



Republic of Liberia



International Atomic Energy Agency

Country Programme Framework 2026–2030

This Country Programme Framework for the Republic of Liberia (2026– 2030) has been signed on behalf of the Government of the Republic of Liberia and the International Atomic Energy Agency

On behalf of the Government

On behalf of the International Atomic
Energy Agency

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LIST OF ABBREVIATIONS

AAID	ARREST Agenda for Inclusive Development
AfT	Agenda for Transformation
AUC	African Union Commission
CARI	Central Agricultural Research Institute
CBL	Central Bank of Liberia
CGIAR	Consultative Group on International Agricultural Research
CHAI	Clinton Health Assets Initiative
COMENA	Commissariat à l'Energie Atomique
CPF	Country Programme Framework
CPN	Country Programme Note
DPoA	Doha Program of Action
EC	European Commission
ECOWAS	Economic Community of West African States
EPA	Environmental Protection Agency of Liberia
EPML	Environmental Protection and Management Law of Liberia
ELL	Electricity law of Liberia
EU	European Union
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GHI	Global Hunger Index
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IAEA	International Atomic Energy Agency
IARC	International Agency for Research on Cancer's
IDA	International Development Association
IFAD	International Fund for Agricultural Development

IIAG	Ibrahim Index of African Governance
INSSP	Integrated Nuclear Security Sustainability Plan
IRENA	International Renewable Energy Agency
ISFM	Integrated Soil Fertility Management
IWRM	Integrated Water Resource Management
JFK	John F. Kennedy Memorial Centre
LBNM	Liberian Board for Nursing and Midwifery
LCS	Liberia Cancer Society
LERC	Liberia Electricity Regulatory Commission
LHS	Liberian Hydrological Services
LISGIS	Liberia Institute of Statistics and Geographic Information Services
LMDC	Liberia Medical and Dental Council
LMHRA	Liberia Medical and Health Regulatory Authority
LWSC	Liberia Water and Sewer Corporation
MAED	Model for Analysis of Energy Demand
MESSAGE	Model for Energy Supply Strategy Alternatives and their General Environmental Impacts
MFDP	Ministry of Finance and Development Planning
MME	Ministry of Mines and Energy
MOA	Ministry of Agriculture
MoFA	Ministry of Foreign Affairs
MOH	Ministry of Health
MOJ	Ministry of Justice
MRU	Mano River Union
NCCP	National Cancer Control Plan
NEP	National Energy Policy of Liberia
NPHIL	National Public Health Institute of Liberia

NRL	National Reference Laboratory
NUTEC	Nuclear Technology for controlling Plastic pollution
NWASH	National Water, Sanitation and Hygiene Commission
RESMP	Rural Electrification Strategy Master Plan of Liberia
RREA	Rural and Renewable Energy Agency
SE4ALL	Sustainable Energy for All
SIDA	Swedish International Development Cooperation Agency
SDGs	Sustainable Development Goals
SMR	Small Modular Reactor
TC	Technical Cooperation
UL	University of Liberia
UN	United Nations
UNEP	United Nations Environment Programme
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
UNSDCF	United Nations Sustainable Development Cooperation Framework
USAID	United States Agency for International Development
US CDC	US Centre for Disease Control and Prevention
VWB	Veterinarians Without Borders
WBG	World Bank Group
WHO	World Health Organization
WJP	World Justice Project
WOAH	World Organization for Animal Health
ZODIAC	Zoonotic Disease Integrated Action

EXECUTIVE SUMMARY

The Country Programme Framework (CPF) for Liberia (2026-2030) defines the strategic priorities for technical cooperation between Liberia and the International Atomic Energy Agency (IAEA). It guides the formulation of impactful projects aligned with national development priorities and the Sustainable Development Goals (SDGs), particularly SDGs 2, 3, 5, 6, 7, 8, 9, 12 and 15.

This CPF was developed through inclusive consultations involving the Ministry of Foreign Affairs (as National Liaison Office), the Environmental Protection Agency, the Ministries of Agriculture, Health, Mines and Energy, as well as UN partners such as UNDP, FAO and WHO. The development process sought to integrate gender perspectives and benefit from diverse institutional inputs.

The CPF is fully aligned with Liberia's national development plan, the ARREST Agenda for Inclusive Development (2025-2029), which prioritizes food security, infrastructure, governance, human capital, sanitation etc. It also builds on lessons learned from the implementation of the first CPF (2019-2025), which enabled the country to reengage in the TC programme after a long period of inactivity.

Thematic priorities for 2026-2030 include:

- Nuclear and Radiation Safety and Security: Establishing a comprehensive regulatory framework and independent authority.
- Food and Agriculture: Improving crop and livestock productivity, food safety, and sustainable soil and water management through nuclear technologies.
- Health and Nutrition: Establishing a radiotherapy facility and applying nuclear techniques to assess maternal and child nutrition.
- Energy and Industry: Enhancing national capacity in energy planning using IAEA tools and supporting national energy strategy development.
- Water and Environment: Building technical capacity to apply isotopic techniques for sustainable water resources management.

