



# KENYA'S CURRENT STATUS AND ROADMAP TO NUCLEAR POWER PROGRAMME

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***IAEA-KINS Basic Professional Training Course on  
Nuclear Safety, Daejeon, South Korea***

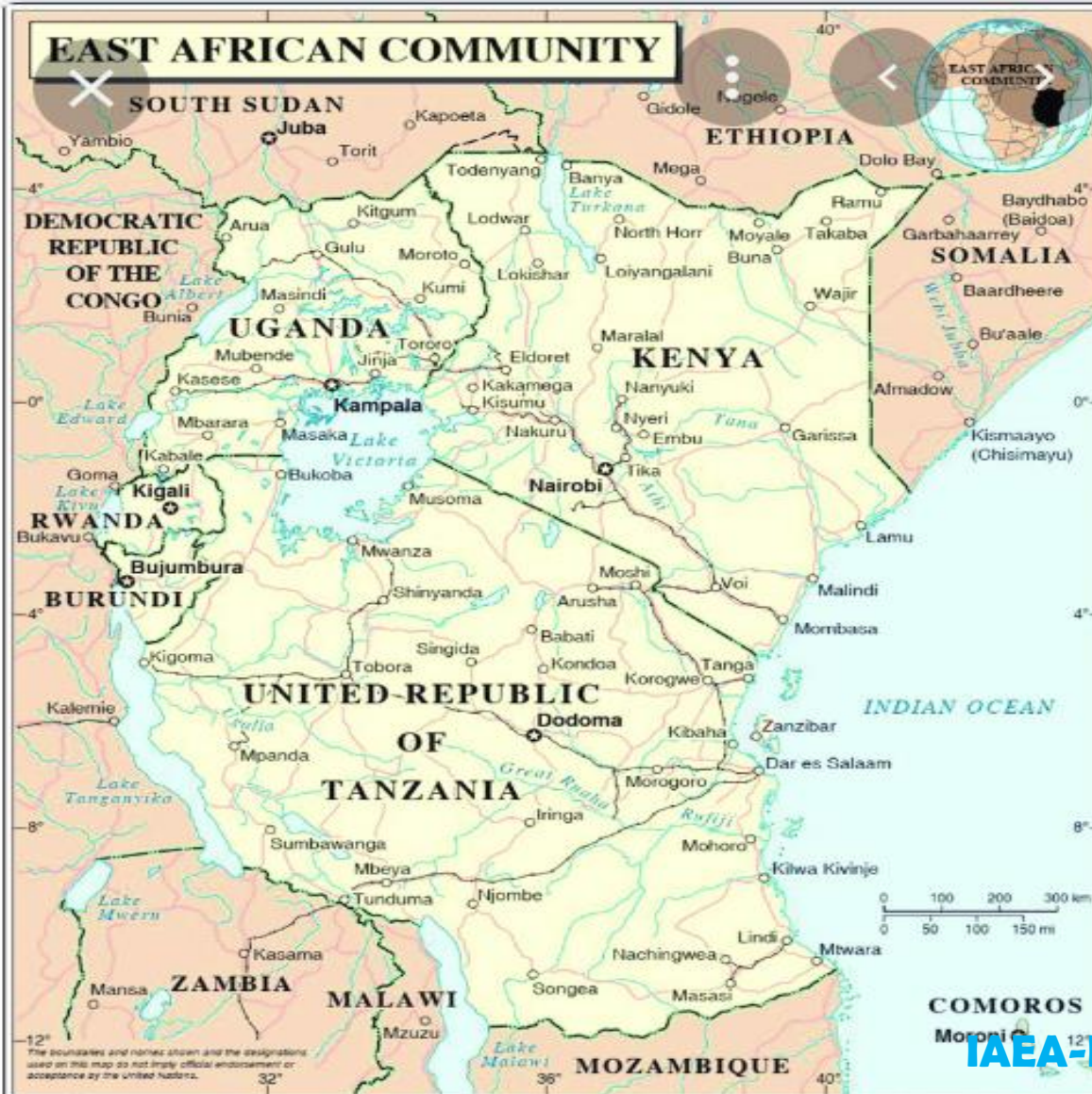


# OUTLINE

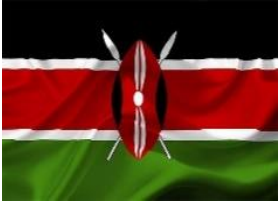
- ❖ Brief Country profile
- ❖ Kenya Nuclear Regulatory Authority
- ❖ Legal & Regulatory Framework
- ❖ NPP Roadmap for Kenya
- ❖ Conclusion



