ANALYSING THE LEGAL AND INSTITUTIONAL FRAMEWORK GOVERNING THE ESTABLISHMENT OF A NUCLEAR POWER PLANT IN KENYA

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Abstract

The article examines the legal and institutional framework governing the establishment of nuclear power program in Kenya owing to the heightened efforts by the government in laying out the plans to establish the first nuclear power plant (NPP) amidst protests by the communities. The analysis is done by examining relevant international law, national law and policies laying down the frameworks and plans for establishing a NPP. Further, review of documents and literature has been done to support the analysis. Kenya needs to strengthen the legal and institutional framework by ensuring that critical treaties and supporting protocols are ratified in order to align with the international standards governing a NPP to guarantee safety of its people and protection of the environment while ensuring that Kenya progresses in development. There is need to lay out comprehensive laws and regulations and supporting mechanisms fortheir implementation and enforcement to enhance management of a NPP.

A. Introduction

A number of policies support lay out the basis of establishment of a NPP as a source of energy. The Kenya Vision 2030 has identified energy as a key enabler for its realization. The Sessional Paper No. 4 on Energy[1] highlighted Kenya's considerations of adopting nuclear power and its economic merit.[2] The Least Cost Power Development Plan (LCPDP)[3] and the Energy Act of 2019 do justify and provide a framework for the inclusion of nuclear energy in Kenya's energy mix.[4] The policy notes that nuclear energy has the potential to provide reliable baseload electricity to meet the country's growing energy demand.The Nuclear Power Energy Agency (NuPEA), established under the Energy Act, is the nuclear energy program implementing organization whose mandate is to promote the development

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1 Sessional Paper No. 4 on Energy (Government of Kenya, 2004).

2 *KIPPRA*, 'Road to Nuclear Power in Kenya' (KIPPRA Discussion Paper 341 2024), 5.

3 Ministry of Energy & Petroleum, Least Cost Power Development Plan 2024–2043.

4 NUPEA, 'Progress of Kenya Nuclear Power Development' https://www.nuclear.co.ke/about-us/our-business/progress-of-nuclear-power-development/> accessed November 17,2025.

of nuclear electricity generation in Kenya; and carry out research, development and dissemination activities in the energy and nuclear power sector.[5] The Kenya Energy Transition and Investment Plan (2023) introduces nuclear power as a clean energy solution in order to replace fossil fuels in order to help Kenya reduce carbon emissions.[6] Various nuclear applications are already in use in food & agriculture, human health, water resource management, industrial processes, education, research and training, water desalination, oil extraction and mining.[7]

Kenya's association with nuclear power can be traced back to as early as 1965, when the country became a member of the International Atomic Energy Agency (IAEA). The IAEA is an intergovernmental agency that promotes peaceful use of nuclear technology and nuclear power worldwide. The need to regulate development of nuclear technology for civilian uses culminated in the establishment of IAEA in July 1957 as the worlds "Atoms for Peace" organization tasked with the core mandate of ensuring that nuclear technology was applied exclusively for peaceful purposes through the establishment and administration of safeguards either at the request of the party state to the Statute of the IAEA, or pursuant to bilateral and multilateral arrangements.[8]

Several challenges impede the implementation of nuclear programs including: high construction costs, insecurity, corruption, political instability, lack of technical, financial and institutional capacity, poor institutional and regulatory frameworks and inadequate human capital and infrastructure.[9] Concerns over risk of accidents and spent fuel disposal have further hindered the adoption of nuclear energy.[10] It is therefore important to identify the minefields Kenya faces in order to set up and run a nuclear power plant effectively.There is need to set an elaborate regulatory framework that provides pathways to effective management of a NPP. The purpose of this article is to assess the suitability of Kenya's legal and regulatory framework concerning the management of a nuclear power plant (NPP).

B. Implementing a Nuclear Power Program in Kenya

Countries intending to develop a NPP usually do so by implementing a nuclear power program.[11] A nuclear power program refers to a plan that establishes the necessary infrastructure to support a nuclear power plant project during its planning, licensing, con-

5 Energy Act, 2019.

6 *KIPPRA* (n 2) 6.

7 *Ministry of Energy & Petroleum*, National Nuclear Policy, Final Report, April 2024 5.

8 Article II.A.5 of the IAEA Statute. *Catherine Kianji* et. al., Importance of Law and Policy on Successful Utilization of Nuclear Technology for Electricity Generation, (2013) Proceedings of 2013 Mechanical Engineering Conference on Sustainable Research and Innovation 62.

9 *KIPPRA* (n 2) 13.

10 *KIPPRA* (n 2) 13.

11 *KIPPRA* (n 2).

struction, commissioning, operation, fuel and waste management, and decommissioning. Construction, commissioning and operations are the core elements of a nuclear power plant project.[12] NuPEA is following the International Atomic Energy Agency (IAEA) Milestone Approach to implement the national nuclear program.

