Nuclear Regulatory Authority

Ghana

Corporate Strategic Plan

2021 - 2025

Foreword

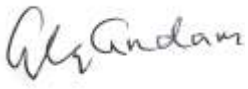
The Nuclear Regulatory Authority, Ghana, was established in 2016, and is tasked with ensuring the protection of humans and the environment from the harmful effects of radiation. The Authority's work focuses on nuclear and radiation safety, security and safeguards, and spans across various facilities and activities that use different forms of radiation.

Since its inception, the Authority has been working to establish itself within the regulatory landscape in Ghana as a trusted entity, and as a committed partner within the global nuclear regulatory regime. This five-year (2021 – 2025) Corporate Strategic Plan is a key element the Authority seeks to implement to guide it to achieve its intended goals.

The main focus areas of development during the 5-year period are:

- To work towards the strengthening of the core functions of the Authority, and in particular, the work of the radiological applications section.
- To continue to develop the Authority's competence to enable it function effectively as a nuclear regulator, particularly as the country's nuclear power programme enters into its second phase.
- To work to provide a supportive environment that promotes excellence in work delivery across all sectors of the Authority.

The Management and Staff of the NRA are committed to this plan, and will endeavour to deliver according to the targets outlined in it. The Governing Board of the Authority also approve the plan, and will provided high-level policy direction to see to its implementation.



PROF. ABA BENTIL ANDAM
Chairman, Governing Board

DR. NII KWASHIE ALLOTEY
Director-General

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1 Introduction

Who we are

The Nuclear Regulatory Authority (NRA) is an independent regulatory body established by the NRA Act, 2015 (Act 895) and began operations in January 2016. The NRA has a statutory responsibility for regulating civilian use of nuclear and other radioactive materials in medicine, industry, agriculture, education and research in Ghana. This is to ensure the protection of people and the environment from the harmful effects of radiation.

The Authority therefore issues authorisations for the possession, use, transport, import, export, storage and the disposal of nuclear and other radioactive materials and radioactive waste, as well as decommissioning or other related activities or practices identified by the Authority.

The Nuclear Regulatory Authority is governed by a seven-member Board appointed by the President of the Republic of Ghana. The mandate of the Board is to formulate and initiate policies for the development of the Authority; to ensure the proper management of the resources of the Authority; and ensure the Authority implements all functions conferred on it by Act 895, and any other enactment.

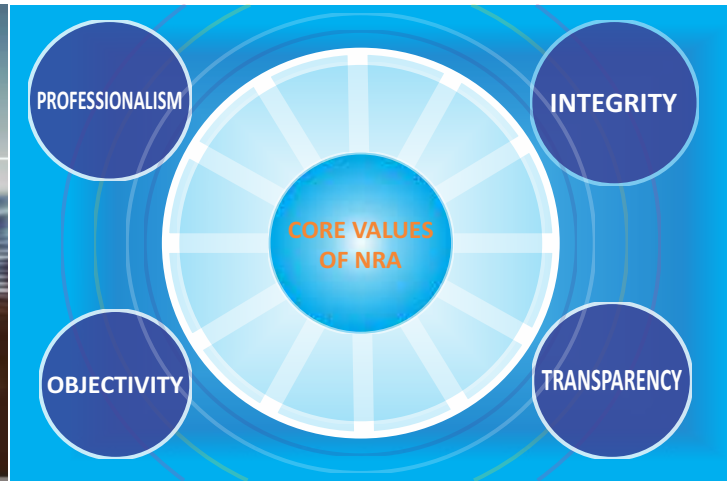
What We Do

The Nuclear Regulatory Authority exists to regulate the safe and secure applications/uses of nuclear and other radioactive materials in medicine, industry, agriculture, and education and research in Ghana, whilst protecting the general public, patients, people who work with radiation, property and the environment from the harmful effects of radiation.

The current scope of NRA's responsibility includes regulating the Ghana Research Reactor 1, linear accelerator, radioactive waste management facility and the Gamma Irradiation Facility at the Ghana Atomic Energy Commission; radiation emitting equipment and devices in medical and industrial facilities as well as educational and research institutions; and in the near future commercial nuclear power plants.

To effectively carry out its mandate and achieve its goal of ensuring the protection of persons and the environment, the NRA performs the following key operations to make certain that licensees operate their facilities and activities in a safe and secure manner always:

- Development of regulations and guideline documents that specify the principles, requirements and associated criteria for safety, security and safeguards to aid the NRA in its regulatory actions, decisions and judgements.
- Review and assessment of applications for authorisations from facilities and activities including nuclear installations, use of ionizing and non-ionizing radiation and radioactive sources and devices, the transport, import, export of radioactive material and the management of radioactive waste
- Conduct of regulatory inspections of nuclear installations and premises where radiological sources and devices are used and stored to verify compliance with regulatory requirements and conditions for authorisation
- Issuance of authorisations, licenses and permits to facilities and activities that demonstrate safety, security and safeguards, and are compliant with NRA's requirements
- Enforcement of non-compliance with regulatory requirements by licensees



Vision

To ensure humans and the environment are protected from all harmful effects of radiation.

Mission

To regulate radiation to meet national and international standards and obligation in a professional, objective and transparent manner.

Core Values of NRA

The NRA is committed to sound and transparent governance that will enhance the Authority's relationship with all stakeholders. This is achieved through adherence to the following core values by management and staff.

Professionalism
Adherence to standard operating procedures in performance of duties using competent staff

Objectivity
To be fair to all clients and stakeholders

Integrity
Honesty in dealing with clients and stakeholders

Transparency
In decision making, communication with licensees, stakeholders and the general public in an open and accurate manner

Legislative Mandate

The Nuclear Regulatory Authority Act, 2015 (Act 895) under Section 4 stipulates a three-pronged object for the Authority. They are to;

(a) ensure that radiation and nuclear energy is used by only persons authorised under this Act, for peaceful purposes;

(b) provide protection of persons and the environment against the harmful effects of radiation hazards; and

(c) pursue and ensure strict compliance with the Act and the Regulations.