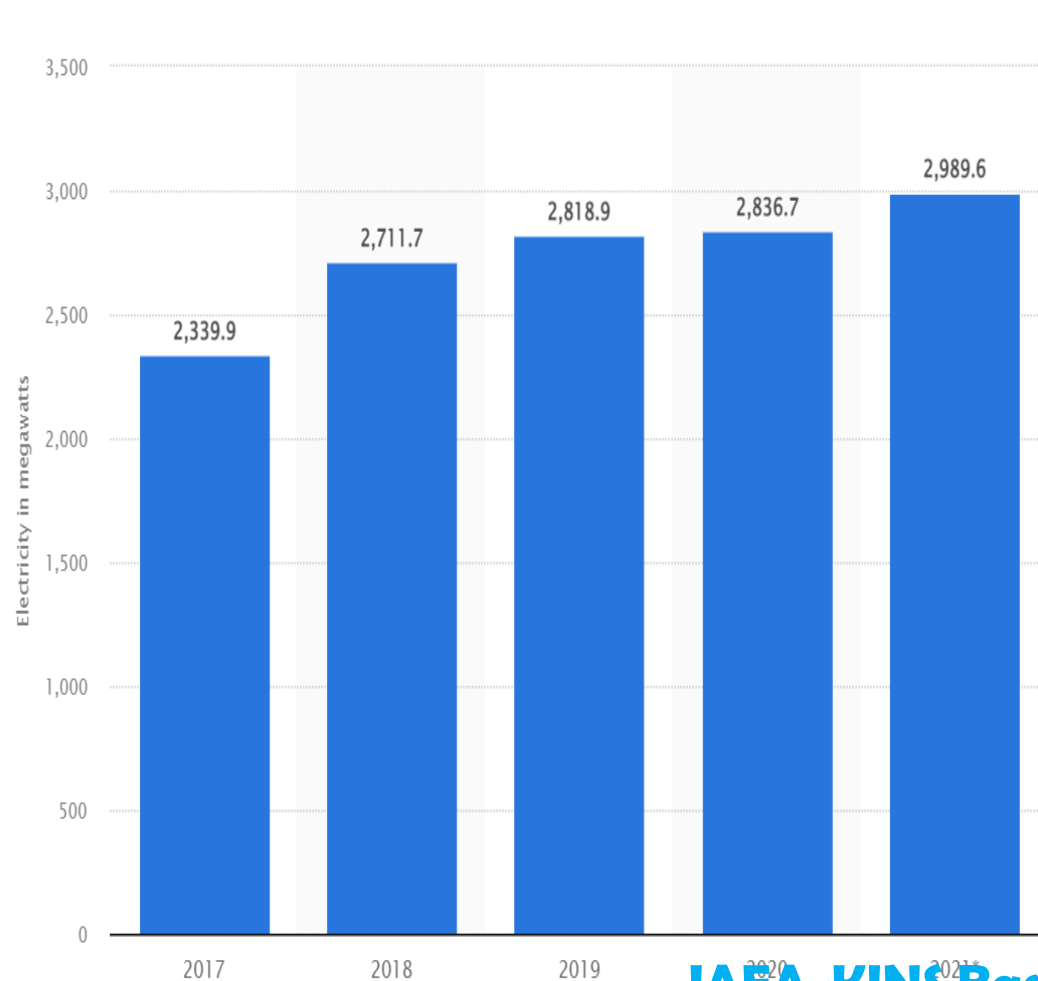
# 1-COUNTRY PROFILE-Geography & Demography



- Kenya is a country in East Africa with coastline on the Indian Ocean.
- The total land area is 569,140 Sq. Km (219,746 sq. miles)
- Population of Approx. 56 Million
- It encompasses savannah, lakelands, the dramatic Great Rift Valley and mountain highlands.
- It's also home to wildlife like lions, elephants and rhinos



## 2-Installed Electricity Capacity Viz Population Growth



- As of 2021, Kenya registered a total installed electricity capacity to generate roughly 3,072MW
- Geothermal power made the largest contribution to the total capacity, followed by hydro and thermal power sources.



## 3-Kenya's Vision 2030 Blue Print



- It is the long-term development blueprint for the country and is motivated by a collective aspiration for a better society by the year 2030.
- It aims to transform Kenya into a newly-industrialised, middle income country providing a high quality of life to its citizens in a clean and secure environment
- The Economic pillar of the Vision identified sustainable energy as an enabler in realizing the dream
- The Vision resulted in the establishment of the Nuclear Power & Energy Agency (NuPEA) in 2010 as a NEPIO to promote and spearhead the inclusion of Nuclear Energy in the country's energy mix

