclear Power Infrastructure Development



Poll Time

At the moment your country is...

- considering a new nuclear power programme;
- ready to take a decision or already decided and preparing infrastructure;
- negotiating the first NPP contract or building the first NPP;
- relaunching or expanding an existing nuclear power programme;
- operating NPPs and is also a nuclear technology/reactor provider;
- None of the above.

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Resource Requirements for Nuclear Power Infrastructure Development



Ms. Liliya Dulinets

- Deputy Director, Nuclear Energy Department, Ministry of Energy of the Republic of Belarus
- Over 14 years of experience in the nuclear power program implementation:
 - Nuclear power project management
 - State management in environmental protection
 - International cooperation in the energy field
- Worked over 10 years at the Thermal Power station
- Graduated from the Belarusian Technical University





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Resource Requirements for Nuclear Power Infrastructure Development



Mr. Antony “Tony” Stott

- Anthony Stott - known to most of us as Tony Stott - is an international expert on nuclear power infrastructure development, environmental protection and stakeholder engagement.
- From December 2014 to March 2020, Tony was a Senior Nuclear Engineer and Operational Lead for the Nuclear Infrastructure Development Section in the IAEA Division of Nuclear Power; and subsequently a Consultant in the same section.
- Tony’s experience in the IAEA includes being the Team Leader for Integrated Nuclear Infrastructure Review (INIR) missions, the lead for national workshops and expert missions on environmental impact assessment and stakeholder engagement. He has lectured at interregional training courses on nuclear infrastructure development topics, and has being the Scientific Secretary for General Conference side events, for Technical Meetings, and for the Technical Working Group on Nuclear Power Infrastructure.
- Prior to joining the IAEA, Tony accumulated more than 30 years’ experience in the nuclear industry in South Africa, in the national electricity utility, Eskom.
- Tony has participated in the development or revision of several IAEA publications. He took over the development of the publication we are talking about today, and saw it through to its publication in June 2022.



Overview of Resource Requirements for Nuclear Power Infrastructure Development

Anthony K Stott
Nuclear Infrastructure Development Section
Nuclear Power Division - Nuclear Energy Department

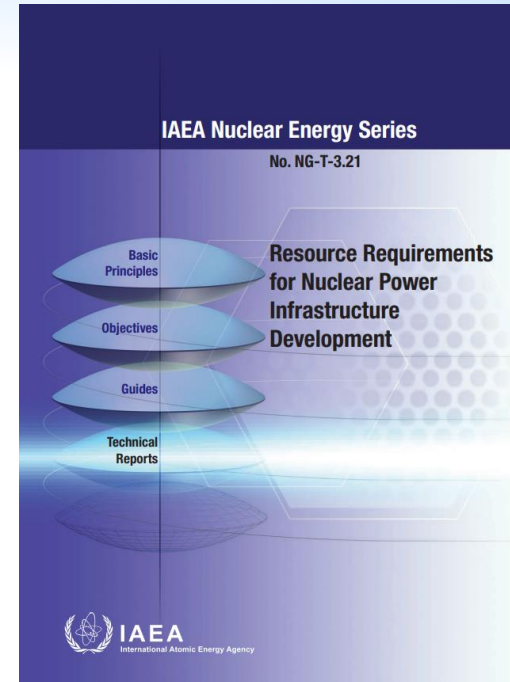
Resource Requirements for Nuclear Power Infrastructure Development

IAEA Nuclear Energy Series No. NG-T-3.21

[Published in June 2022]

Publication can be downloaded from the IAEA website

<https://www.iaea.org/publications/14882/resource-requirements-for-nuclear-power-infrastructure-development>



The IAEA Milestones Approach

Three phases Three milestones

- ➔ By end of **Phase 1**: Ready to make a **knowledgeable commitment** to a nuclear power programme
- ➔ By end of **phase 2**: Ready to **invite bids/negotiate a contract** for the first nuclear power plant
- ➔ By end of **phase 3**: Ready to **commission and operate** the first nuclear power plant

Key organizations

- ➔ **Government**
- ➔ **NEPIO** (Nuclear Energy Programme Implementing Organization)
- ➔ **Regulatory Body**
- ➔ **Owner-Operator**

19 infrastructure issues

- | | | | | | |
|---|-----------------------|---|--------------------------------|---|------------------------------|
|  | National position |  | Regulatory framework |  | Environmental protection |
|  | Nuclear safety |  | Radiation protection |  | Emergency planning |
|  | Management |  | Electrical grid |  | Nuclear security |
|  | Funding and financing |  | Human resource development |  | Nuclear fuel cycle |
|  | Legal framework |  | Stakeholder involvement |  | Radioactive waste management |
|  | Safeguards |  | Site and supporting facilities |  | Industrial involvement |
| | | | |  | Procurement |

What does it take to develop nuclear infrastructure?

Objective

Provide **resource estimates** broken down by phase, organization and resource-intensive *meta-activities*

→ In line with IAEA Milestones Approach

Scope

Focus on the **soft** infrastructure

→ Development of national policies, legal and regulatory framework, establishment and staffing of key organizations with competent resources...

Required improvements to the country's **physical (hard) infrastructure omitted**

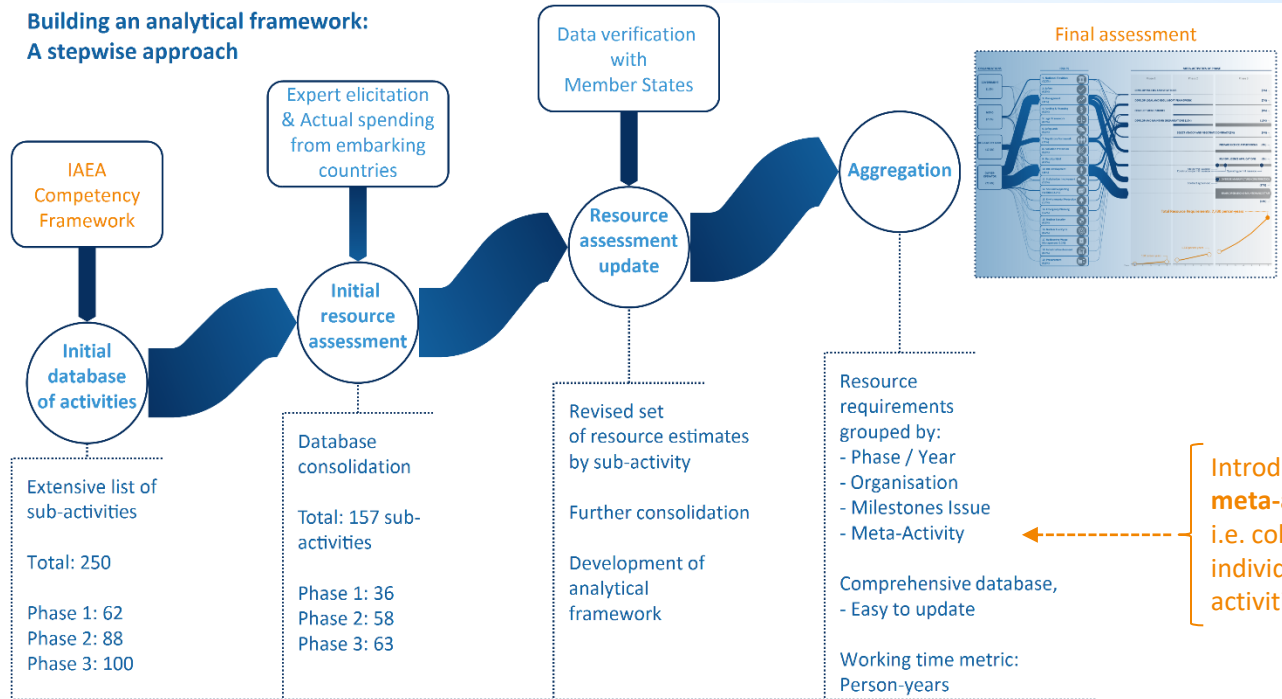
→ Roads, railway system, ports, electrical grid, site preparation, etc. are important elements to consider when establishing the overall cost but are largely project and country dependent