Furthermore, Act 895 provides certain powers to the NRA under Section 6 for the performance of its mandate and functions. They include;

(a) define the exposures that are excluded from the scope of application of this Act;

(b) establish the process for removal of a facility or activity from regulatory control;

(c) impose an administrative penalty on an authorised person including a prohibition or confiscation of the nuclear and radioactive material or equipment and its source, for noncompliance with this Act and any Regulations;

(d) levy fees for authorisation;

(e) collaborate with the Ministries responsible for National Security and the Interior in determining what constitutes a domestic threat for the variety of nuclear and radioactive materials used within the country and assess the Republic's vulnerability to each threat;

(f) establish in collaboration with the Ghana Immigration Service and the Customs Division of the Ghana Revenue Authority, a control system for the import and export of nuclear material, radioactive sources and other controlled items;

(g) establish and maintain a national system for registering, authorisation, and accounting for nuclear materials and radiation sources;

(h) establish appropriate mechanisms for stakeholder participation in the regulatory process;

(i) set conditions for issuing authorisation and issue, amend, suspend or revoke an authorisation;

(j) grant exemptions concerning the possession and use of radiation sources, and the safe management of radioactive materials;

(k) conduct inspections to assess compliance with safeguard conditions and radiation safety and security conditions, imposed by the Authority on an authorised person;

(l) establish a system for tracking inventories and movement of nuclear material; and establish procedures for reporting to the International Atomic Energy Agency in accordance with section 56 of the NRA Act (Prohibitions on non-peaceful use of nuclear material).

Rationale for this Strategic Plan

This Strategic Plan is purposed to resource the Authority with strategic direction that will facilitate its operation as an efficiently run and financially self-reliant organisation. The plan translates the vision and mission of the Authority, drawn from its mandate, statutory functions and the focus of the Board and Director-General, into strategies and priority actions to be implemented over a period of five years to enable the NRA fulfil its statutory obligations.

The strategic plan focuses on key objectives, strategies and actions to be implemented in the short, medium and long terms to ensure humans and the environment are protected from all harmful effects of radiation. Critically, this Plan would serve as basis to track the growth of the Authority.

> "This strategic plan may be reviewed and updated to take cognisance of changes in the nuclear landscape, regulatory priorities and changes in NRA's operating environments."

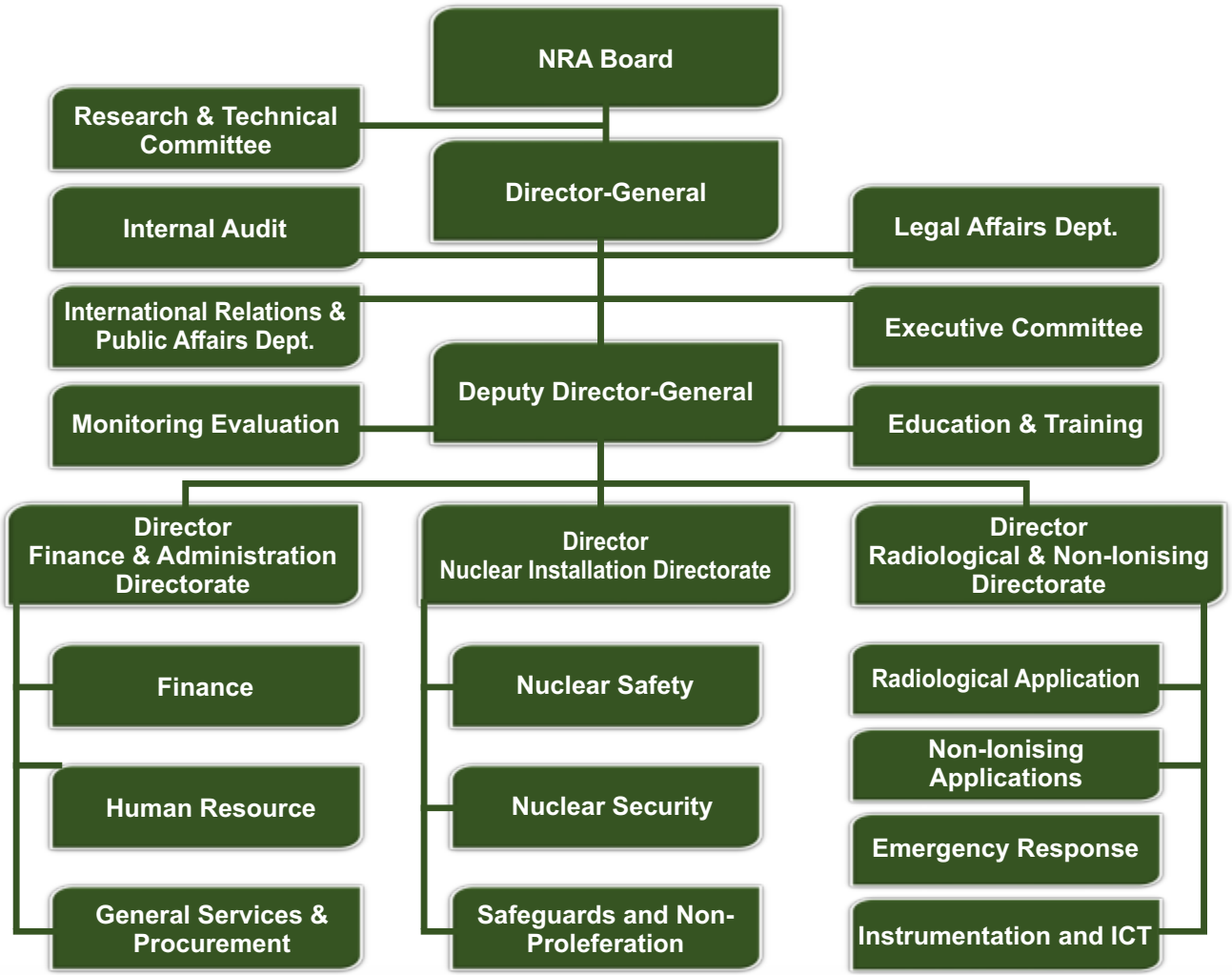
2 Governance Framework

Governance Structure

The Nuclear industry in Ghana is going through significant growth and the NRA was established to effectively regulate the industry. The NRA board is the governing body of the Authority. The Board consisting of the Chairperson, the Director-General, one representative of the Environmental Protection Agency not below the rank of a director, one representative of the National Security Council not below the rank of a director, and three other members with cognate background and experience in the sciences at least one of whom is a woman. Members of the Board are appointed by the President in accordance with Article 70 of the Constitution.