Effective implementation of these programs requires the necessary infrastructure, policies and regulations to be first developed and set up. The IAEA has a framework whose main purpose is to assist emerging nuclear countries in setting up a nuclear power program. The framework has three phases, each with its own milestone, and it is called the Milestone Approach.[13] The Milestones Approach sets out certain guidelines that a country may adopt to holistically evaluate its status (level of development) concerning 19 infrastructure issues as it embarks on the development of its nuclear power program.[14] Phase one consists of the considerations to be made before the launch of a nuclear program, the choice of whether to have a nuclear program or not. Phase two is the preparatory work once the decision in phase one has been made and, lastly, phase 3 has the implementation activities.[15]

NuPEA with assistance from the IAEA has done extensive work in the implementation of the nuclear power program in the country. The various activities undertaken as reported by the agency include: pre-feasibility study; human resource development, electric grid study, strategic environmental assessment; regulatory framework development and public engagement.[16] NuPEA needs to implement the program carefully cognizant of the challenges such as the high capital cost required to develop and sustain nuclear power program; stakeholder buy-in due to safety and environmental concerns; lack of regulatory framework for implementation of nuclear power; long duration and life cycle of developing nuclear energy and insufficient local expertise to develop nuclear power program[17]

One of the first requirement to be met is to establish a national position signifying the country's intent to develop nuclear power program. The national position is the outcome of a process that establishes the governmental strategy and commitment to develop, implement and maintain a safe, secure and sustainable nuclear power program. This process results in a national decision that clearly communicates the state's national policy, as well as the state's commitment to proceed according to the international obligations of the State and international norms and standards.[18] Kenya has fulfilled this requirement, with the gov-

12 *International Atomic Energy Agency* – IAEA (2007), "Milestones in the development of a national infrastructure for nuclear power". *Nuclear Energy Series*, No. NG-G3.1, IAEA, Vienna, Austria.

13 *International Atomic Energy Agency – IAEA* (2012), "Milestones in the development of a national infrastructure for nuclear power". *Nuclear Energy Series*, No. NG-G3.1, IAEA, Vienna, Austria.

14 *Kianji* et al. (n 8) 64.

15 *KIPPRA* (n 2) 2, 3.

16 *NUPEA*, 'Progress of Kenya Nuclear Power Development' https://www.nuclear.co.ke/about-us/our-business/progress-of-nuclear-power-development/> accessed November 17, 2025.

17 Ministry of Energy and Petroleum, Draft Energy Policy 2025–2034, 8.

18 *IAEA*, Building a National Position for a New Nuclear Power Programme, IAEA Nuclear Energy Series [2016] 2.

ernment already having developed a national nuclear policy and 15-year nuclear strategic plan. The nuclear power program is also incorporated in the country's main policies such as the development agenda (Kenya Vision 2030), the energy sector plans (LCPDP) and many other policies discussed in the paper.[19]

In the process of establishing a national position, the state must engage the public and relevant stakeholders during the development and implementation of the national position by using effective communication strategies and stakeholder involvement to lead to a more sustainable national position, while ensuring broader support for the development of a new nuclear power program.[20]

NuPEA has identified several possible sites where a nuclear power plant (NPP) could be set up one of them being Uyombo in Kilifi County. The residents of Uyombo staged protests rejecting the plans to have NPP set up in the area for lack of transparency, community engagement and the fact that the area is a biodiversity hotspot.[21] A petition was filed in court challenging the plans to set up the nuclear power plant raising concerns of lack of capacity to run a plant; lack of adequate public participation and inadequate policy and legal framework.[22] The next section looks at the international and national legal framework that regulates nuclear development by ensuring safe use which will help in identifying areas that need to be strengthened for better implementation of the nuclear power program.

C. The International Legal Framework governing use of Nuclear Power

Kenya as a member of the IAEA commits to cooperate in the development of nuclear power by aligning with international law that promote its peaceful use.

I. The Treaty on Non-proliferation of Nuclear Weapons (NPT)

The Treaty on Non-proliferation of Nuclear Weapons (NPT) establishes an international legal framework by which states work to steer the use of nuclear science and technology towards peace and development and away from development of nuclear weapons. This is primarily achieved through a safeguards system within the United Nations' International Atomic Energy agency (IAEA). Kenya is party to the NPT and has also signed a Comprehensive Safeguard Agreement and Additional Protocol with the IAEA.[23]

19 IAEA [2016](n 18) 20.

20 See (n 17).

21 *NTV Kenya*, 'Uyombo residents demand transparency in Nuclear Power project'https://www.youtube.com/watch?v=qrbyJVSKigI accessed November 17, 2025.

22 *Ngolo & another* v *Nuclear Power Energy Agency (NuPEA) & 2 others; County Attorney-Kilifi County Government & 2 others (Interested Parties)* [2024] KEELC 14071 (KLR).

23 Ministry of Energy & Petroleum, National Nuclear Policy, Final Report, April 2024, 1.

II. The 1963 Vienna Convention on Civil Liability for Nuclear Damage

The 1963 Vienna Convention,[24] sought to allow prompt and equitable compensation and the enforcement being enabled by the national legal systems.[25] Similar conventions and protocols were developed to strengthen the liability and compensation regimes after 1986 following the Chernobyl accident.[26] The regimes bear features of liability which help in the process of holding those responsible for nuclear damage undertake prompt and equitable compensation.[27] The liability of the operator for nuclear damage under the convention is absolute[28] and the liability is channeled to the operator which minimizes litigation as liability is already channeled to the operator.[29] The time limitation of raising such claims is 10 years from the time of the incident.[30] But, where the law of the installation state requires the operator to be covered by insurance, other financial security or by state funds, for a period longer than ten years, then the law of the limitation shall be guided by the law of the installation state and therefore can be longer than 10 years.[31]

The regimes provide funding mechanisms for compensation which guarantee availability of meaningful compensation in the event of a nuclear incident. Various sources are provided from which funds can be sourced.[32] There is a mandatory requirement of undertaking insurance for the unforeseen risks and therefore the operator is required to

24 1063 UNTS 265.