Key assumption **Two unit-programmes**

→ Country that already has some experience and capability for managing large infrastructure projects

A methodological note (Figure 1)

Building an analytical framework: A stepwise approach



Summary of the process to determine aggregated resource requirements

Note: The IAEA Nuclear Infrastructure Competency Framework database is available [here](#)

Choice of metric

Resource estimates are presented in **person-years**

- ➔ Measure of the time (effort) that the key personnel of an organisation devotes to a specific task or activity
- ➔ Smooths out countries' economic differences, in particular in terms of labour costs which may vary significantly
- ➔ Should not significantly exceed the rates generally applicable in the relevant geographical area and for the staff profiles in question

Relation between **estimated work/effort (person-years)** and **actual expenditure (cost)**

- ➔ Multiply resource estimates by average annual income to translate resources into monetary terms

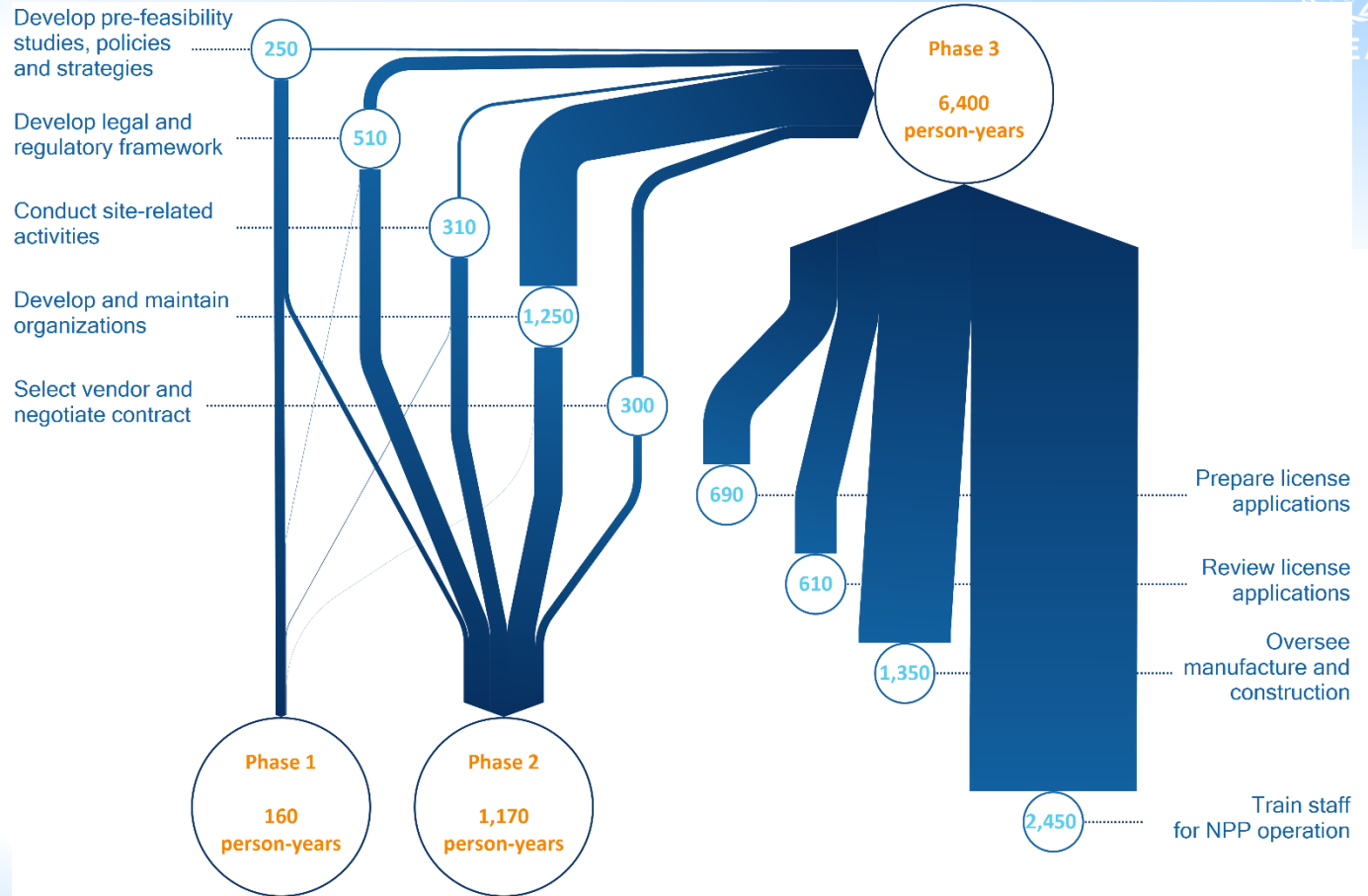
Definition of meta-activities (Table 1)