The Director-General (DG) is the head of the Authority and responsible for the day to day administration of the affairs of the Authority and is answerable to the Board in the performance of his/her functions. The DG is appointed by the President in accordance with Article 195 of the Constitution.

NRA's Organisational Structure



As shown in the above organizational structure, the Authority currently has two Technical Directorates that perform regulatory activities related to radiological and non-ionizing installations, and nuclear installations. The third Directorate, the Finance and Administration Directorate provides administrative support for carrying out the functions of the Authority.

3 Regulatory Environment

Operational Frame Work

As a regulator, our top priority is to deliver effective and efficient regulation and management activities and practices for the peaceful use of nuclear energy and radiation across all industries in Ghana. Given the usage of nuclear energy and radiation applications across many industries, building effective relationships with government, other related regulatory bodies, key industry players and international agencies is critical to achieving NRA's expected outcomes.

Given that the mandate of NRA was passed by Parliament and assented to by the President, effective collaboration with Government is critical for NRA's operations. Per the NRA Act, Parliament approves all funding for the Authority, and the President appoints the Board, Directors and critical staff. Therefore, the need to build a strong relationship with Parliament and Government is critical for the smooth functioning of the Authority without compromising its independence.

As a new regulator, taking over the regulatory functions of the Ghana Atomic Energy Commission (GAEC), some aspects of NRA's activities are related to the activities of other state regulators such as National Communication Authority (NCA) and Environmental Protection Agency (EPA). An effective collaboration with these agencies is critical for delivering NRA's mandate.

As part of fulfilling its responsibility, NRA works closely with medical, educational, environmental and scientific institutions, industries, and license holders, to achieve radiation protection and nuclear safety, security and safeguards outcomes for Ghana.

The NRA grants authorisations to some Technical Support Organisations to provide technical services after satisfying a set of NRA requirements. The services include but are not limited to:

- Dosimetry service providers
- Performance testing and calibration service providers
- Training service providers
- Radioactive waste management service providers
- Sale, supply, repair, maintenance and decommissioning/ dismantling of radiation equipment
- Qualified Experts/consultants and consulting organisations
- Source leakage test service providers

International Collaboration

As a member of the global nuclear regulatory family, the NRA collaborates with a number of international agencies in nuclear regulatory matters. The form of cooperation spans from all forms of technical support to areas related to infrastructure development. The NRA has signed collaborative agreements with various organisations including the following:

- International Atomic Energy Agency
- European Commission's Instrument for Nuclear Safety Cooperation
- United States Department of Energy
- United States Nuclear Regulatory Commission
- Canadian Nuclear Safety Commission
- Forum for Nuclear Regulatory Bodies in Africa
- Regulatory Cooperation Forum
- European Nuclear Safety Tutoring and Training Initiative

International Conventions

As a highly regulated sector internationally, all activities related to nuclear and allied technologies have to conform to international treaties. In accordance with being an International Atomic Energy Agency (IAEA) member state, the Government of Ghana has acceded to several International Nuclear Treaties and conventions. The Authority plays a vital role in ensuring the effective fulfillment of Ghana's obligations under the following conventions and treaties:

Nuclear Safety

i. Convention on the Early Notification of a Nuclear Accident
ii. Convention on Nuclear Safety
iii. Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
iv. Convention on Assistance in Case of Nuclear Accident or Radiological Emergency

Nuclear Security

v. Convention on the Physical Protection of Nuclear Material
vi. Amendment to the Convention on Physical Protection of Nuclear Material
vii. UNSC Resolution 1540 on Preventing the Acquisition of Weapons of Mass Destruction (including Nuclear) by Terrorist/ Criminal Groups. Adopted by UN Security Council in 2004 and it is binding on all UN Member States including Ghana.

Nuclear Safeguards and Non-Proliferation

viii. Treaty on the Non-Proliferation of Nuclear Weapons
ix. Additional Protocol to the Agreement of Safeguards in connection with the Treaty on the Non-Proliferation of Nuclear Weapons
x. Comprehensive Safeguards Agreements pursuant to the Treaty on the Non-Proliferation of Nuclear Weapons Treaty
xi. Comprehensive Nuclear-Test-Ban Treaty
xii. Treaty on an African Nuclear -Weapon- Free Zone (Pelindaba Treaty)

Nuclear Liability

xiii. Convention on Supplementary Compensation for Nuclear Damage
xiv. Vienna Convention on Civil Liability for Nuclear Damage
xv. The Protocol to amend the Vienna Convention on Civil Liability for Nuclear Damage
xvi. The Joint Protocol relating to the application of the Vienna Convention and the Paris Convention

Industry

As stipulated by Act 895, the focus of all NRA's activities is the regulation of nuclear and radiological facilities and activities across industries within the country. NRA is committed to working in an enabling way with all industry players, who are currently using radiation sources. The Authority will continue to engage with licensees and stakeholders through information exchange and strategic meetings to improve regulatory compliance. The Authority will also continue to identify and reach out to other users of radiation sources that are not currently under its regulatory control to ensure public safety.

The Authority will ensure that it exercises its powers by applying the law to influence compliance and to improve the regulatory environment. The NRA by legislative instrument issues regulatory requirements and guidance documents for industry players to guide the use of nuclear materials, radioactive sources and radiation without compromising on human health and environmental safety.