25 *Ben McRae*, Convention on Supplementary Compensation for Nuclear Damage e(CSC) and Harmonisation of Nuclear Liability Law within the European Union (2011) 87 Nuclear L Bull 74.

26 The protocols are the Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention (Joint Protocol), the Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage (Protocol to the Vienna Convention), ' the Convention on Supplementary Compensation for Nuclear Damage (CSC), the Protocol to Amend the Convention on Third Party Liability in the Field of Nuclear Energy (Protocol to the Paris Convention) and the Protocol to Amend the Convention of January 31, 1963 Supplementary to the Convention of July 29, 1960 on Third Party Liability in the Field of Nuclear Energy (Protocol to the Brussels Supplementary Convention); Protocol to Amend the Convention of 31 January 1963 Supplementary to the Paris Convention of 29 July 1960 on Third Party Liability in the Field of Nuclear Energy, <available at https://www.oecdnea.org/law/brusselssupplementaryconvention.pdf.>.

27 *Ben McRae*, The Compensation Convention: Path to a Global Regime for dealing with Legal Liability and Compensation for Nuclear Damage (International Nuclear Law in Post Chenorbyl Period), Nuclear Law Bulletin,193, *Michael Faure & Tom Borre*, Compensating Nuclear Damage: A Comparative Economic Analysis of the US and International Liability Schemes[2008] 33 (5) 227.

28 Article IV (1), *Jonathan Bellamy*, Civil Liability for Nuclear Damage in Countries Developing Nuclear Built Programmes, Journal of World Energy Law and Business [2018] 5.

29 *Ben McRae* 197, Jonathan Bellamy 5.

30 *Jonathan Bellamy(n28)* 6.

31 Vienna ConventionArticle VI(n 24).

32 *Ben McRae*, The Compensation Convention: Path to a Global Regime for dealing with Legal Liability and Compensation for Nuclear Damage (International Nuclear law in Post Chenorbyl Period) 191.

maintain insurance or other financial security covering his liability for nuclear damage in such amount, type and terms as the installation state may require.[33] The state is required to cover payment of claims for compensation for nuclear damage which have not been covered under the insurance or other financial security.[34] Kenya has not yet ratified these conventions and protocols on liability despite their importance in providing redress mechanisms.

III. The Convention on Early Notification of a Nuclear Accident

The Convention on Early Notification of a Nuclear Accident[35] requires a notification of the accident and the setup of preventive measures upon the occurrence of an accident. The disclosure of an accident and prevention measures would mitigate harm and therefore ease the burden of compensation.[36] The state is required to rapidly avail available information in order to limit the radioactive consequences in other countries.[37] Information that should be disclosed includes time, location and nature of accident, the installation or activity concerned, the presumed or known cause, the likely evolution of the accident and the general characteristics of radioactive discharge.[38] The response measures do assist in mitigating damage, as taking prompt action can go a long way to limit the scope of compensation. Kenya is not a party to this convention despite the important measures it provides.

IV. Convention on the Physical Protection of Nuclear Material (CPPNM)

This is the key international legal instrument in nuclear security and the only internationally legally binding counter-terrorism instrument.[39] The CPPNM establishes legal obligations for parties regarding the physical protection of nuclear material used for peaceful purposes; the criminalization of certain offences involving nuclear material; and international cooperation, for example, in the case of theft, robbery or any other unlawful taking of nuclear material or credible threat.[40] The Amendment to the CPPNM extends the scope of the

33 Vienna Convention Art VII, *Bellamy* (n 26). *Michael G. Faure and Tom Borre*, Compensating Nuclear Damage: A Comparative Economic Analysis of the U.S. and International Liability Schemes, Wm. & Mary Envtl. L. &Pol'y Rev 33 (2008) 219, 238.

34 Article VII.

35 Sep 1986, 1439 U.N.T.S 275.

36 Art 1 (f) CSC convention.

37 Art 2 b, in *Alexendre Kiss*, State Responsibility and Liability of Nuclear Damage 35 (1) 2006 Denver Journal of International Law and Policy 75.

38 art 5 (1) a-d.

39 The CPPNM entered into force on 8 February 1987 and subsequent amendments to the Convention were done in 2005; *Kianji et al* (n 8), 62.

40 IAEA, Convention on the Physical Protection of Nuclear Material (CPPNM) and its Amendment https://www.iaea.org/publications/documents/conventions/convention-physical-protection-nuclear-material-and-its-amendment#scope accessed November 28, 2025.

original treaty to cover physical protection of nuclear facilities and nuclear material used for peaceful purposes in domestic use, storage and transport. It criminalizes offences related to illicit trafficking and sabotage of nuclear material or nuclear facilities while providing for strengthened international cooperation in the assistance and information sharing in the event of sabotage.[41] Kenya is a party to the Convention and its amendment,[42] therefore the state is obliged to comply with the provisions therefrom.

V. Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency 1987

The convention provides an international legal framework to facilitate the prompt provision of assistance in the event of a nuclear accident or a radiological emergency to mitigate its consequences.[43] Kenya is yet to ratify the convention, although it has expressed the intention to accede to support the nuclear power development.