Develop pre-feasibility studies, policies and strategies	Develop legal and regulatory framework	Conduct site related activities	Develop and maintain organizations	Select vendor and negotiate contract
<ul style="list-style-type: none"> All necessary studies for developing the comprehensive report, incl. stakeholder engagement Subsequent development of policies (e.g. for safe, secure use of nuclear power for peaceful purposes, spent fuel and waste management, industrial involvement and human resource development) 	<ul style="list-style-type: none"> Review of and adherence to international legal instruments Development and enactment of the comprehensive nuclear law Review of all other legislation that may impact the nuclear power programme Development of regulations and guides to control the use of nuclear power Establishment of a licensing and oversight process 	<ul style="list-style-type: none"> Site survey activities, site selection and characterization activities and the preparation and submission of the Environmental Impact Assessment Submission of the site license / permit applications depending on the regulatory requirements of the country Work to identify and implement physical infrastructure upgrades such as grid, roads, ports etc. 	<ul style="list-style-type: none"> Establishment of organizations, definition of structures and management systems and recruitment and training of staff [except those trained specifically for operation and maintenance under the engineering-procurement-construction (EPC) contract] Activities related to stakeholder engagement and to emergency preparedness and response 	<ul style="list-style-type: none"> Definition of the approach to financing, contracting and vendor/contractor selection, evaluating offers Development of technical specifications Negotiations of the contract for plant construction
Prepare licence applications	Review licence applications	Oversee manufacture and construction	Train staff for NPP operation	
<ul style="list-style-type: none"> Task of the owner/operator in reviewing information provided by the vendor and developing the additional information required to apply for 2 main licenses: the construction and operating licenses Includes the response to questions from the regulator Submissions for other licenses/permits required by the operating organization and programmes requiring regulatory review 	<ul style="list-style-type: none"> Regulatory task of reviewing the siting, construction and operating licence applications or a combined licence application Regulatory review of the Environmental Impact Assessment, and any other permit applications by the relevant authority 	<ul style="list-style-type: none"> Owner/operator activity of overseeing the work of the vendor during construction Confirmation that contract requirements are met, reviewing non-conformances, witnessing manufacture and construction 	<ul style="list-style-type: none"> Cost of hiring staff to enable them to be trained and gain experience prior to commissioning 	

Overall assessment of resource requirements

Breakdown of resource requirements by meta-activities and milestone phases (Figure 3)

7,730 person-years in total



Who is doing what?

Example for the NEPIO

(Regulatory Body and Owner-Operator in the presentation, but will not be presented)

Resources and main activities

NEPIO

NEPIO's principal responsibilities

Phase 1

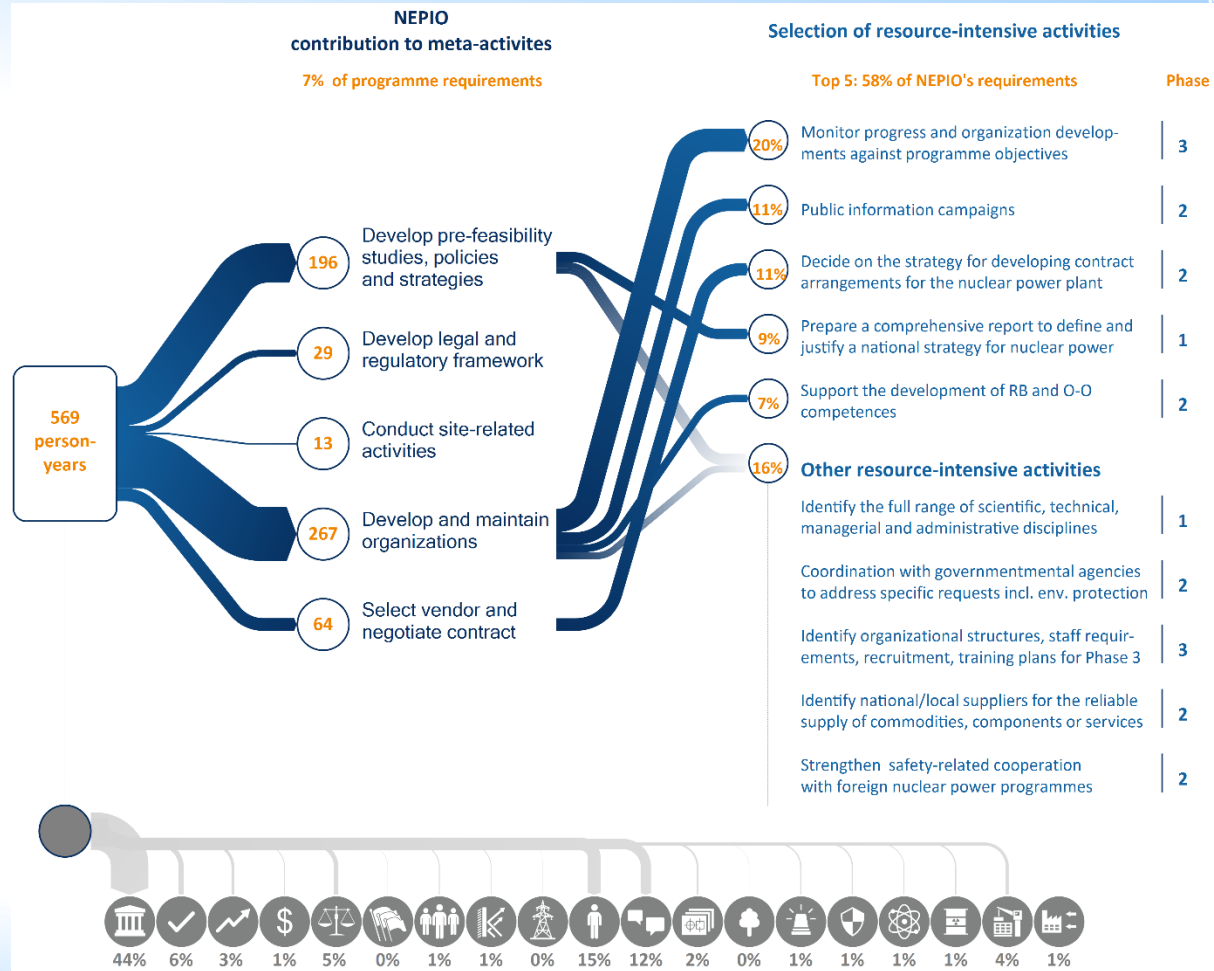
Coordinate the preparation of the studies and compile the information necessary for the government to make a knowledgeable commitment

Phase 2

Coordinate and monitor the development of the necessary infrastructure among the various responsible parties

Phase 3

Ensure the overall development of the infrastructure to sustainably implement the national strategy