Key sectors with radiation applications in Ghana

Health

Education/Research

Construction

Power

Oil & Gas

Mining

NRA's Regulatory Activities

The NRA carries out a range of regulatory activities across these key sectors to assure the safe, secured, and safeguarded use, storage and transport of nuclear materials and radioactive sources and radiations. The regulation of these activities and facilities is carried through risk-informed authorizations, inspections and engagements with licensees and stakeholders.

Health Sector

The use of radiation in medicine, forms the most part of radiation exposure to the Ghanaian populace. As the nation develops and technology improves, the range and complexity of the application of radiation in medicine will increase. The NRA therefore cooperates with the health sector to ensure that only fit-for-use facilities and techniques are applied whilst ensuring the safety of the public and the environment.

Typical facilities that fall under NRA regulatory control in the health sector include:

- X – Ray Diagnostic facilities
- Nuclear Medicine facilities
- Radiotherapy Centres
- Linear Accelerators
- Magnetic Resonance Imaging

Education and Research

In research, the main institution we work with is the Ghana Atomic Energy Commission, which has a research reactor, linear accelerator and gamma irradiation facility, as well as, sources used for calibration at the Secondary Standard Dosimetry Laboratory.

Construction Sector

The construction industry uses nuclear gauges to test materials for the purposes of construction quality control. Specifically, the use of nuclear moisture/density gauges for road construction is very common in Ghana's construction sector

Oil and Gas

The Oil and Gas sector applies radiation sources typically for well logging, and to provide information on the resource viability in a particular location. In addition, radioactive waste generated from the oil and gas activities require authorization to be managed.

Mining

In the mining sector, radiation sources are mainly used for process control and for mineral analysis in mineral ore extraction.

Power Sector

Key activity under power sector is the development of the Ghana Nuclear Power Programme, where the expected outcome is the installation of nuclear power plants for electricity generation. Facilities and activities to be regulated are:

- Nuclear power plants
- Nuclear fuel management facilities
- Technical support organisations and consultancies
- Spent fuel management facilities

Other Industrial Applications

There are other industrial applications of both ionizing and non-ionizing radiation. Some facilities and activities in this cluster include:

- Nuclear gauges used in industrial radiography
- Non-ionizing radiation emitting devices and facilities
- Radioactive materials storage facilities
- Radioactive waste disposal facilities

4 Corporate Analysis

Our Strategic Planning Process

Review of Past Performance

The NRA was formed in January 2016. From its humble beginnings, the Authority has made significant strides in its operations relying on its minimal resources. With an initial staff strength of 56, some basic regulatory equipment and three used pickup vehicles all transferred from the Ghana Atomic Energy Commission, the NRA has, among others, accomplished the following.

Operational Accomplishment since 2016

Organisational

- Collaborated with Ghana Nuclear Power Programme Organisation (GNPPO) to produce the Nuclear Programme Comprehensive Report.
- Organized various media fora for public awareness on nuclear issues

Regulatory - Administration

Signed a number of agreements to facilitate the development of regulatory infrastructure notable among which are:

- Agreement with US-NRC for the development of regulatory infrastructure
- Memorandum of understanding with the Canadian Nuclear Safety Commission on regulatory support
- Regulatory support agreement with the European Commission's Instrument for Nuclear Safety

Regulatory – Core Activities

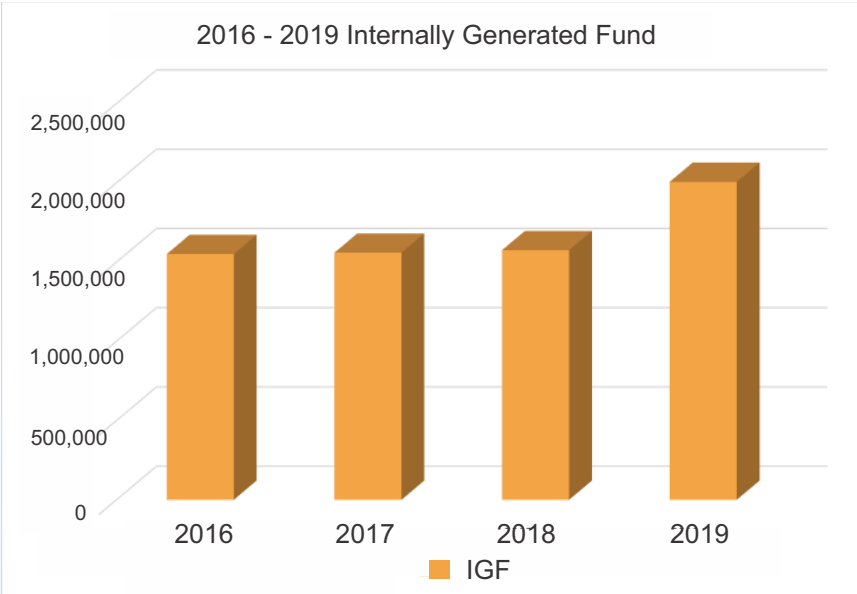
- Successfully supervised the conversion of the core of the Ghana Research Reactor-1 from high enriched uranium to low enriched uranium.
- Drafted and reviewed a number of regulations to support the implementation of the NRA Act 895 as well as the development of guidance documents for use by licensees. Collaborated with various stakeholders to conduct a National Threat Assessment and developed a Design Basis Threat

Financial

Major sources of finance consist of Internally Generated Funds (IGF), and Government of Ghana budget allocation for staff compensations and goods and services.
The past annual revenues from IGF were

GHS1,551,052 in 2016, GHS1,559,523 in 2017, GHS 1,575,219 in 2018 and GHS 2,006,363 in 2019.

Below shows the performance review of NRA from 2016 to 2019



Situational Analysis

To help develop an effective corporate strategy, an analysis of the business environment of the NRA was done by employing two commonly used tools, the SWOT and PESTLE.

SWOT

A SWOT analysis identified the internal capabilities of the NRA and external environmental factors that significantly impact the performance of the Authority.