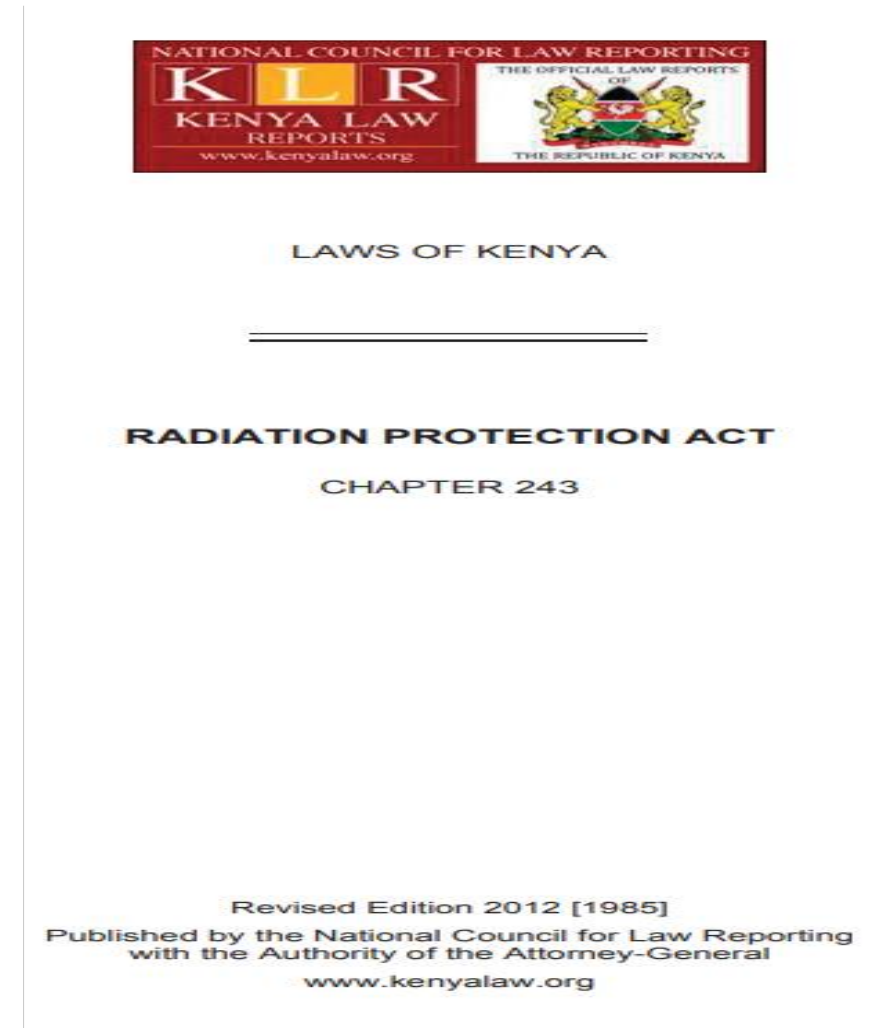
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# KENYA NUCLEAR REGULATORY AUTHORITY

## ❖ **Background:**

- 1948 – “Radiation Protection Ordinance”
- 1982 - Enacted as Cap 243 Laws of Kenya
- 1984 – Commenced on 1<sup>st</sup> November 1984
- 1986 – Radiation Protection Board established