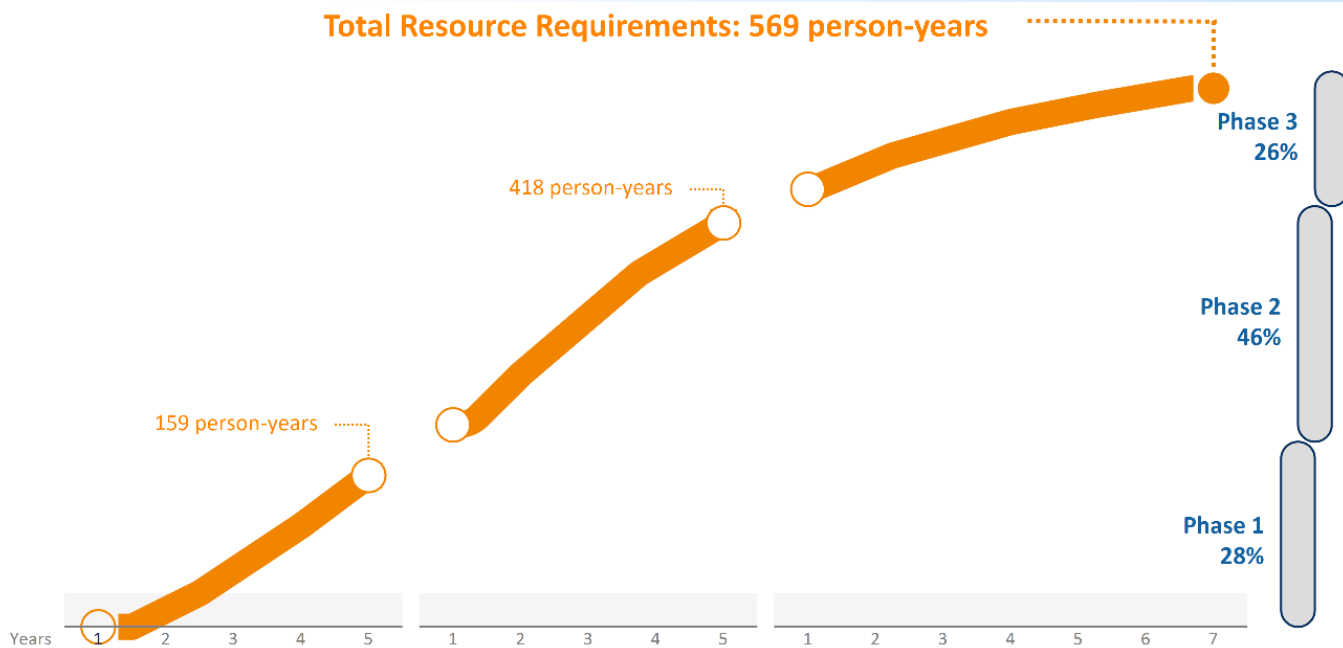


Figure 5

Sizeable ramp-up of resource needs in Phase 2, reflecting the **importance of ensuring that the conclusions and recommendations of the comprehensive report are successfully implemented** through the owner/operator and regulator

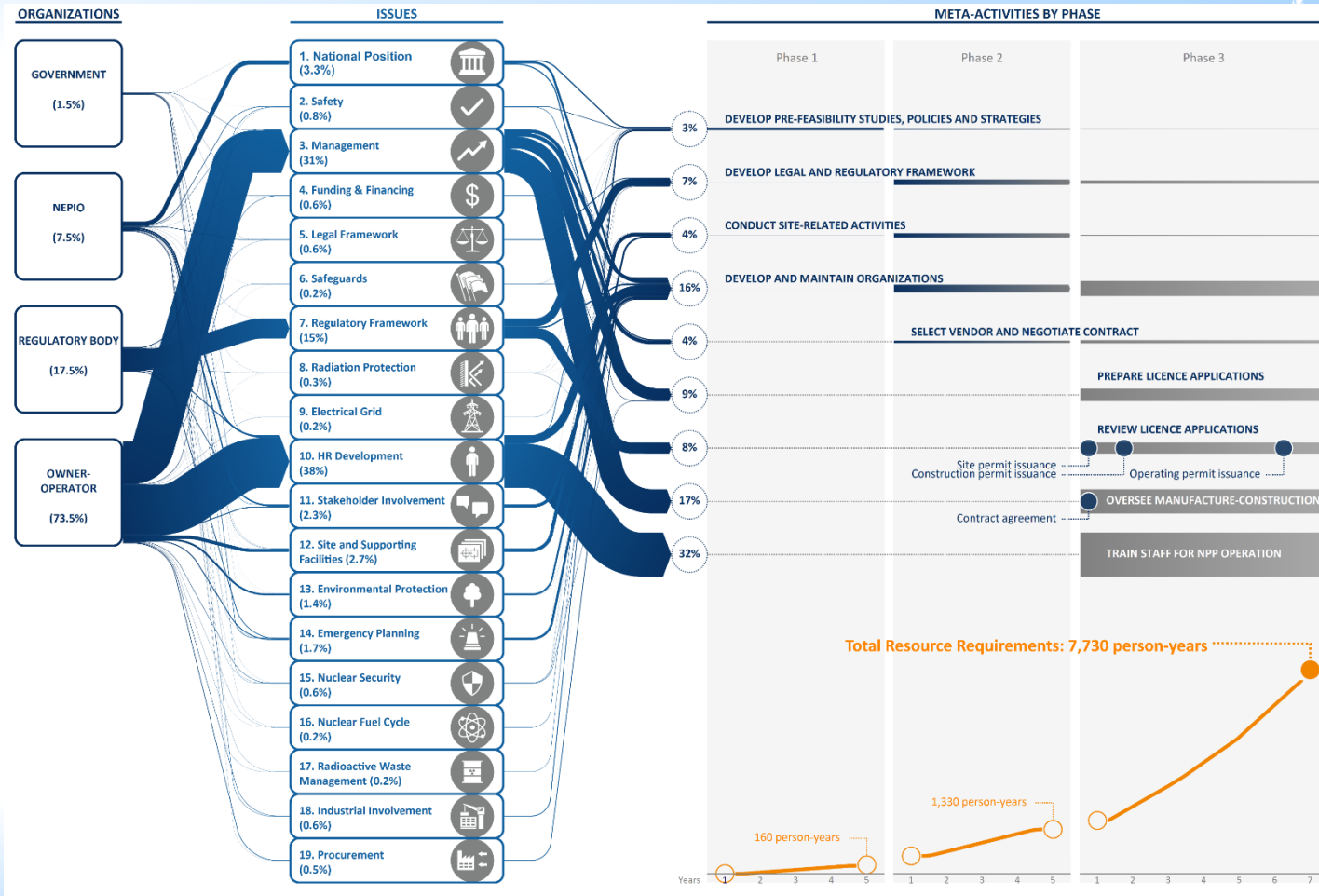
Bringing it all together

Overview of resource requirements

Full overview of resource requirements (Figure 2)

Some of the resource cost can be factored into a feasibility cost model and recovered through the cost of electricity produced.

But all of it needs to be funded by the Member State before any electricity is produced.



Summary

Summary

- ➔ The overall resource estimate is about **7730 person-years**
- ➔ The overall “cost” is **small compared to the capital cost** of the nuclear power plant, but **still significant**: estimated as **5-10% of total investment**
- ➔ The resources required will be a **mix of national resources** and, if necessary, **foreign consultants/experts**
- ➔ The **actual cost** will depend on competence requirements, salary costs in the country and the split between national staff and foreign consultants
- ➔ The **overall results and key messages** are adequate for planning purposes. The publication does not try to clarify the different competences required, or define the required size of organizations. Each organization will need to conduct their own detailed workforce planning studies to identify staff numbers, competences and experience that will be needed.