SWOT MATRIX

	STRENGTHS - S	WEAKNESSES - W
	1. Established regulatory & governance framework ensuring regulatory independence 2. Availability of youthful and competent workforce. 3. Strong international collaborations, technical partnerships and participation in national and international nuclear related activities, allowing for knowledge sharing and increased quality of services.	1. Low sensitization and difficulty in effectively providing public education. 2. Difficulty in joint enforcement with other public stakeholder agencies 3. Lack of relative capacity due to limited human resource 4. Potential staff attrition 5. Low levels of internal generated funds
OPPORTUNITIES - O	**S - O : STRATEGIES**	**W - O : STRATEGIES**
1. Ghana's nuclear power programme 2. Revised fees and charges approved by parliament 3. Expanding sector/industry applications of nuclear related activities 4. Increasing cooperation with law enforcement agencies 5. International and national recognition for nuclear application related regulation	1. Secure funding to build requisite infrastructure across the nation to enforce the regulations and maximize benefits from all relevant industries. 2. Adopt international best practices in nuclear regulation via peer review and knowledge sharing from international regulatory bodies	1 Institute continuous personnel development programme to enhance HR capacity. 2. Continuous engagement in stakeholder consultation to boost coordinated enforcement
THREATS - T	**S - T : STRATEGIES**	**W - T : STRATEGIES**
1. Inadequate Government funding 2. Low public awareness of nuclear safety and security	1. NRA to develop a media relation strategy in order to make public its national and international nuclear related activity	1. Explore the commercial potential for NRA's regulatory activities in all sectors/industry in Ghana 2. Procure communication expert to train and support NRAs branding, publicity and public education

PESTLE

A PESTLE analysis was done to provide an understanding of the political, economic, social, technological, legal and environmental factors that affect NRA's activities and to help develop a strategy for the Authority.

PESTEL	STRENGTH	NEED
Political	· Political Stability · Favourable government support	· Increase government funding for effective regulation. · Build capacity to improve the efficiency in regulation
Legal	· Established legal and regulatory framework	· Increase government support and colla boration with other related regulatory bodies for improved coordinated enforcement.
Economic	· Development of nuclear power in Ghana · The potential increase in the number of radiation therapy facilities for cancer treatment	· Requisite training, equipment and infrastructure to support the development of nuclear power industry.
Environmental	· The NRA regulatory functions provide environmental sustainability and safety from harmful radiation sources	· Increased regulatory enfo rcement · Develop regulations to improve environmental safety
Social	· Increasing use of radiation sources for industrial and medical sectors of Ghana contributing to job creation and economic welfare · Awareness of nuclear and radiation related activities in Ghana	· Increase regulatory enforcement activities to ensure safe and secure use of radiation sources for industrial applications · Execute comprehensive education and communication strategy to increase public awareness and deepen nuclear education to ensure the public have the right perception and acceptance of nuclear and radiation related activities
Technology	Availability of NRA's technical division and programmes: · Nuclear installation, safety, security, safeguards and non-proliferation progra mme/department · Radiological and non-ionizing installation and applications programme · Emergency preparedness and response programme/department · Instrumentation department	· Invest in regulatory oversight to meet the diversity of applications, e.g., · Adopt newer technology to facilitate the work of NRA · Build capacity to develop e-learning programmes/toolkits on nuclear and radiation safety (e.g. safety culture, security culture , etc.) · Build an asset register for orphan and lost sources.

The SWOT and Pestle analysis allows the NRA to identify the key drivers for this strategy. The drivers are the important and critical issues in NRA' current and future operating environment which have been taken into consideration in developing this strategy. These drivers serve as the foundations for the strategic pillars

5 NRA's Strategic Pillars

Strategic Pillars

Based on a critical analysis of both the internal and external operating environment, NRA has identified four strategic pillars that will ensure the peaceful application of ionizing and non-ionizing radiation sources and devices in a safe and secure manner without limiting the benefits to mankind. These pillars will ensure that people and the environment are adequately protected. For the next five years, NRA will focus on the following four strategic pillars in order to fulfill its legal mandate.

This section of the plan details specific activities NRA will undertake under each strategic pillar.

Pillar 1

Ensure improvements in nuclear radiological safety, safeguards and security in Ghana

1.1 Ensure innovation, resilience and continuous improvement in work delivery

1.2 Establish regulatory framework for effective delivery of the Authority's mandate

1.3 Regulate nuclear and radiological facilities and activities

Pillar 3

Ensure resource availability and financial sustainability of NRA's operations

3.1 Develop mechanisms to ensure financial viability and sustainability

3.2 Improve employee working environment for effectiveness

3.3 Develop and sustain an effective system of internal controls

3.4 Provide appropriate facilities to ensure enhanced regulatory work

Pillar 2

Ensure stakeholder trust, respect and confidence in NRA's regulatory role

2.1 Independent and objective in delivery of regulatory functions

2.2 Strengthen stakeholder relations and improve public awareness of the NRA

Pillar 4

Build qualified and competent human resource management team to help deliver NRA's mandate