VI. The Convention on Nuclear Safety 1994

The Convention on Nuclear Safety (CNS)[44] provides a framework for enabling states to achieve and maintain a high level of nuclear safety worldwide through the enhancement of national measures and international co-operation including, where appropriate, safety-related technical co-operation; establish and maintain effective defences in nuclear installations against potential radiological hazards to protect individuals, society and the environment from harmful effects of ionizing radiation from such installations; and prevent accidents with radiological consequences and to mitigate such consequences should they occur.[45] Kenya is yet to ratify this convention.

VII the Joint Convention on the Safety of Spent Fuel and Radioactive Waste Management (1997)

The convention provides a framework for enabling safety in spent fuel and radioactive waste management, through the enhancement of national measures and international co-operation; ensuring that effective defenses are in place during all stages of spent fuel and radioactive waste management to guard against potential hazards to protect individuals, society and the environment from harmful effects of ionizing radiation and preventing

41 See above.

42 Kenya acceded to the original CPPNM on February 11, 2002, and accepted the Amendment on August 1, 2007.

43 Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency 1987, Art 1.

44 CNS, IAEA Doc. INFCIRC/449, 1963 UNTS 293.

45 CNS, art 1.

accidents with radiological consequences and to mitigate their consequences should they occur during any stage of spent fuel or radioactive waste management.[46] Kenya is yet to ratify the convention. Kenya's nuclear policy recognizes the importance of adopting these conventions to fully develop the nuclear power program.[47]

D. The National Legal Framework

Internal treaties, conventions,protocols and or agreements ratified by Kenya form part of the applicable law in Kenya. In addition, the Constitution of Kenya lays down the normative framework that for safe use of nuclear energy through the entrenchment of governance principles of sustainable development and the obligation of the state to protect ad safeguard human rights.Therefore, development of a nuclear power program should be done in a way to support sustainable development and respect of human rights. The constitution requires that state ensures that there is sustainable exploitation of natural resources they same which should benefit the citizens of Kenya and while at it, the state should eliminate processes or activities that are likely to cause harm to the environment.[48] Developmenment of a nuclear power program should therefore ensure it meets the requirement of the constitution.

The supporting statutes and regulations give life to the constitutional provisions and international standards set to enable safe use of nucleartechology and creating enforceable obligations.

I. Nuclear Regulatory Act (NRA)

NRA provides a comprehensive framework for the regulation of safe, secure and peaceful utilization of atomic energy and nuclear technology; the production and use of radiation sources and the management of radioactive waste.[49] The objects of the law are to regulate the safe, secure and peaceful development, production, possession, use, storage, transport, transfer, disposal or handling of nuclear and radioactive materials, activities and facilities and other apparatus generating radiation; and protect persons, property and the environment in relation to nuclear and radioactive material, activities and facilities and other apparatus generating ionizing radiation.[50]

The Kenya Nuclear Regulatory Authority (KNRA), an institution established by the Act, is mandated to ensure the safe, secure and peaceful use of nuclear science and technology; protect persons, property and the environment against the harmful effects of

46 Joint Convention on the Safety of Spent Fuel and Radioactive Waste Management (1997), art 1.

47 *Ministry of Energy*, National Nuclear Policy June 2022, 28.

48 Constitution of Kenya, art 69.

49 NRA, Chapter 243 Laws of Kenya.

50 NRA s 3.

ionizing radiation through the establishment of a system of regulatory control and exercise regulatory control over siting, design construction, operation, among other functions.[51]

KNRA scope of work covers regulatory control: notifications, authorizations, inspections and enforcement.[52] The authority has oversight responsibilities over the enforcement activities done by the inspectors.[53] The person subject to enforcing action shall take necessary measures to remedy compliance as directed by the authority or as soon as practically possible and prevent recurrence. The authority may, where the case presents an immediate safety or security hazard to people, property or the environment, require the authorized person to suspend its activities until the situation has been remedied.

The authorized person must plan and implement the technical and organizational measures necessary to ensure adequate safety, including effective defenses against radiological hazards; prepare and implement an appropriate emergency plan; ensure compliance with the dose limits established by the authority and monitor the radiation exposure of workers; possess adequate human and financial resources to conduct the proposed activity in a manner that ensures safety and security; not modify the conduct of any authorized activity in a manner that could affect the protection of workers, patients and the public or the environment without seeking the written approval of the authority; and provide upon request by the Authority, all information considered to be necessary by the authority.[54]

Where an authorized person undertakes an activity likely to cause public exposure to neighboring states, the authorized person shall notify the Authority of the intended activity,[55] who shall then notify the neighboring state. Failure to comply can result in being ordered to paying a fine of not exceeding ten million shillings or to imprisonment for a term not exceeding ten years or to both.[56] This is a provision which should be reviewed to incorporate more stringent measures because such public exposure may lead to irreversible damage.

1. Safety and Responsibility for Radiation Sources and Facilities

The authority must establish a system of control over radiation sources to ensure they are safely managed and securely protected during and at the end of their useful lives; and prescribe a categorization of sources based on the potential injury to people and the environment.[57] An authorized person must bear the primary responsibility for ensuring the

51 s 7 (3) NRA.
52 S 21 NRA.
53 NRA s 31.
54 NRA s 33(c-h).
55 NRA s 36 (1).
56 NRA s 36.
57 NRA s 37.

safe and secure use of radiation sources.[58] The authority must establish and maintain a national register of radiation sources; establish the categories of radiation sources required to be included in the national register; and ensure protection of information contained in the national register to guarantee the safety and security of these sources as appropriate.[59] An authorized person shall promptly report to the authority any loss of control over radiation sources, or any other situation; or incident in connection with a radiation source that may pose a significant risk of radiological injury to persons or substantial damage to property or the environment.[60]

The authority must establish a system for recovery and safe management of orphan sources; be responsible for coordinating the response to radiological emergencies as a result of orphan sources; bear the primary responsibility of the safety of orphan sources of which it has notice; establish programs aimed at detecting orphan sources in places where such sources are generally suspected to be; draw up appropriate response plans and measures for handling orphan sources; and give specialized technical advice and assistance to persons not normally involved in operations subject to radiation protection requirements and who suspect the presence of an orphan source.[61] KNRA must work together with NEMA to ensure that the environment is protected, consequently NEMA may issue clean up and remediation measures where necessary.