IAEA

International Atomic Energy Agency
Atoms for Peace and Development

Thank you





February 2023

Resource Requirements for Nuclear Power Infrastructure Development



Ms Nancy Mberia

- Economist at the Nuclear Power and Energy Agency in Kenya
- Academic background in economics, and Ms. Mberia work for the NuPEA primarily entails implementing the Strategic Plan for a Nuclear Power Programme in Kenya through carrying out technical studies as well as drafting policies on and strategies for the different infrastructure issues within the programme.
- Expertise includes the evaluation of the funding and financing nuclear infrastructure issue and the assessment of internal and external environmental issues that are likely to influence decisions about the programme.



NUCLEAR POWER & ENERGY AGENCY

FUNDING ESTIMATION FOR THE KENYA NUCLEAR POWER PROGRAMME

IAEA Webinar on Resource Requirements for Nuclear Power Infrastructure
Development

15th February 2023

Presented by:
Nancy Mberia
Strategy & Planning Directorate



NuPEA

Presentation Outline

- NuPEA's Mandate
- Kenya Nuclear Regulatory Authority
- Funding and financing infrastructure issue
- Funding plan review
- Conclusion

NuPEA's Mandate

- Established by the **Energy Act, 2019**
 - Successor to Nuclear Electricity Project Committee (2010) and Kenya Nuclear Electricity Board (2012)
- **Main functions** of the Agency
 - Be the nuclear energy programme implementing organization and promote the development of nuclear electricity generation in Kenya; and
 - Carry out research, development and dissemination activities in the energy and nuclear power sector.

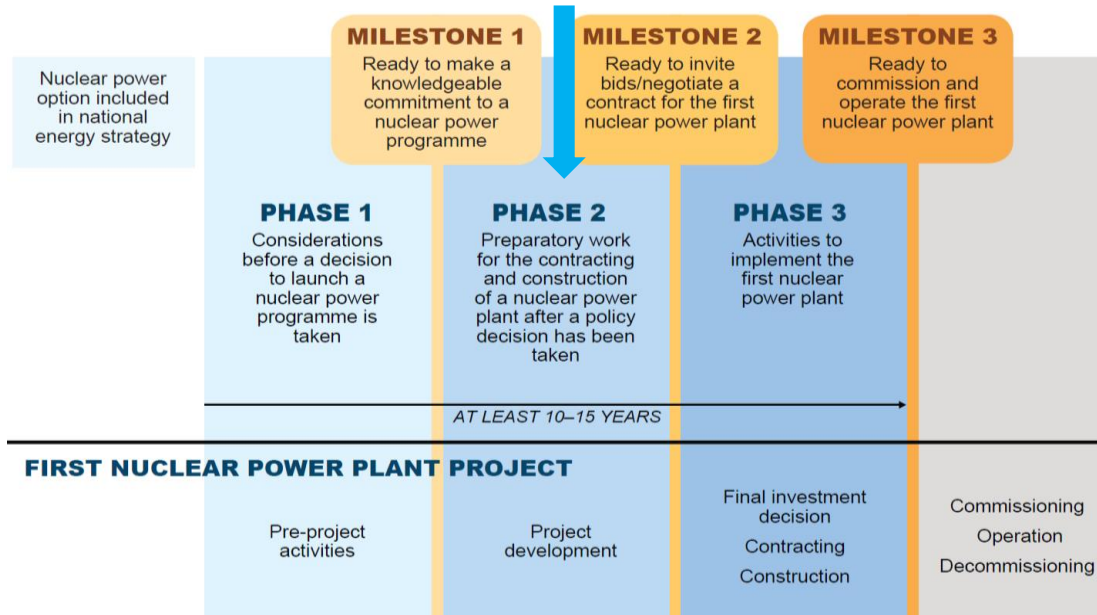
NuPEA's Mandate *cont'd*



National nuclear power infrastructure development

NuPEA's Mandate *cont'd*

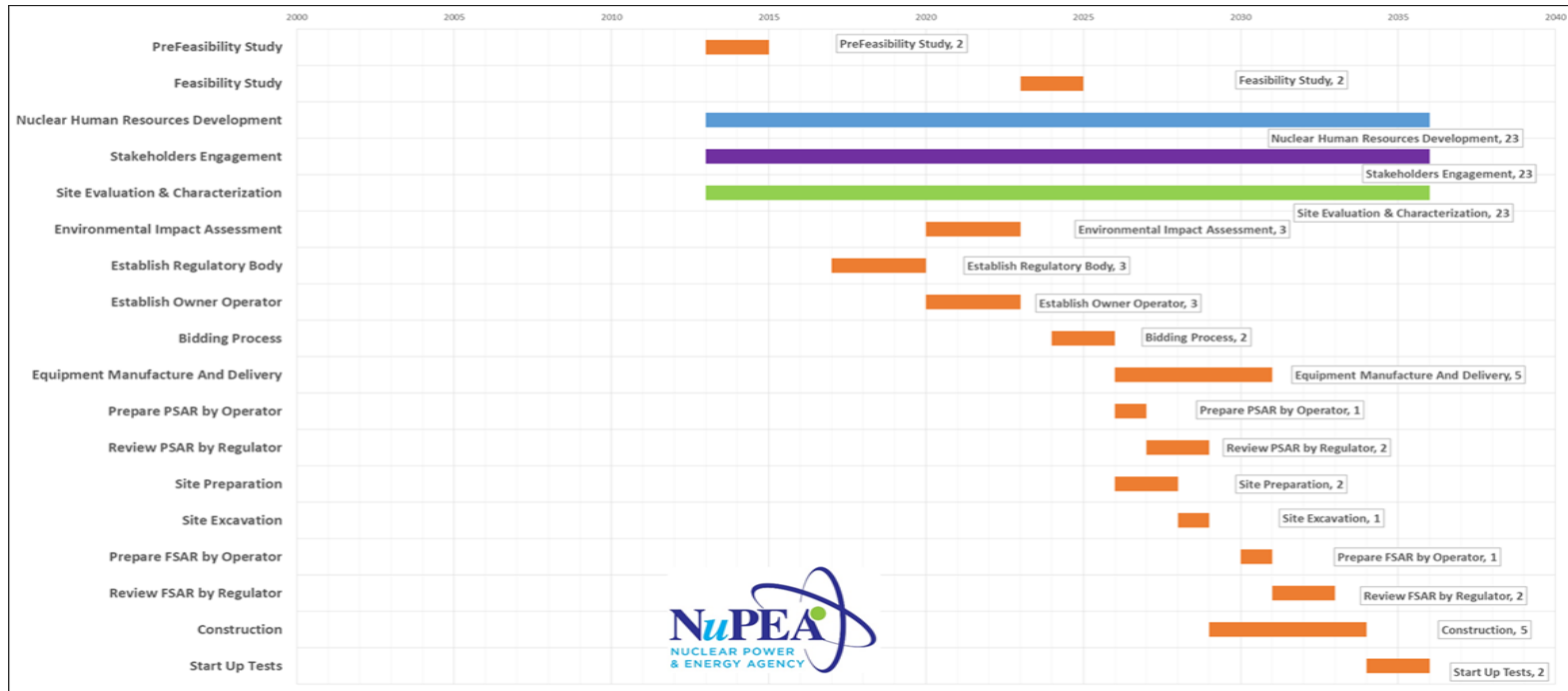
We are here




- Phase 1 INIR Mission undertaken in 2015
- INIR Action Plan developed and implemented
- Follow-up INIR Mission undertaken in 2021