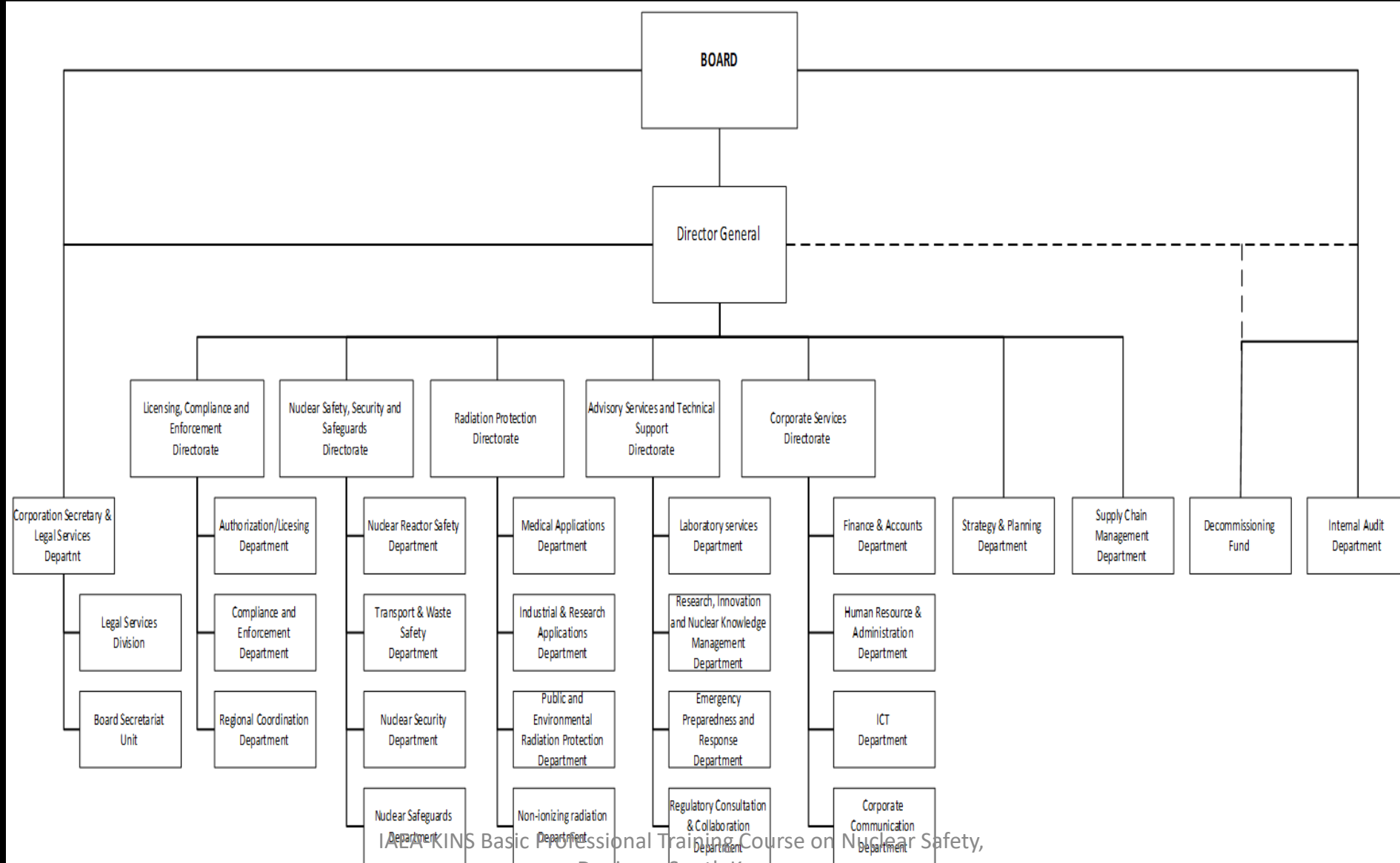
# KENYA NUCLEAR REGULATORY AUTHORITY

- The Kenya Nuclear Regulatory Authority is a body corporate established by the Nuclear Regulatory Act No.29 of 2019

## **Functions of the Authority**

- (a) ensure the safe, secure and peaceful use of nuclear science and technology;
- (b) provide for the protection of persons, property and the environment against the harmful effects of ionizing radiation through the establishment of a system of regulatory control;
- (c) exercise regulatory control over — (i) siting, design, construction, operation, manufacture of component parts, and decommissioning of facilities; (ii) nuclear and radioactive materials and facilities;