2. Safety of Nuclear Facilities and Decommissioning

KNRA plays a critical role in the authorization for siting, constructing, operationing and decommissioning nuclear facilities.[62] The authority must prescribe requirements in connection with the authorization, review and assessment of a nuclear facility, including the requirements for nuclear facility design; siting; construction; commissioning; operation; decommissioning; remediation; and such other activity relating to construction and operation, as may be necessary.[63]

It is the responsibility of KNRA to ensure that the general public is informed and consulted at appropriate steps during the authorization process of a nuclear facility.[64] The authorized person shall bear the primary responsibility for ensuring safety and security of the facility and all activities associated with it.[65]

58 NRA s 38.
59 NRA s 39.
60 NRA s 40.
61 NRA s 41.
62 NRA s 43(1,2).
63 NRA s 43(3).
64 NRA S 43 (6).
65 NRA S 44.

A person applying for a site authorization for a nuclear power plant shall prepare a site evaluation report.[66] The site evaluation report must contain critical information that is necessary to determine whether such a site is ideal for setting up a nuclear facility. The information must include: the frequency and severity of external natural and human induced events and phenomena that could affect the safety of the facility; the foreseeable evolution of natural and man-made factors in the region that may have a bearing on safety for a time period that encompasses the projected lifetime of the facility; the hazards associated with external events that are to be considered in the design of the facility, including the potential combined effects of hydrological, hydrogeological and meteorological conditions; particulars relating to safety such as the storage and transport of nuclear material; the possible non-radiological impact of the facility, due to chemical or thermal releases, and the potential for explosion and dispersion of chemical products; the potential for interactions between nuclear and non-nuclear effluents; the potential radiological impacts in operational states and conditions on people in the region, including impacts that could lead to emergency measures or potential impacts outside the territory of the Republic of Kenya; and the total nuclear capacity to be installed on the site, with provision for re-evaluation of the site if the installed capacity is to be significantly increased beyond the level assessed in a previous site evaluation.[67]

To bolster the safety measures, the authority must review and assess a number of things before granting authorization for construction and operations. The authority must review the competence and capability of the applicant or authorized person to meet relevant authorization requirements during construction and operation; the site evaluation report, to confirm its acceptability, and related information needed for the design of the proposed facility; the potential environmental impact of the proposed facility; the basic design of the proposed facility, to confirm that it can meet relevant safety, security and physical protection requirements; the management systems of the applicant or authorized person; research and development plans and arrangements for decommissioning and management of radioactive waste including financial mechanisms.[68]Inevitably, the authority must have the capacity to review the competence and the capability of the applicants.

Before granting an operation authorization for a nuclear power plant, the authority shall review and assess the commissioning program and, if needed, establish a schedule for further review and assessment prior to operation; as-built design and construction and manufacturing quality of the facility; results of non-nuclear commissioning tests; limits and conditions for operation during commissioning, with a staged approach, if necessary; provisions for radiation protection; adequacy of operating instructions and procedures, especially the main administrative procedures, general operating procedures and emergency operating procedures; recording and reporting systems; arrangements for training and qualification

66 NRA S 45 (1) .
67 NRA S 45 (2).
68 NRA S 46(1-2).

of facility personnel, including staffing levels and fitness for duty requirements; management systems for operation; emergency preparedness program; accounting measures for nuclear and radioactive material; adequacy of physical protection measure arrangements for periodic testing, maintenance, inspection and control of modifications and surveillance; arrangements for decommissioning and management of radioactive waste; results of commissioning tests; and limits and conditions for operation.[69]

The requirements for the decommissioning of nuclear facilities where radioactive sources are produced, used or stored must be set up by KNRA.[70] Setting decommissioning requirements ensures that nuclear energy development remains safe, financially responsible and environmentally sustainable throughout its full lifecycle, thereby protecting present and future generations.[71]

The applicant must perform a baseline survey of the site, including radiological conditions, prior to construction; and develop information prior to construction for comparison with the end state after decommissioning; ensure that relevant documents and records prepared by the authorized person are maintained for a specified period of time before, during and after decommissioning; establish criteria for determining when a nuclear facility or part of a facility must be permanently shut down; and evaluate the end state of the facility after decommissioning activities have been completed to ensure that relevant regulatory requirements have been met.[72]

The regulatory requirements to be met include safety and environmental criteria, including conditions on the end state of decommissioning; limits and conditions for the removal of regulatory controls for facilities containing radionuclides; criteria for the clearance of radioactive material during and following decommissioning; and such other requirements as may be prescribed. KNRA shall release an authorized person from regulatory control upon demonstrating that the end state in the decommissioning plan has been reached and all other regulatory requirements have been met.[73] It is very critical that the authority gets the required capacity to set these requirements to ensure safe establshment of a NPP.