NuPEA's Mandate *cont'd*



Kenya Nuclear Regulatory Authority

<p>SPECIAL ISSUE</p> <p><i>Kenya Gazette Supplement No. 208 (Acts No. 29)</i></p>  <p>REPUBLIC OF KENYA</p> <p>KENYA GAZETTE SUPPLEMENT</p> <p>ACTS, 2019</p> <hr/> <p>NAIROBI, 27th December, 2019</p> <hr/> <p>CONTENT</p> <table border="0"><tr><td>Act—</td><td>Page</td></tr><tr><td>The Nuclear Regulatory Act, 2019</td><td>985</td></tr></table>	Act—	Page	The Nuclear Regulatory Act, 2019	985	<p>The Nuclear Regulatory Act NAIROBI, 27th December, 2019 SUPPLEMENT No. 208 Acts ,2019((Acts No. 29)</p> <p>Date of Assent:27th December, 2019</p> <p>Date of Commencement: 10th January, 2020</p>	<p>985</p> <p>THE NUCLEAR REGULATORY ACT, 2019 No. 29 of 2019 <i>Date of Assent: 23rd December, 2019</i> <i>Date of Commencement: 10th January, 2020</i></p> <p>ARRANGEMENT OF SECTIONS</p> <p>Section</p> <p>PART I—PRELIMINARY</p> <ol style="list-style-type: none">1—Short title.2—Interpretation.3—Objects and purposes of the Act.4—Application of the Act. <p>PART II—KENYA NUCLEAR REGULATORY AUTHORITY</p> <ol style="list-style-type: none">5—Establishment of the Authority.6—Functions of the Authority.7—Powers of the Authority.8—Composition of the Board.9—Director General.10—Staff of the Authority.11—Conduct of business and affairs of the Board.12—Remuneration of the Board.13—Protection from personal liability.14—Liability of Authority for damages.15—Common seal of the Authority. <p>PART III — FINANCIAL PROVISIONS</p> <ol style="list-style-type: none">16—Funds for the Authority.17—Financial year.18—Annual estimates.19—Accounts and audit.20—Investment of funds. <p>PART IV — REGULATORY CONTROL: NOTIFICATIONS, AUTHORIZATIONS, INSPECTIONS AND ENFORCEMENT</p> <ol style="list-style-type: none">21—Notifications.22—Authorization.
Act—	Page					
The Nuclear Regulatory Act, 2019	985					

Comprehensive framework for regulation of safe, secure and peaceful utilization of atomic energy and nuclear technology; production and use of radiation sources and management of radioactive waste

Funding and financing infrastructure issue

- International Atomic Energy Agency Milestones Framework
 - 3 phases, 3 milestones, 19 infrastructure issues
 - Funding and financing infrastructure issue
 - Funding refers to items that the **Government** is responsible for such as providing resources for development of human resources
 - Financing refers to items that the **owner/operator** is responsible for, such as construction, which are to be recovered from electricity sales

Funding and financing infrastructure issue *cont'd*

○ Funding and financing phases

Phase 1 Funding requirements extensively review by the NEPIO*
Recommendation of funding sources for different activities

Phase 2 NEPIO* expected to coordinate development of long-term funding plans for the activities identified in phase 1

Phase 3 Funding plans developed in phase 2 are expected to be implemented to guarantee funding for the Government and regulatory body**

Funding and Financing Implementation Status

Prefeasibility study (2014)

- Identification of phase 1 and 2 activities, responsible organization, and implementation timelines
- Further studies proposed to estimate magnitude of costs of the identified activities

Additional studies (2019)

- Review of activities to be funded during the preparatory stage of programme implementation
- Breakdown of Government funding for NuPEA's projects



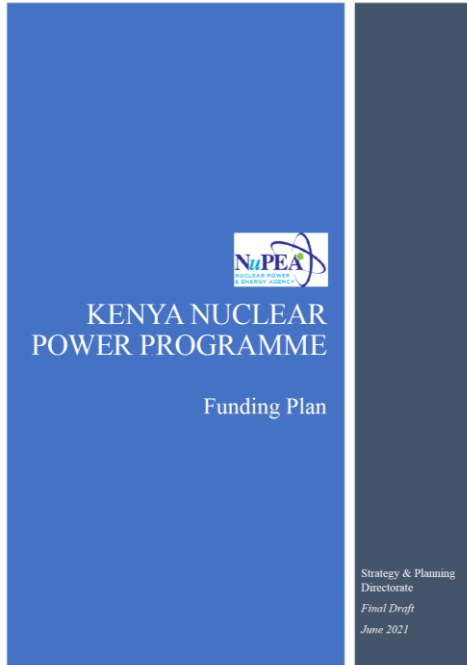
Phase 1 INIR* (2015)

- Completion of work to estimate order of magnitude cost of developing nuclear infrastructure recommended to inform budgetary requirements
- Country commended for identification of activities to be funded for development of nuclear power infrastructure; termed as good practice

Additional studies (2021)

- Development of funding plan
- Assessment of progress made in implementing phase 1 and 2 activities
- Review of expenditure to date
- Estimation of costs of planned phase 1 and 2 activities