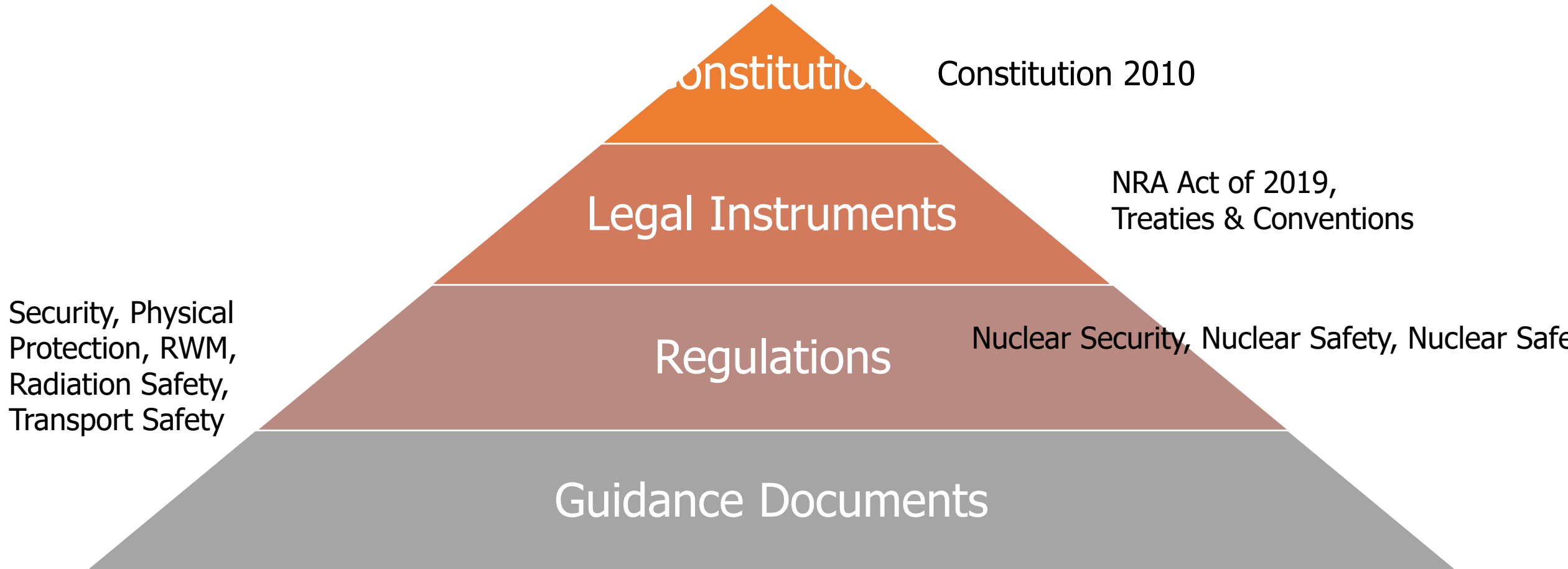
# KNRA ORGANIZATION STRUCTURE







# LEGAL AND REGULATORY FRAMEWORK





# LEGAL & REGULATORY FRAMEWORK

## ❖ PART VII – SAFETY OF NUCLEAR FACILITIES AND DECOMMISSIONING

- Authorization of nuclear facilities
- Responsibility for safety of facilities and activities
- Site evaluation
- Authorization for construction and operations
- Extended shutdown for reactors
- Decommissioning requirements
- Decommissioning plan
- Decommissioning responsibilities
- Finances for decommissioning

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# Nuclear Safety and Other Regulations

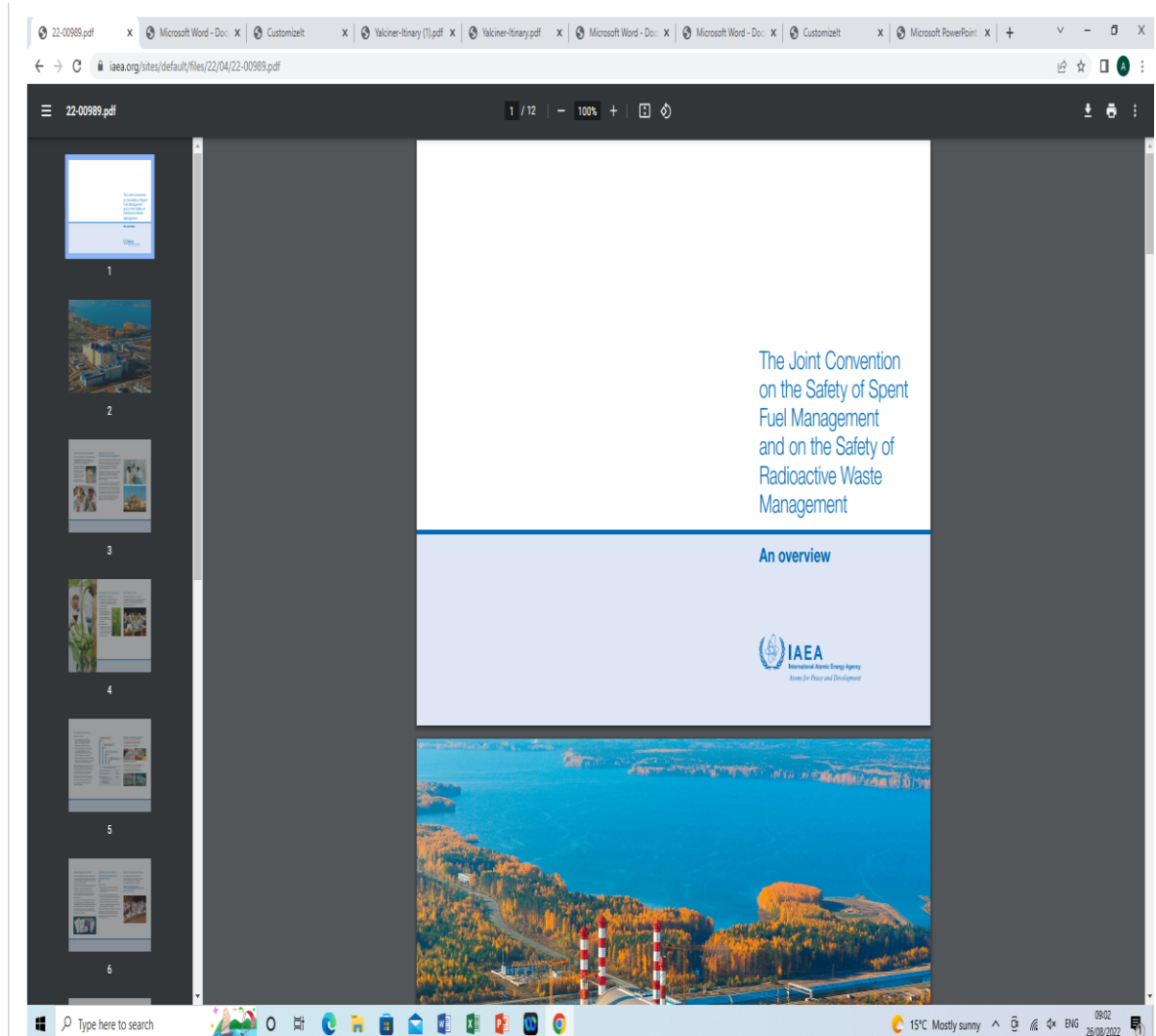
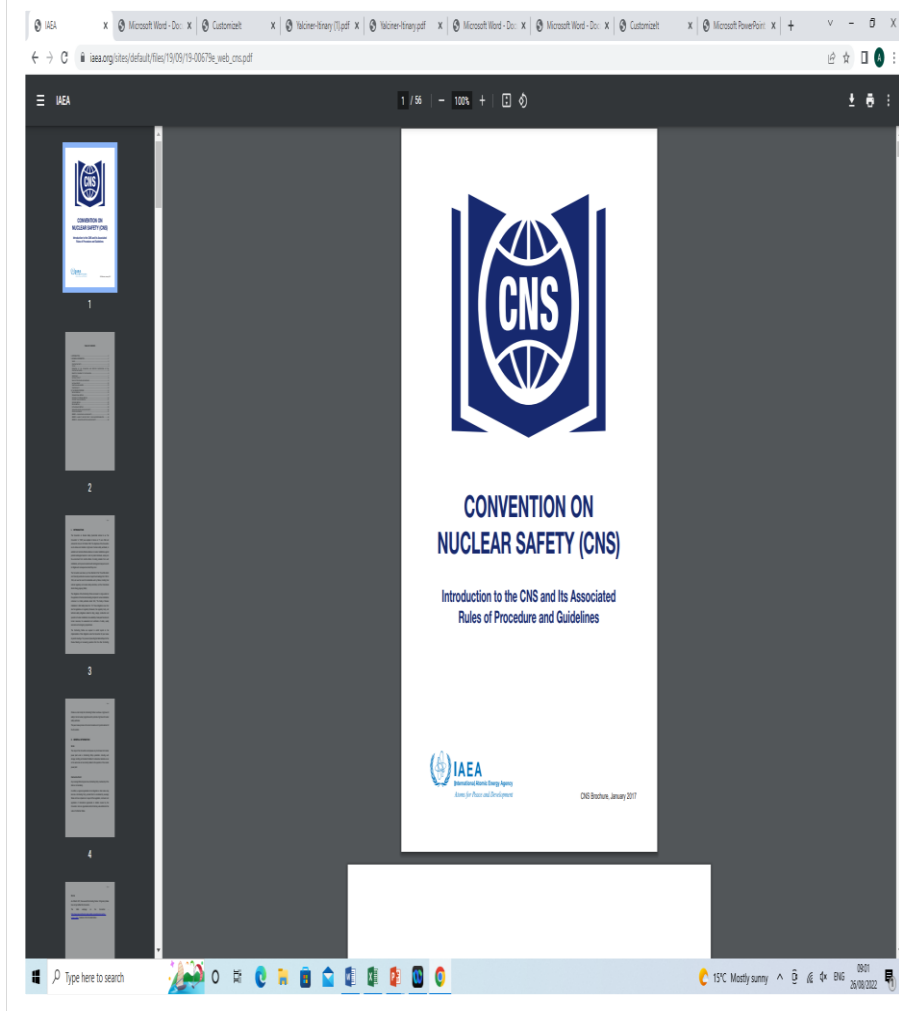
- Currently the RB is in the process of developing regulations to ensure safety during the processes of Siting, Design, Operations, and Decommissioning of NPP.