4.1 Ensure a well-structured organisation with adequate staffing

4.2 Ensure a highly competent and motivated workforce

Pillar 1 - Ensure improvements in nuclear and radiological safety, safeguards and security in Ghana			Targets				
	Objectives/Strategy	*Performance Indicator*	***2021***	***2022***	***2023***	***2024***	***2025***
1.1	**Ensure innovation, resilience and continuous improvement in work delivery**						
1.1.1	Ensure continuous management of organisational capabilities and weaknesses	Number of new organisational ideas/concepts that have been logged, developed and commenced	2	3	3	3	3
1.1.2	Being abreast with new developments in technology in NRA related subject matters	Number of new updates in ways of doing things in the Authority through technology	1	3	3	3	3
1.1.3	Ensure the organization is resolute and able to anticipate, prepare for, respond and adapt to internal and external changes	Percentage of completion of developed implementable change management plan	40%	85%	100%	100%	100%
1.2	**Establish regulatory framework for effective delivery of Authority's mandate**						
1.2.1	Develop and promulgate prioritised regulations and guides across all NRA's regulatory programmes	Number of regulations and guides that have received NRA Board Approval	3	5	5	4	3
1.2.2	Develop all required processes, procedures and documentation to facilitate application, review and assessment, authorization, licensing, inspections, and enforcement.	Percentage of regulatory processes well documented, developed and structured for ease of regulatory work	20%	50%	80%	100%	100%
1.2.3	Identify and develop areas of regulatory research to provide technical and research support for delivery of core regulatory functions.	Number of identified R&D projects initiated and completed.	0	3	5	7	7
1.3	**Regulate nuclear and radiological facilities and activities**						
1.3.1	Provide timely and evidence-based review and assessment of applications using the graded approach	Percentage number of review and assessments conducted that was timely and met licensee expectations.	90%	90%	100%	100%	100%
1.3.2	Ensure the compliance of users, facilities, and activities involving nuclear, radiological, and non-ionizing radiation with all regulatory requirements.	Percentage of the number of licensees who followed all regulatory requirements of the Authority.	90%	90%	100%	100%	100%
1.3.3	Ensure clear well spelt out dialogue with regulated entities	Percentage number of licensees who are satisfied with the way the Authority communicates with them.	80%	80%	95%	100%	100%
1.3.4	Ensure that the principles of safety and security are doctrines that guide the Authority and its licensees in the delivery of their respective mandates.	Score received by the Authority on its annual safety and security culture self-assessment	25%	50%	75%	90%	90%

Pillar 2- Ensure stakeholder trust, respect and confidence in NRA's regulatory role			Targets				
	Objectives/Strategy	*Performance Indicator*	***2021***	***2022***	***2023***	***2024***	***2025***
2.1	**To be independent and objective in delivery of regulatory functions**						
2.1.1	Ensure the implementation of peer review services to benchmark the work of the Authority	Number of peer-reviewed missions completed.	0	1	1	0	1
2.1.2	Review and amend the NRA Act 2015 (Act 895)	Percentage status of the completion of the amended NRA Law	10%	50%	75%	100%	100%
2.1.3	Develop and maintain domestic and international scientific and technical cooperation	Number of developed MOUs and bilateral activities conducted	3	5	5	5	5
2.2	**Strengthen stakeholder relations and improve public awareness of the NRA**						
2.2.1	Work to provide government a better understanding of the role and responsibilities of the NRA.	Number of successful interactions with Government on NRA mandate	2	4	4	4	4
2.2.2	Ensure targeted and consistent communication with stakeholders and the public.	Score received on the clarity of NRA communication with stakeholders and the public	50%	60%	75%	90%	90%
2.2.3	Create more visibility for the NRA, and provide the public with a better understanding of the role and functions of the NRA	Number of public outreach programmes conducted by the NRA	2	4	4	4	4
2.2.4	Work towards creating a public image of the NRA as an open, transparent, fair, well-structured and competent regulatory Authority	Score received on the perception of the public on NRA as a competent regulatory body.	50%	60%	75%	90%	90%

Pillar 3-Ensure resource availability and financial sustainability of NRA's operations			Targets				
	Objectives/Strategy	*Performance Indicator*	***2021***	***2022***	***2023***	***2024***	***2025***
3.1	**Develop mechanisms to ensure financial viability and sustainability**						
3.1.1	Develop and implement a transparent, easy-to-use, fair and sustainable fees and charges system for the Authority	Percentage completion of approved NRA Fees and Charges document	60%	90%	100%	100%	100%
3.1.2	Extend the coverage of NRA regulatory activities to bring most radiological sources and nuclear materials facilities and activities under regulatory control.	Percentage annual increase in number of facilities and activities brought under regulatory control	3%	3%	3%	3%	3%
3.1.3	Effectively engage with governmental authorities to ensure sustained government funding and support for NRA.	Percentage of amount of government funding realised by the Authority as percentage of budgeted amount.	70%	80%	100%	100%	100%
3.1.4	Identify and explore alternative sources of income considering the available capabilities within the Authority.	Percentage amount of revenue realised from non-traditional methods as a ratio of the conventional revenue.	2%	5%	10%	10%	10%
3.1.5	Develop and implement an effective debt management system that limits the outstanding payment period for the Authority.	Percentage amount of the yearly receivables collected within 3 months	70%	85%	90%	90%	95%
3.1.6	Establish and maintain the tenets of a good maintenance culture within the organisation	Percentage score received by Authority on the level of maintenance culture from self-assessment	25%	50%	75%	90%	90%
3.2	**Improve employee working environment for effectiveness**						
3.2.1	Increase the available office space for the Authority, and also to create a safe, secure, and congenial environment	Percentage of completion of NRA temporary (container) and permanent office buildings	100% / 0%	100% / 10%	100% / 15%	100% /40%	100% / 70%
3.2.2	Foster a work environment in which staff love their jobs and have a fair opportunity to optimally use their diverse talents to make the NRA a youthful, competent strong regulatory body.	Score from survey of perceived congeniality of working at the NRA	70%	80%	90%	90%	90%

Pillar 3 - Ensure resource availability and financial sustainability of NRA's operations			Targets				
3.3	**Develop and sustain an effective system of internal controls**		***2021***	***2022***	***2023***	***2024***	***2025***
3.3.1	Develop and implement a well-functioning IT-based enterprise resource planning system for effective service delivery	Percentage of usability of the IT-based system for the work of the Authority	10%	50%	85%	100%	100%
3.3.2	Develop and implement an organizational integrated management system and project management setup	Percentage of completion and use of the IMS system for the Authority work	25%	50%	85%	100%	100%
3.4	**Provision of appropriate facilities to ensure enhanced regulatory work**						
3.4.1	Develop and sustain emergency preparedness infrastructure that includes an emergency management centre.	Percentage setup of an emergency centre at NRA	10%	30%	50%	75%	100%
3.4.2	Consolidate the nuclear security infrastructure for the country with clear documentation and interfaces	Percentage of completion of setup of all documents and nuclear security structure for the country.	30%	70%	100%	100%	100%
3.4.3	Provide logistics required for professional, well-organized, and proper functioning of all work tasks of the Authority	Number of documented complaints that resources are not enough for work of Authority	<50	<30	<20	<10	<10