Funding Plan Review



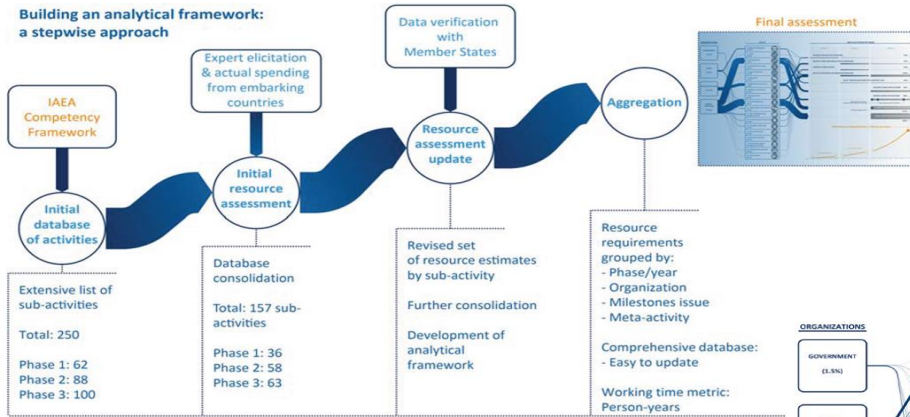
- *IAEA National Workshop On Required Resources For A Nuclear Power Programme* held in July 2022 in Nairobi, Kenya
- Participation by NuPEA, Kenya Nuclear Regulatory Authority, Kenya Electricity Generating Company PLC, Ministry of Energy, National Treasury
- Areas for improvement identified through workshop discussions
 - Prioritization of phase 2 and 3 activities; revision of resource estimates
 - Use of IAEA methodology for comparison of output

Funding Plan Review *cont'd*

- Review of resource requirements identified in the *Funding Plan*
 - Grouping of activities by responsible organization
 - Application of IAEA competency framework, self-evaluation publication
 - Need to have good prioritization of activities – implementing activities at the right time (enhances the optimization of resource allocation)
- Consideration of phase 3 activities and corresponding resource requirements

Adoption of IAEA Methodology

Building an analytical framework: a stepwise approach



	Responsible organization	Area of work	Activity	Number of experts	Duration in person-months	Estimated expenditure (KSh Mn)
Phase 2						
2.1	NuPEA	Develop prefeasibility studies, policies and strategies	Finalize the development of the funding plan for the programme	5	18	9

FIG. 1. Summary of the process to determine aggregated resource requirements. (The final assessment is pr...

- 4 main steps in determining resource requirements
- Country template developed incorporating the steps

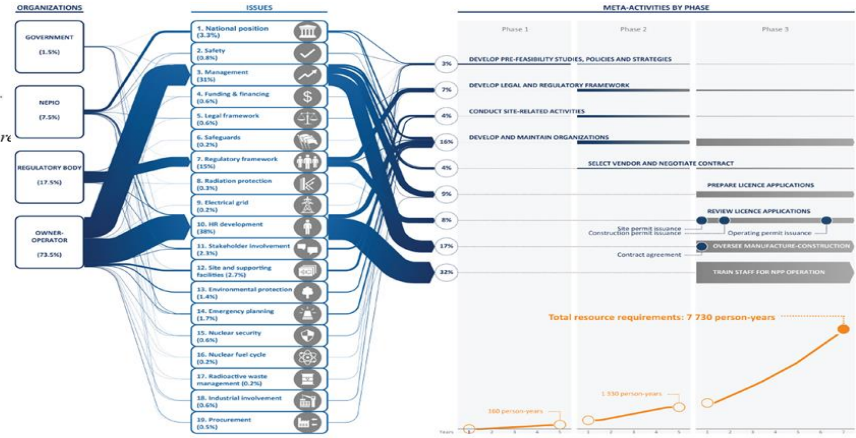


FIG. 2. Overview of resource requirements.

Application of IAEA competency framework

Database Query
Competency Framework

Search for Competencies

Selected Phase:

Selected Issue:

Selected Organization(s):

Selected Reference:

Words in Activities:


Words in Competencies:

Search


No	1.1.1	Activity:	Establish a mechanism (NEPIO) mandated by a high level authority in the government to coordinate the activities for the nuclear power programme and define its terms of reference.
Phase:	Phase 1	Competency:	Ability to navigate the governmental policy making process. Ability to define the roles and responsibilities of a NEPIO, including a comprehensive review of all the issues relevant to making a knowledgeable commitment to a nuclear power programme. Ability to estimate the human and financial resources required by the NEPIO. Ability to secure a strong government commitment, including the human and financial resources needed by the NEPIO. Ability to identify relevant stakeholders and secure their participation in
Issue:	01. National Position		
Organization(s):	Government		
Lessons Learned:			
References	NG-G-3.1 (Rev. 1), Section 3.1.1		

No	Phase	Issue	Organization(s)	Activities	Competency Areas	Lessons Learned	References
1.1.1	Phase 1	01. National Position	Government	Establish a mechanism (NEPIO) mandated by a high level authority in the government to coordinate the activities for the nuclear power programme and define its terms of reference.	Ability to navigate the governmental policy making process. Ability to define the roles and responsibilities of a NEPIO, including a comprehensive review of all the issues relevant to making a knowledgeable commitment to a nuclear power programme. Ability to estimate the human and financial resources		NG-G-3.1 (Rev. 1), Section 3.1.1; NG-T-3.6 (Rev. 1), Section 2
1.1.2	Phase 1	01. National Position	NEPIO	Establish working groups/departments to prepare the pre-feasibility studies evaluating various aspects of introducing nuclear power.	NEPIO should be knowledgeable about all 19 infrastructure issues. Demonstrate ability to lead teams. For specific teams:	Outsourcing may be needed in areas where national competencies are not available. This may include siting technology	NG-T-3.6 (Rev. 1), Section 4.1

- Guide for activities review and manpower requirements estimation



Towards a globally competitive and prosperous nation.



50

Conclusion

- Funding requirements estimation is *country-specific*, and absence of common methodology can be challenging for long-term planning
 - IAEA methodology a good basis for benchmarking national estimates
- *Periodic review* of required resources (activities, estimates) necessary for effective programme planning (prioritization)
- Different *responsible organizations* should contribute to process as they are established for comprehensive estimation
 - Engagement of Ministry of Energy and National Treasury for awareness and budgetary allocation



Thank you for your attention.



February 2023

Resource Requirements for Nuclear Power Infrastructure Development



Mr Seth Debrah

- Over a decade working with the Ghana Atomic Energy Commission in the field of Nuclear Science and Technology
- Since 2015 been dedicated to Ghana's Nuclear Power Infrastructure Development.
- Currently the Director of the technical institute (Nuclear Power Institute) addressing all technical activities on behalf of the NEPIO
- Supports the IAEA activities through Expert Missions and Consultancy services
- Contributor to IAEA Resource requirements document and other IAEA documents
- E-mail: seth.debrah@gaec.gov.gh/ sethdebrahgh@yahoo.com
- Phone: (+233)24-321-5604