These include:

- Draft regulations on Nuclear Safety
- Draft regulations on Nuclear Security and Physical Protection of Nuclear Facilities
- Draft regulations on Nuclear Safeguards and Non-Proliferation
- Draft regulations on Radioactive Waste Management



# CONVENTIONS & TREATIES KENYA YET TO RATIFY



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# NPP ROADMAP FOR KENYA

- 2010 – Expanded Mandate – Nuclear Energy
- 2010 – Political decision to go Nuclear
- 2010 – Establishment of NEPIO
- 2015 – Conducted INIR Mission
- 2016 – Conducted IRRS mission
- 2017 – Stakeholder consultative meeting
- 2018 – Published Nuclear Regulatory Bill
- 2019- Nuclear Regulatory Act No.29 2019
- 2010- date- Capacity building





## ESTABLISHMENT OF NUCLEAR POWER & ENERGY AGENCY (NuPEA)

- Nuclear Power and Energy Agency (NuPEA), is a State Corporation established under the Energy Act 2019.
- NuPEA is charged with the responsibility of:
- Promoting and implementing Kenya's nuclear power programme-Identify appropriate sites for nuclear installations in Kenya
- Coordinating Research and Development (R&D) for the energy and petroleum sectors in Kenya
- Coordinating capacity building for the energy and petroleum sectors in Kenya.

## NuPEA-Cont'd

- NuPEA has developed a Justification Report and a preliminary feasibility study report for the establishment of a research reactor in Kenya.
- NuPEA is carrying out feasibility study for the research reactor project with the technical assistance from Korea Atomic Energy Research Institute (KAERI) as guided by IAEA NES NG-T-3.18.