Liberia have officially confirmed their participation in flagship IAEA initiatives such as Rays of Hope, Atoms4Food, ZODIAC, and NUTEC Plastics, which presents an excellent opportunity for Liberia to leverage the contribution of the initiatives to address identified national priority gaps in each thematic area.

Implementation of the CPF will be carried out in close coordination with national institutions and international partners and will be subject to review at the end of each TC cycle and prior to the next CPF. Liberia may also revise the CPF at any point in response to major shifts in national priorities or circumstances.

1. INTRODUCTION

The CPF for Liberia (2026-2030) outlines strategic areas for technical cooperation between Liberia and the IAEA, where nuclear technology can significantly support national development. The CPF is aligned with the national ARREST Agenda for Inclusive Development (2025-2029) and relevant sectoral plans.

The CPF was developed through broad-based consultations involving policymakers and technical experts across multiple ministries and institutions, including the Environmental Protection Agency (EPA), Ministry of Foreign Affairs (MoFA), Ministry of Agriculture (MOA), Ministry of Health (MOH), Ministry of Mines and Energy (MME), JFK Medical Centre and the University of Liberia. The process was coordinated by the National Liaison Office and incorporated gender considerations and inclusive stakeholder engagement to reflect diverse perspectives.

The CPF identifies six priority areas for technical cooperation: (i) nuclear and radiation safety and security, (ii) food and agriculture (including crop productivity, animal health, soil and water management, and food safety), (iii) human health and nutrition (including radiotherapy for cancer care), and (iv) energy and industry.

2. SITUATION ANALYSIS

Liberia is a low-income country on the West African coast, with a population of approximately 5.5 million. Despite its wealth of natural resources and biodiversity, the country faces persistent development challenges, including inadequate infrastructure, heavy reliance on imported energy, vulnerability to external economic shocks. Liberia is still recovering from the impacts of civil conflict and the COVID-19 pandemic, with high unemployment and inequality continuing to constrain human capital potential.

Liberia's national development is guided by the ARREST Agenda for Inclusive Development (AAID, 2025-2029), which prioritizes economic diversification, infrastructure development, governance, environmental sustainability, human capital. The AAID is aligned with Liberia's Vision 2030, Africa Agenda 2063, ECOWAS Vision 2050, and the Sustainable Development Goals (SDGs), notably SDGs 2, 3, 6, 7, 13 and 15. Key sectoral plans also inform national priorities in health, energy, food security and environmental management.

Liberia has been a Member State of the IAEA since 1962 and re-engaged in the TC programme through its first CPF (2019-2025), enabling the launch of projects in agriculture and health. As of 2025, ongoing projects include: LIR5004 on improving rice and vegetable productivity using nuclear techniques, and LIR6004 on preparatory work for a national radiotherapy facility.

The country has also received IAEA assistance in the removal and temporary storage of a Cesium-137 source and is actively engaged in planning its second CPF cycle. A Country Programme Note (2026-2027) has been submitted, proposing continued support for radiotherapy and the establishment of a radiation safety regulatory framework.

However, Liberia remains highly vulnerable to climate change impacts, particularly in agriculture, water resources, and coastal zones. While adaptation is a key pillar of the AAID, further capacity is required to integrate nuclear techniques into national responses to climate-related risks and environmental challenges.

As of 2025, Liberia's institutional and technical capacity to apply nuclear science and technology remains limited. There is no independent regulatory authority for radiation protection, national legislation is still under development. Radiotherapy services are not yet operational, while diagnostic infrastructure is concentrated in a few public facilities. Nuclear techniques for food safety, water management and energy planning are largely untapped. Gender disparities persist across health, education and science sectors, with limited representation of women in technical fields and disproportionate health burdens among women and children.

Liberia also lacks sufficient monitoring infrastructure and technical expertise to inform climate change mitigation and adaptation. These capacity gaps are further compounded by systemic challenges in financing, staffing, and coordination across institutions.

Successful implementation of the CPF will require sustained political commitment, timely resource mobilization and targeted capacity building across national institutions and technical counterparts.

2.1 LEGAL FRAMEWORK

The legislative framework for radiation safety in Liberia is provided primarily through the Environmental Protection and Management Law (EPML) of Liberia promulgated in 2003. Section 44 of the EPML gives the Environmental Protection Agency (EPA) the function to regulate radiation sources in Liberia. Radiation Safety Regulations were issued in December 2024.

As outlined in Annex II, in radiation and nuclear safety, Liberia is party to the Convention on Early Notification of a Nuclear Accident, the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, the Convention on Nuclear Safety. In the area of nuclear security, it is party to the Convention on the Physical Protection and its Amendment. In addition, Liberia concluded with the IAEA an agreement for the application of safeguards as well as a protocol additional to the SAFEGUARD'S agreement.