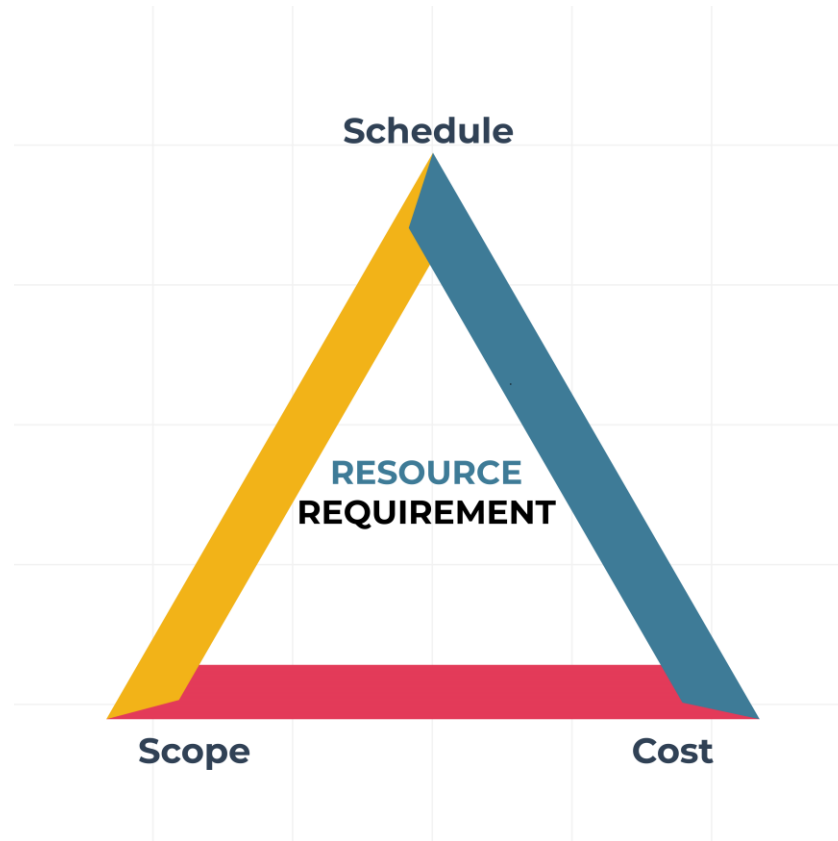


Resource Requirement for Ghana's Nuclear Power Programme

Seth Kofi Debrah, Director

(Ghana Atomic Energy Commission, Nuclear Power Institute)

Introduction



Introduction

- Comprehensive analysis of available human resources in the country needed
- The first step in performing Resource Requirement is to **identity the kind of activities** to be performed during nuclear power programme development and the **required effort and skills** needed to perform such activities, and the **type of organization** performing such activities

Baseline Considerations

- Developing baseline estimates of work effort involves several factors and such estimates vary greatly depending on the following
 - skills, knowledge and attitude towards nuclear programme development
 - political and economic conditions
 - Project complexity
 - Licensing and permitting requirements
 - knowledge of international requirements

Framework Scope

- Activities such as actual construction activities, of field works such as drilling for site investigation, electrical grid improvements, etc. are not directly within the scope of the framework
- Program Evaluation and Review Technique (PERT) formula was used to derived Level of Effort (LOE) for each Activity under the 19 Issues
- Various identified organizations involved in undertaking the activities to be performed are listed as:
 - Consultants or Outsourcing Organisations
 - GNPPO
 - Regulatory Body
 - Project Development Organization

Methodology

- The PERT method is often used to estimate complex projects where there is high probability in scheduling uncertainties.
- The PERT formula used in computing the Level of Effort (LoE) for each activity is shown as:

$$LOE_e = \frac{(O_e + 4M_e + P_e)}{6}$$

Summary of Organization Based Efforts

- The overall work effort required to perform activities under the programme development is about 79,241 Man-Weeks.

Organization	Man-Weeks	Percentage
GNPPO	10,946	14%
Regulatory Body	13,923	18%
Operating Organization	38,560	49%
Outsourcing	15,812	20%

GNPPO Highest Work Efforts (Phase 1)

WBS Code	Activity	Work Effort (M-W)	Category of Infrastructure Issue
1.18.3	Assess the need to create or to enhance national organizations to provide technical support to the regulatory body and the operating organization for the safe operation of nuclear power plants.	309	Industrial involvement
1.1.6	Prepare a comprehensive report that defines and justifies a national strategy for nuclear power. It should address all 19 issues of the Milestones document and be based on the pre-feasibility studies performed by the working groups	300	Environmental protection
1.2.9	Establish contact with local and international organization to seek advise on safety related matters	197	Nuclear safety
1.19.1	Develop procurement policy consistent with the overall recommendation for nuclear power programme development	194	Procurement
1.18.1	Assess national capability for participating to NPP programme	134	Industrial involvement
1.18.3	Assess opportunities for national and local industrial capabilities, interest, involvement, etc. in the nuclear power programme	130	Industrial involvement

GNPPO Highest Work Efforts (Phase 2)

WBS Code	Activity	Work Effort (M-W)	Issue
2.18.4	Encourage industrial organizations in the State to develop their capabilities with the objective of participating in the construction of nuclear power plants and supporting their safe long-term operation.	770	Industrial Involvement
2.10.5	Coordinate the workforce plans of the different organizations, including the regulatory body, research and technical support organizations (TSOs), to optimize the country's efforts.	275	Human Resources Development
2.2.4	Strengthen cooperation on safety related matters with States with advanced nuclear power programmes.	148	Nuclear Safety
2.4.1	Develop funding plans for items listed for Activities in Phase 1 Project Comprehensive Report	139	Funding and Financing
2.11.3	Communicate with stakeholders regarding the national process to be used for site selection, supporting the owner/operator, who engages local stakeholders and addresses their issues.	138	Stakeholder Involvement
2.11.2	Continue to communicate the reasons for, and expected benefits of, nuclear power and to respond to concerns raised by stakeholders.	138	Stakeholder Involvement

GNPPO Highest Work Efforts (Phase 3)

WBS Code	Activity	Work Effort (M-W)	Issue
3.10.8	Promote educational and industrial development for national participation in the nuclear programme	379	Human Resources Development
3.1.6	Maintain momentum and provide a continuing forum for communication and cooperation among stakeholder organizations	358	National Position
3.1.7	Ensure that decisions made throughout Phase 3 remain consistent with the country's economic development strategy and the joint interests of the important parties	358	National Position
3.2.1	Continue to implement the national policy and strategy for safety.	357	Nuclear Safety
3.1.2	Ensure that the key organizations progress in line with the project schedule	303	National Position
3.10.14	Coordinate the workforce plans of the different organizations, including the O/O, regulatory body, research and technical support organizations (TSOs), to optimize the country's efforts.	193	Human Resources Development

Take Aways

- Consult the IAEA competency Framework
- For Newcomers to resource requirement, the IAEA NG-T-3.21 is a good first step
- Condense your meta data and have a simplified data set
- Connect to Institutions or people who have experience in conducting such activity.

Thank You



February 2023

Resource Requirements for Nuclear Power Infrastructure Development



Q&A Session



Webinar Series: Nuclear Infrastructure Publications Updates

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