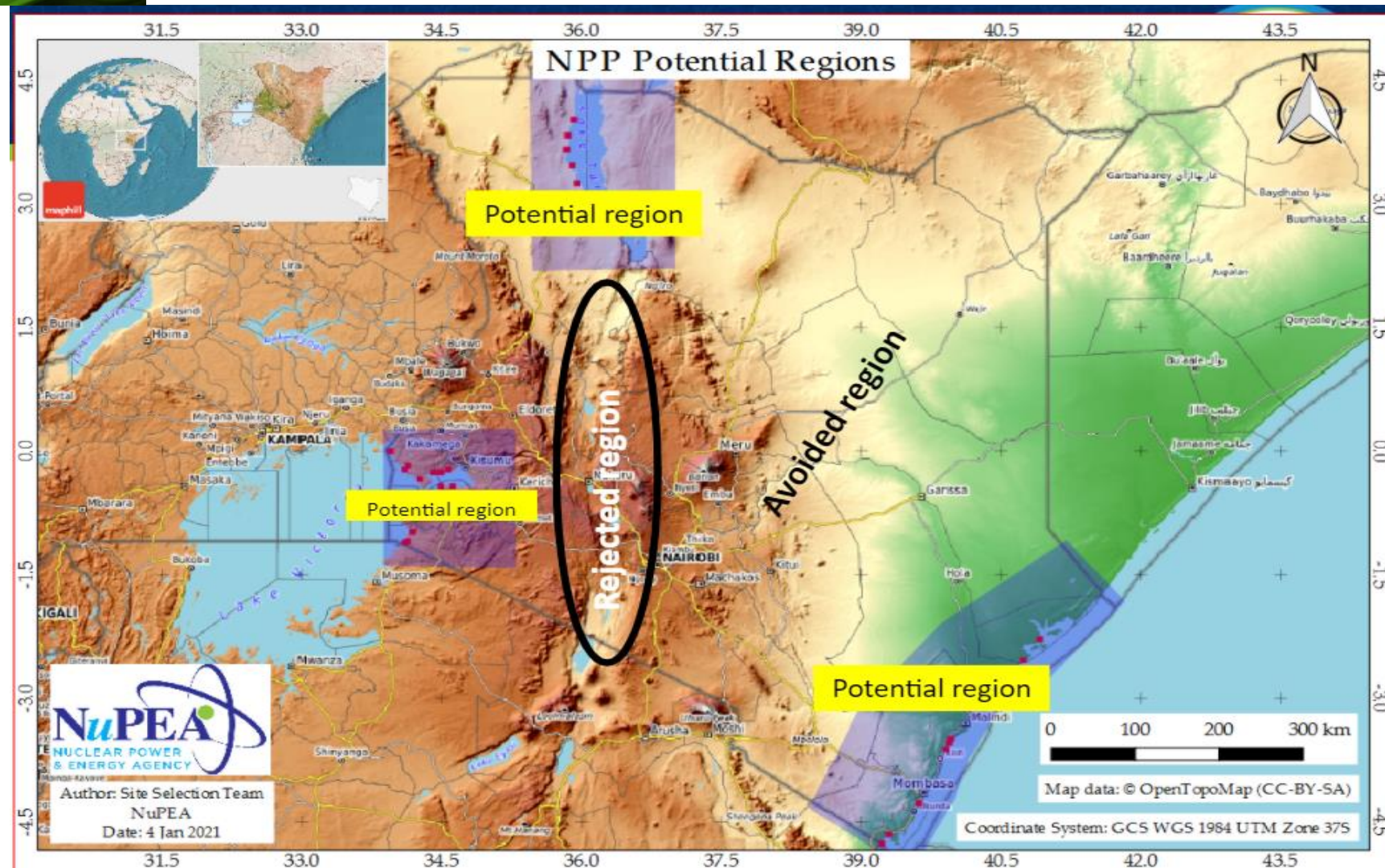


# NuPEA -2

- To realize its strategic objectives, NuPEA is implementing the following:
- Development of policies and strategies,
- Public education and awareness creation,
- Identification and preparation of suitable sites for nuclear facilities;
- Research, development and innovation on nuclear and other energy technologies



# SITE EVALUATION & CHARACTERIZATION-1



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# Status of Nuclear Infrastructure

## Regulatory Framework

- The Nuclear Regulatory Act, 2019 establishes a comprehensive nuclear regulatory framework and National Regulator (KNRA)

## Management/Organizational Structure

- The nuclear regulatory body, Kenya Nuclear Regulatory Authority has been established
- The NuPEA is designated as the NEPIO with a clear governance structure.
- Potential Owner/Operator has been identified

## Environmental Protection

- Strategic Environment Assessment is complete
- EIA at the preferred NPP Site ready to commence after site acquisition.