Pillar 4 - Build qualified and competent human resource management team to help deliver NRA's mandate			Targets				
	Objectives/Strategy	***Performance Indicator***	***2021***	***2022***	***2023***	***2024***	***2025***
4.1	**Ensure a well-structured organisation with adequate staffing**						
4.1.1	Develop and implement appropriate human resources documents.	Percentage of HR and training documents developed for the Authority.	60%	90%	100%	100%	100%
4.1.2	Develop and establish an appropriate organisational structure that promotes the achievement of the Authority's mandate.	Percentage at which new organogram has been fully operationalize with all positions filled	40%	70%	90%	100%	100%
4.1.3	Ensure all regulatory approvals with respect to organisational structure and human resource establishment are obtained.	Percent completion of discussions with FWSC and PSC and obtained technical and financial clearance for recruitment	60%	100%	100%	100%	100%
4.2	**Ensure a highly competent workforce**						
4.2.1	Develop, implement, and maintain a comprehensive competence management programme.	Percentage level of competence management being conducted within the Authority	25%	50%	75%	90%	90%
4.2.2	Develop and implement an appropriate knowledge management system for the Authority	Percentage level of knowledge management being conducted within the Authority	25%	50%	75%	90%	90%

6 RESOURCES

People:

The NRA currently has a staff strength of seventy-three employees, which is significantly lower than the required staff strength to enable it operate efficiently. NRA has a youthful and experienced workforce with an average age of forty years, which bodes well for the future of the Authority. The NRA is poised in the coming years to recruit additional employees to make up for its staffing deficit. However, the NRA is cognisant of the fact that increasing the numbers alone does not mean an overall increase in its regulatory capability. Therefore, in addition to the yearly recruitment, the NRA will implement a comprehensive human resource management

programme focusing on competence building for all the sectors of the regulatory activities. The Authority will develop a robust knowledge management system that will ensure knowledge retention and sharing.

Technical Support

The NRA utilises technical support services to provide specialised expertise to support its short to medium term operational requirements.

This approach reduces the risk of resource not being available when required and provides NRA with the ability to source appropriate technical experts from across the global nuclear supply chain. This will increase the Authority's capacity and capability to undertake it regulatory mandate.

The need for technical experts is expected to increase with further development in Ghana's Nuclear Power Programme.

Funding and Financial Projections

The NRA's primary funding comes from the Government of Ghana. Other sources of funding for the Authority include internally generated funds (fees from its licensees) as well as funds from international partners and donors. Funding from donors and international partners come in the form of training support, technical support, as well as support for infrastructure.

Current Sources of Internally Generated Funds (IGF)

Per NRA's mandate and functions, the diagram below show the current sources of NRA's IGF. Of the many activities undertaken by NRA, the services mentioned below are those that the Authority charges for.

PROJECTED EXPENDITURE FOR THE PERIOD 2021 TO 2025

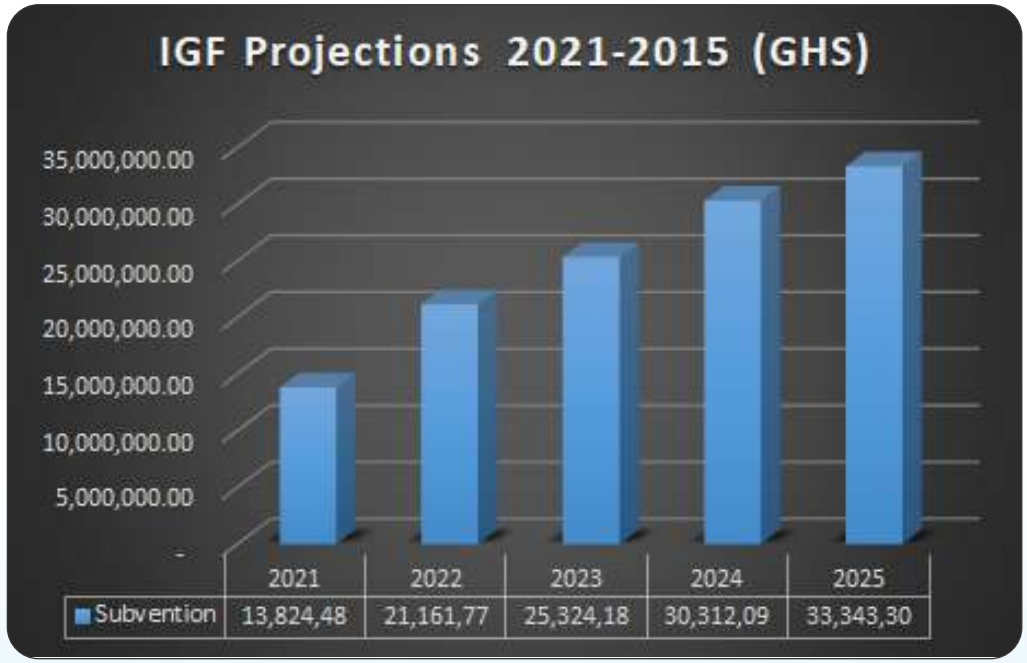
	2021	2022	2023	2024	2025
Compensation of Employees	13,188,664.00	20,462,374.51	24,554,849.49	29,465,819.39	32,412,401.33
Goods and Services	2,307,344.51	2,899,460.96	3,414,274.45	4,004,959.67	4,405,455.63
Capital Expenditure	860,000.00	350,000.00	350,000.00	350,000.00	350,000.00
Total	**16,356,008.51**	**23,711,835.47**	**28,319,123.94**	**33,820,779.06**	**37,167,856.96**

5 Year Financial Projections 2020 to 2024

Forecast Assumptions

Our 5 year projection makes the following assumptions:

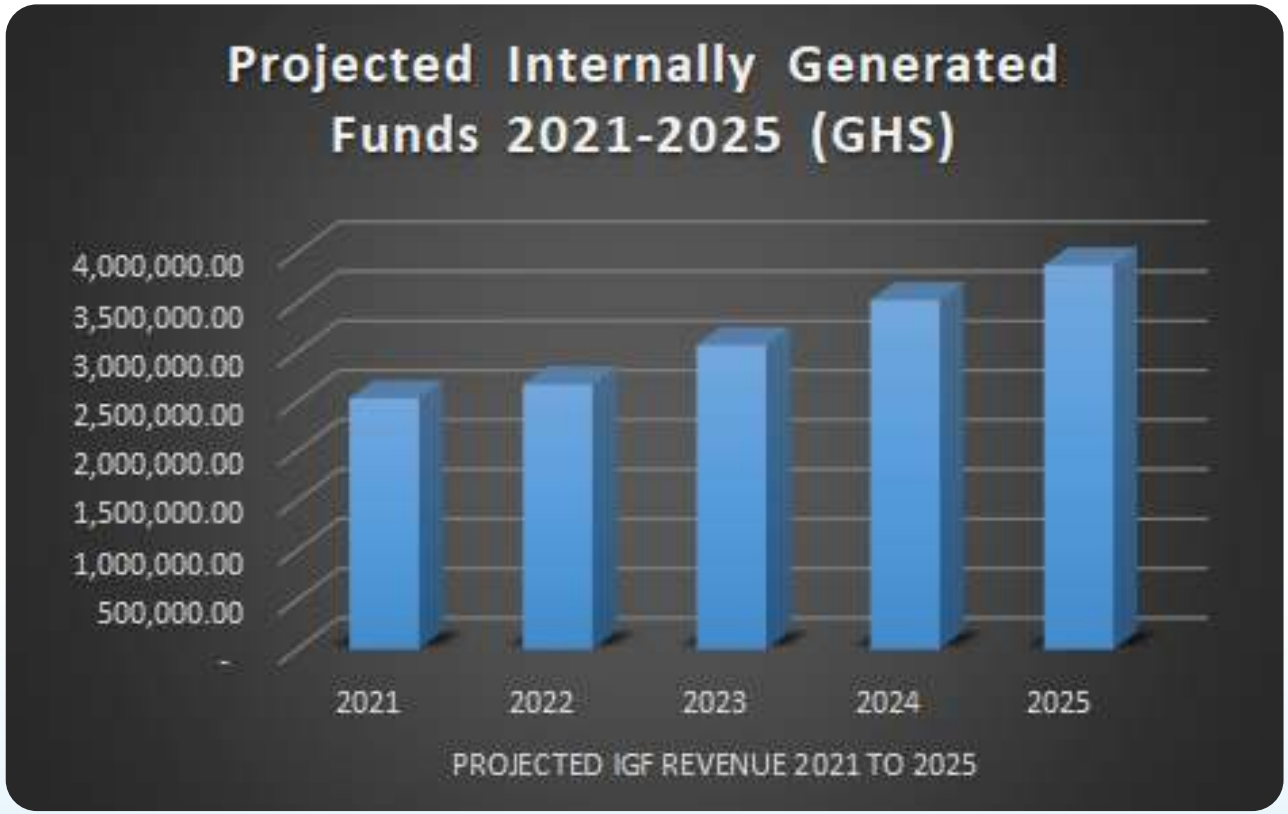
- NRA's goal of inspecting new medical, research and industrial facilities
- NRA's goal of decreasing Accounts Receivables by 95% by end of the 5 years
- New oil basin exploration business coming into operations which will lead to a minimum of 50 new radiation sources.
- Synergy between NRA & Other Bodies
- Increase in Fees and Charges



The figures in this section presents a forecast of revenue from internally generated funds and government subvention, it also presents a forecast of operational expenses for the Authority. NRA projects that IGF will grow from GHS 2.5M in 20201to GHS 3.8M by in 2025. The Authority projects funding from government to also grow from GHS 13.8 M in 2021 to GHS 33.3M in 2025. NRA's total expenditure is projected to grow from GHS 16.3M in 2021 to GHS 37.1M in 2025.

PROJECTED REVENUE FROM GOVERNMENT SUBVENTION 2021 TO 2025

	2021	2022	2023	2024	2025
Compensation of Employees	13,188,664.00	20,462,374.51	24,554,849.49	29,465,819.39	32,412,401.33
Goods and Services	435,816.70	479,398.37	527,338.21	580,072.03	638,079.23
Capital Expenditure	200,000.00	220,000.00	242,000.00	266,200.00	292,820.00
Total	**13,824,480.70**	**21,161,772.88**	**25,324,187.70**	**30,312,091.42**	**33,343,300.56**



PROJECTED IGF REVENUE 2021 TO 2025

	2021	2022	2023	2024	2025
Permits	331,524.88	364,677.36	401,145.10	441,259.61	485,385.57
Inspection	1,093,575.31	1,153,224.87	1,337,740.85	1,551,779.38	1,706,957.32
Other Income	1,106,427.45	1,156,719.61	1,330,227.55	1,529,761.69	1,682,737.86
Total	**2,531,527.64**	**2,674,621.84**	**3,069,113.50**	**3,522,800.68**	**3,875,080.75**

Financial Sustainability

Sustainability is the ability to mobilize resources (human, infrastructure, logistics, financial, etc.) to maintain operations over a long period of time. NRA seeks to outline potential sources of income that can serve as reliable source of long-term funding to support operational expansion and achieve long-term objectives. The need for financial sustainability of the Authority is a key consideration for management as Government's fiscal space continues to tighten up.

In Ghana, public agencies have difficulty in fulfilling their legal mandate as government subvention for the most part, is unable to cover all their operational expenses. The need for a sustainability plan is more heightened now, as government implements its weaning-off agenda that seeks to gradually take public agencies off government subvention.

It is for this reason that NRA, a relatively new regulatory Authority, is focusing on financial sustainability into resource planning and management. This will enable NRA to fulfill its critical mandate of regulating activities and practices for the peaceful use of nuclear energy and radiation within the jurisdiction of Ghana.