The Decommissioning Plan

At the design stage of facilities, the applicant for an authorization to construct and operate a facility shall prepare an initial decommissioning plan for approval by the authority which shall be commensurate with the type and status of the facility and the hazards that

69 NRA S 47(3).

70 NRA Art 48 (1).

71 International Atomic Energy Agency (IAEA), *Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel-Cycle Facilities — Specific Safety Guide (SSG-47)* (2018).

72 NRA S 48 (1).

73 NRA S 48(2).

may be associated with its decommissioning.[74] The authority must ensure that the public and interested parties are provided with an opportunity to review and comment upon the decommissioning plan prior to its approval.[75] Public participation is clearly a priority in this case of setting a decommissioning plan. The authority must require the authorized person to provide periodic reviews and updates of the decommissioning plan and shall specify the maximum time interval between such reviews and updates; where specific circumstances result in significant changes to the initial decommissioning plan, require the authorized person, to revise and update the plan to reflect these changed circumstances and submit it to the Authority for approval.

A final decommissioning plan must be prepared and submitted for approval prior to the implementation phase of decommissioning activities. The authority must ensure that a program to implement and monitor compliance with remaining regulatory requirements has been established for sites where decommissioning has been completed but where authorizations or restrictions on future use of the site remain.[76] The authority shall, upon completion of decommissioning, ensure that appropriate records for confirmation of the completion of decommissioning activities are maintained in accordance with the approved decommissioning plan including the records of the premises and of the disposal of radioactive waste and material.[77]

A decommissioning fund[78] shall be administered by the authority[79] and shall cater for decommissioning and the management of radioactive waste and spent fuel.[80] The sources of funds for the fund shall consist of all moneys appropriated by the National Assembly, or paid into, or allocated to the Fund under the provisions of any other law; domestic and foreign grants; and any property or amount of money received or acquired from any other legal sources.[81] The Cabinet Secretary, in consultation with the National Treasury, may make regulations on the administrative operations of the Fund and the financial requirements for decommissioning.[82] By National Assembly setting apart funds needed means that the sources of such funds are from the taxes and or government revenues which can be burdensome for the country as such funds are needed for other recurrent expenditureand development needs. Reliance on grants is not a gurantee on the availability of such funds. An operator of the plant should make provision for decommissioning by providing financial

74 NRAS 49 (1–2) .
75 NRA S 49 (3).
76 NRA S 49.
77 NRA S 49.
78 NRA S 52.
79 NRA S 54.
80 NRAS 55.
81 NRA S 53.
82 NRA S 56.

resources or commitments which aligns with the polluter pays principle and precautionary principle.

3. Emergency Preparedness and Response

KNRA (the authority) in liaison with the national body responsible for responding to national emergencies must define the criteria for classification of emergencies; review and approve emergency preparedness and response plans developed by an authorized person; and advise and provide technical support on radiological emergencies and nuclear accidents.[83] The KNRA ought not to approve any activity, operation, facility, or possession or use of a source unless an appropriate emergency preparedness and response plan has been developed by the applicant and approved by the Authority.[84] The national body responsible for responding to national disasters is the National Disaster Operation Center established pursuant to an executive order. Unfortunately its mandate is not supported by any statute therefore making it inadequate and less reliable in provision for funds and proper coordination.[85]

An on-site and off-site emergency plan shall be prepared in the prescribed form and manner for any facility, activity, or source. The emergency preparedness and response plans shall take into account an assessment of the nature, likelihood and potential magnitude of resulting damage, including the population and territory at risk from an accident, malicious act or incident; the results of any accident analyses and any lessons learnt from the experience or incidents and accidents that have occurred in connection with similar activities.[86] The plans must be periodically reviewed as directed by the KNRA.[87] The authorized person shall, in the event of a nuclear or radiological emergency, implement the emergency preparedness and response plan as approved by the Authority.[88]

4. Transportation of Radioactive Material

The Authority is mandated to regulate transportation of radioactive material in accordance with international standards.[89] Every carrier must maintain a radiation protection transport plan during transportation of nuclear material or radiation sources.[90] The transport plan

83 NRA S 57.

84 NRA S 58.

85 KC Rono-Bett, '*A political economy analysis of decision-making on natural disaster preparedness in Kenya*' (2018) 10(1) Jàmbá: Journal of Disaster Risk Studies <https://pmc.ncbi.nlm.nih.gov/articles/PMC6014147/> accessed 19 March 2026.

86 NRA S 59 (1).

87 NRA S 59 (3).

88 NRA s 60.

89 NRA S 63(1).

90 NRA S 66(1).

shall take into account the nature and extent of the measures to be taken in respect of the likelihood and magnitude of radiation exposures or environmental contamination; and adopt a structured and systematic approach including consideration of the interfaces between the mode of transport and other activities.[91] Failure to comply attracts criminal liability.[92]

In the event of an accident or incident during the transportation of a nuclear material or radiation source, a carrier must initiate its radiation protection transport plan approved by the Authority.[93] Illicit trafficking of nuclear material or radiation source attracts hefty criminal sanctions.[94]