## Stakeholder Engagement

- Extensive public awareness through academic institutions, trade fairs, national media channels, and county governments
- Annual NPP visits for political leaders (Law makers)

# Status of Nuclear Infrastructure

## Siting

- Preferred NPP site and alternate sites selected
- SEED Mission conducted (Module 1, site survey and selection criteria) (SEED Module 2 also conducted)
- Preparatory activities for site characterization ongoing (Land acquisition underway for characterization; Regional office established)

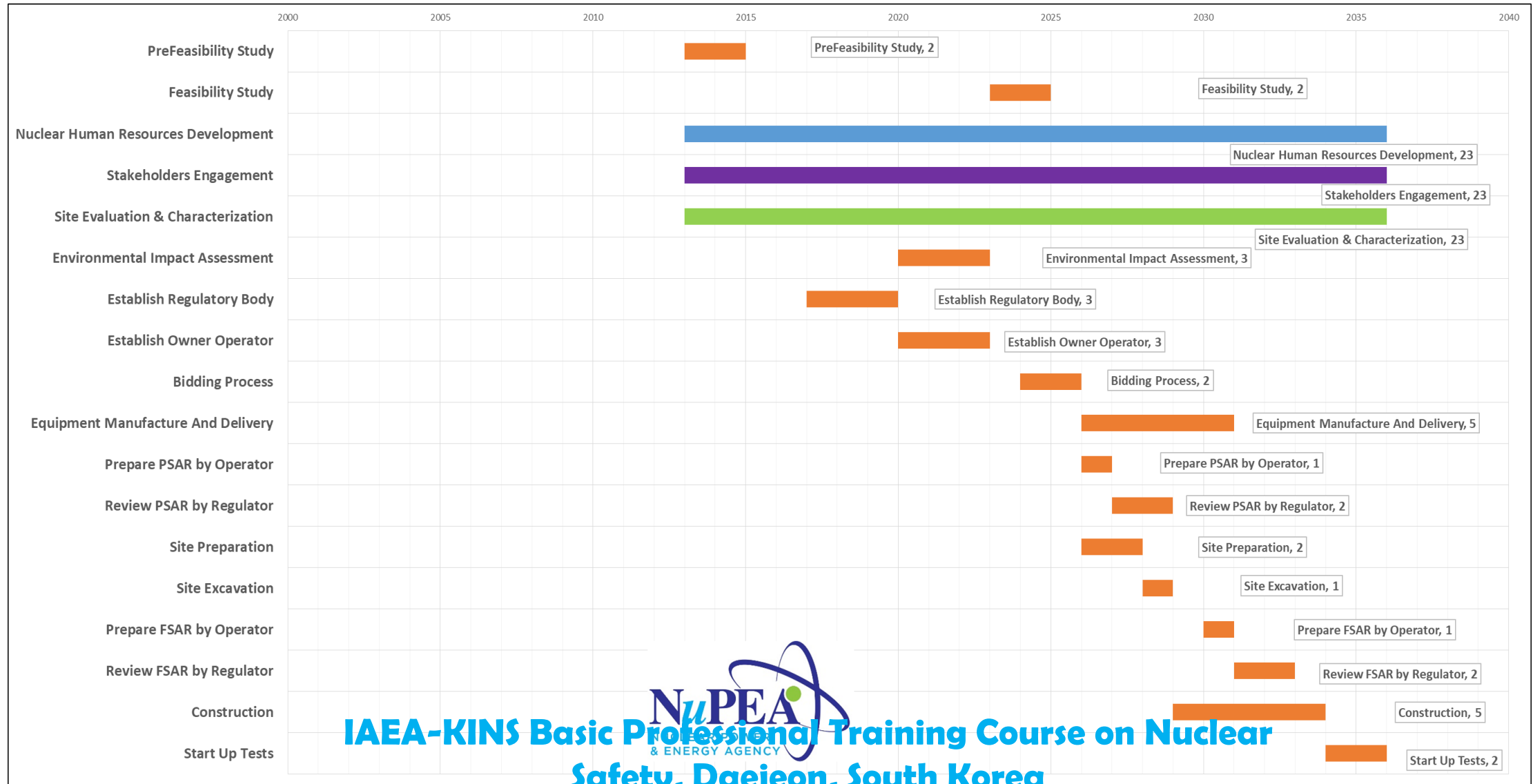
## Human Resource Development

- Training of Kenyan nationals in South Korea at KEPCO International Nuclear Graduate School (32 graduates by 2021)
- Participation in IAEA technical cooperation projects on nuclear energy
- Human resource development workforce planning is complete

## Industrial Involvement

- Industrial outreach is ongoing targeting major industries such as steel and cement production companies
- Industrial capability survey and assessment is complete

# Summary of NPP Roadmap for Kenya



# Human Capacity Development

- As at December 2021, 222 Kenyans trained through the IAEA National Liaison Office (NLO) through trainings, fellowships, scientific visits and technical meetings in various countries;
- **Masters Studies:**
  - Academic scholarships with S. Korea, China, local universities.
  - More than 50 Nuclear graduates trained by 2021
- MoUs with S. Korea, China, USA on trainings, research and development.

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# CONCLUSION

- Kenya has currently No nuclear facilities
- However, elaborate plans are in place to ensure safe introduction of Nuclear Program in the country