5. Radioactive Waste and Spent Fuel Management

The Authority must establish a classification of radioactive waste to ensure the safe and secure management of radioactive waste in Kenya.[95] The primary responsibility for ensuring the safety and security of radioactive waste and spent fuel in a radioactive waste or spent fuel management inside or outside a facility throughout its life rests with the holder of the relevant authorization.[96] An authorized person shall be responsible for the safe management of radioactive waste generated by the activities for which the authorization is issued and shall take all necessary measures to ensure that generation of the activity and volume of radioactive waste are kept to the minimum practicable level by suitable design, operation and decommissioning of its facilities; radioactive waste is managed by appropriate classification, segregation, treatment, conditioning, storage or disposal, and maintaining records of such activities; management of radioactive waste is not unnecessarily delayed; and information sought by the Authority is furnished as requested.[97] To carry out the functions a waste management plan must be submitted by the authorized person.[98]

A waste management plan shall provide for the appropriate management of radioactive waste. It must include the following: an outline of the processes generating waste, and a description of the waste generated; a description of the environment into which the waste will be discharged or disposed, including the baseline radiological characteristics; a description of the proposed system for waste management including the facilities and procedures involved in the handling, transportation, treatment, storage or disposal of radioactive waste; prediction of environmental concentrations of radionuclide and radiation

91 NRA S 66(2).
92 NRA S 66(3).
93 NRA S 67(1).
94 NRA S 72.
95 NRA S 75.
96 NRA S 74 (1).
97 NRA S 74(2).
98 NRA S 101.

doses to people from the proposed waste management practices, including demonstration of adherence to the radiation protection requirements under this Act; a program for monitoring the concentration of radionuclides in the environment and assessment of radiation doses to members of the public arising from the waste management practices; emergency plans for dealing with accidental releases, or circumstances which might lead to uncontrolled releases of radioactive waste, to the environment; a schedule for reporting on the operation and results of monitoring and assessments required by this plan; a plan for decommissioning the operation and the associated waste management facilities and remediation of the site; and a system of periodic assessment and review of the adequacy and effectiveness of procedures instituted under the plan to ensure currency and to take account of potential improvements consistent with best practicable technology.[99]

An authorization must be given to allow for storage, management, transfer or disposal of radioactive waste. The authorized person must take appropriate measures to keep generation of radioactive waste and its environmental impact to the minimum practicable.[100] Failure to comply attracts hefty criminal fines and or an imprisonment for a term not exceeding five years, or to both.[101] Criminal liability is not sufficient, the authorised person should also incur civil liability should the disposal of such radioactive waste cause harm to the environment to cater for remediation of the environment and compensation to victims.

An authorized person shall ensure that radioactive waste from authorized activities is not discharged to the environment unless such discharge is within the limits specified in the authorization and is carried out in a controlled manner using authorized methods; or the discharge is confirmed to be below the radioactivity clearance level prescribed by the Authority.[102] An applicant for an authorization for a radioactive waste and spent fuel management facility shall meet safety requirements for the protection of persons, property and the environment by appropriate planning for the siting, design, construction, operation and maintenance of the respective facility, including provisions for eventual retrieval of the waste; and design the facility.[103]

The importation of radioactive waste and spent fuel generated outside the territory of Kenya is prohibited[104] but the one generated within the Republic of Kenya may be exported only upon authorization by the Authority.[105] In determining export authorization for radioactive waste and spent fuel, the authority shall consider whether the importing State has been notified of the transfer of radioactive waste and spent fuel prior to its receipt and has consented to such transfer; movement of the intended exported material shall be

99 NRA S 76(2).
100 NRA S 77(23).
101 NRA S 77(4).
102 NRA S79(1).
103 NRA S 80.
104 NRA S 81.
105 NRA S 82(1).

conducted in conformity with relevant international obligations in all States through which the material will transit; and the importing State possesses the regulatory infrastructure and technical capacity necessary to manage the exported radioactive waste and spent fuel.[106]

6. Safeguards for peaceful use of nuclear material

In enabling the application of safeguards, KNRA must ensure the implementation of the obligations of Kenya arising from ratified international treaties and conventions; by providing to International Atomic Energy Agency (IAEA) the applicable international entity information required to fully implement Kenya's international and national obligations; facilitating entry into, access within the Republic of Kenya and offering necessary support to designated inspectors of the applicable international entity; and ensuring all agencies of the Government of Kenya and authorized persons cooperate fully with the applicable international and national entities in application of safeguard measures.[107] It is important for Kenya to ratify treaties and conventions concerning safe use of nuclear energy. Similarly it is important to strengthen existing legislation and regulations to ensure alignment with international standards and as a guarantee of safe use of nuclear technology.

Inspection subject to the safeguards regime by an inspector of the Authority and a designated inspector of the IAEA must be allowed with a view of conducting verification activities.[108] The Authority must effectively manage the system of accounting for and control of nuclear material by making regulations to ensure the effective implementation of safeguards in Kenya by establishing and implementing a system for the measurement of nuclear material; a system for the evaluation of measurement accuracy procedures for reviewing measurement differences; procedures for carrying out physical inventories; a system for evaluation of unmeasured inventories; a system of records and reports for tracking nuclear material inventories and flows; procedures for ensuring that accounting procedures and arrangements are being operated correctly; and procedures of reporting to the applicable international entity.[109]

7. Nuclear Security and Physical Protection

KNRA must co-ordinate threat assessment which is to be carried out by the national security institutions.[110] It is the responsibility of an authorized person to ensure security measures are put in place in accordance with the threat identified.[111] An authorized person

106 NRA S 82(3).
107 NRA, s 84(1-2).
108 NRA S 85.
109 NRA, S 87.
110 NRA, S 89 (1).
111 NRA, S 89(2.

is primarily responsible for ensuring the physical protection of nuclear material, radioactive material and related facilities under its control.[112] Where there has been theft, threat of theft or loss of nuclear material, an authorized person must notify the Authority without delay of the incident and circumstances.[113]

The Authority must issue guidelines to on protection from attempted or actual unauthorized access of or illicit trafficking of nuclear and radioactive materials or sabotage of their associated facilities.[114] In the event of an unlawful taking or threat of unlawful taking of nuclear material, the Authority must inform other States that may be affected of the circumstances of the incident and the relevant international entity.[115] KNRA is the lead authority responsible for coordinating recovery and response in the event of any theft or unlawful taking of nuclear material.[116] The Authority shall provide information on incidents involving unlawful taking of nuclear material, equipment and technology to the applicable international entity.[117] The Act prescribes sanctions for anyone who commits an offence relating to nuclear facilities[118] The Director of Public Prosecutions may, on the request of the Authority, gazette any officer of the Authority to be a public prosecutor for the purposes of prosecuting offences under the NRA.[119] A Memorandum of Understanding (MoU) was recently signed between the Office of the Director of Public Prosecutions (ODPP) and the NuPEA,[120] about strengthening inter-agency collaboration to address nuclear power-related offences, particularly emerging and complex crimes linked to Kenya's advancing nuclear energy programme.[121]

II. The Environment Management and Coordination Act

The Environment Management and Coordination Act (EMCA) provides for the establishment of the National Environmental Management Authority (NEMA) as the principal agency of government in the implementation of all policies relating to environmental management.[122] NEMA oversees the process of environmental impact assessment (EIA), strategic environmental assessment for projects like the establishment of a NPP that are

112 NRA, S 90(1).
113 NRA, S 90 (2).
114 NRA S 90(3).
115 NRA S 91(1).
116 NRA S 91(2).
117 NRA S 91 (3,4).
118 NRA S 94.
119 NRA S 97.
120 The MoU was signed on 17 March 2026.
121 Uzalendo News, DPP, Nuclear Agency Seal Landmark Deal to Tackle Nuclear-Related Offences(2026, March 17) < https://uzalendonews.co.ke/dpp-nuclear-agency-seal-landmark-deal-to-tackle-nuclear-related-offences/>accessed March 24, 2026.
122 EMCA, Act No.8 of 1999(Laws of Kenya).

potentially deleterious to the environment.[123] NEMA implements the polluter pays principle where pollution occurs by requiring the polluter to effect remediation measures to the degraded environment.[124] Nonetheless, the primary responsibility of managing nuclear waste lies with KNRA.[125] NEMA may be involved as a player because it is the coordinating agency in environmental matters.

Nuclear waste will require licensed facilities, segregation, and minimization, maintenance of waste inventories, transport manifests, and decommissioning plans with financial assurances.[126] EMCA does control effluent discharges and water abstraction while monitoring forms of thermal pollution that may be caused by running nuclear power plant.[127]

EMCA criminalizes importation, processing, mining, exportation, possession, transport, use, or disposal of radioactive materials or other source of dangerous ionizing radiation without a licence that has been validly issued by the Authority.[128] The EIA framework is the cornerstone of sustainable energy development, balancing the need for energy generation with sustainability of ecosystem.[129]

III. The Energy Act

The Energy Act (EA) establishes the Nuclear Power and Energy Agency,[130] which is the nuclear energy program implementing organization and promotes the development of nuclear electricity generation in Kenya; and carry out research, development and dissemination activities in the energy and nuclear power sector.[131]

In order to carry out the functions, the agency is mandated to propose policies and legislation necessary for the successful implementation of a nuclear power program; undertake extensive public education and awareness on Kenya's nuclear power program; identify, prepare and facilitate implementation of an approved roadmap for a nuclear power program; in collaboration with the relevant government agencies develop a comprehensive legal and

123 EMCA S 58 .

124 EMCA, s2. S9.

125 NRA (s 6, 73-82)

126 Environmental Management and Coordination (Waste Management) Regulations, 2006 (Legal Notice No. 121).

127 Environmental Management and Coordination (Water Quality) Regulations, 2006 (Legal Notice No. 120.

128 EMCA, S 65.

129 *Ahmad Mahadi*, 'An analysis of Policy, Regulatory and Environmental Impact Assessment Requirements to Support Sustainable Development of Nuclear Energy in Malaysia' Master of Science (Graduate Programs in Sustainable Energy Development) 24.

130 Energy Act, S 54 .

131 Energy Act,S 56 (1).

regulatory framework for nuclear electricity generation in Kenya; identify appropriate sites in Kenya for the construction of nuclear power plants and their related amenities.[132]

Conclusion

Kenya has majorly progressed in meeting the legal and regulatory frameworks prerequisites. However, further development of these frameworks is needed for them to cover all aspects of nuclear law and implementation of international legal instruments and accommodate various sizes of aspects of the nuclear power program.[133] Kenya needs to effectively engage people on the nuclear power program and genuinely commit to carefully implement it to avert any nuclear incident. Kenya will need to ratify the treaties and supporting protocols it has not ratified to fully protect the people of Kenya and the environment. The legal framework for disaster management needs to be developed as such a management of disaster emanating from nuclear damage cannot be managed through presidential directives. The legal architecture has to align to the international legal framework for disaster management.

132 Energy Act, S 56 (2) .
133 KIPPRA (n) 42.