Through its legislative assistance programme, the IAEA can provide assistance in the development of a comprehensive nuclear law and support adherence to relevant international nuclear law instruments.

2.2 RADIATION SAFETY AND NUCLEAR SECURITY

Liberia has no comprehensive radiation safety law and lacks an independent regulatory authority. The existing legislative framework relies primarily on the Environmental Protection and Management Law (EPML) of 2003, which assigns regulatory functions for radiation to the Environmental Protection Agency (EPA). Section 44 of the EPML outlines limited responsibilities for inspecting facilities and enforcing compliance. However, it does not sufficiently address radiation protection, licensing, enforcement mechanisms, or the security of radioactive sources.

In 2024, Liberia finalized draft Radiation Safety Regulations to partially fill these legal gaps. The IAEA has supported the country in identifying radiation sources, establishing a Radiation Safety Department within the EPA, and providing training under TC project LIR9001. The Regulatory Authority Information System (RAIS) has been implemented to strengthen control of radioactive sources, but there is still no formal system for authorization, inspection, and enforcement. Liberia has not yet submitted complete data to the IAEA's Radiation Safety Information Management System (RASIMS) or the Emergency Preparedness and Response Information Management System (EPRIMS), limiting international visibility of its infrastructure status.

Liberia is a party to key international legal instruments in nuclear safety and security, including the Convention on Early Notification of a Nuclear Accident, the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, the Convention on the Physical Protection of Nuclear Material and its Amendment. Liberia has also concluded a Comprehensive Safeguards Agreement and its Additional Protocol with the IAEA.

Despite these efforts, major institutional and technical gaps remain. There is no legally empowered and operational regulatory body, technical capacity within EPA is limited to a small number of trained officers. Radiotherapy infrastructure is still in development and cannot proceed without a functioning regulatory framework. There is also a lack of reliable data on the number and distribution of radiation sources in the country.

As of 2025, the baseline situation reflects limited enforcement capability, no operational licensing regime, only nascent technical capacity within EPA. RASIMS data is incomplete, Liberia's EPRIMS profile has not yet been developed. Regulatory and emergency preparedness functions remain under-integrated. Gender disparities persist in staffing of the regulatory authority, where women remain underrepresented in radiation safety and nuclear science professions.

Key risks include delays in the adoption of radiation safety legislation, insufficient budget allocation for the regulatory body, weak inter-agency coordination. It is assumed that the Government of Liberia will prioritize regulatory reform, allocate financial resources and ensure political support for implementation of safety standards.

Proposed interventions in this period include:

- development and enactment of a national radiation safety law aligned with IAEA safety standards and nuclear security series;
- establishment and operationalization of an independent national regulatory authority with adequate staffing and financial autonomy;
- implementation of systems for authorization, inspection, enforcement and radioactive source tracking;
- capacity building for EPA and associated institutions, including training in radiation protection, source control, and emergency preparedness;
- enhancement of Liberia's RASIMS and EPRIMS profiles to improve transparency and performance monitoring.

These efforts align with the ARREST Agenda's pillar on governance and institutional reform and contribute to SDGs 3 (Good Health and Well-being), 12 (Responsible Consumption and Production) and 16 (Peace, Justice and Strong Institutions).

The *planned outcome* of the proposed technical cooperation programme in the thematic area of radiation safety and nuclear security is:

- Strengthened national regulatory infrastructure for radiation safety through the establishment of an independent authority with adequate legal, institutional and human resource capacity in Liberia.

2.3 FOOD AND AGRICULTURE

Agriculture is the mainstay of Liberia's economy, providing livelihoods for approximately two-thirds of the population (World Bank, 2021). The sector accounts for about 28.6 percent of Liberia's GDP in 2023 (CBL Annual Report, 2023). Most agricultural activities in Liberia are conducted by smallholder subsistence farmers, particularly in rural communities, where food crops are primarily grown. These farmers typically operate on small plots of land, averaging less than 2 hectares, and rely on rain-fed agriculture and traditional farming methods. Unfortunately, this renders them highly vulnerable to climate change impacts, significantly affecting their productivity and food security.

According to the National Oil Palm Strategy (2021- 2025), among cash crops, oil palm is particularly vital to Liberia's economy, occupying over 1 million hectares and involving about 21 percent of farming households. The sector employs over 220,000 individuals and generates substantial foreign exchange. The production of oil palm has seen a remarkable increase, from 18,104 metric tons in 2018 to 22,265 metric tons in 2019, positioning Liberia as a significant player in West Africa's oil palm industry.

According to the 2024 Global Hunger Index (GHI), Liberia ranks 120th out of 127 countries with a score of 32.2, indicating a serious level of hunger. The World Food Program's 2023 Annual Country Report highlights that a rapid Comprehensive Food Security and Nutrition Survey conducted in 2022 found that approximately 47 percent of Liberian households are food insecure, with rural areas being disproportionately affected (54 percent of rural households are faced with food insecurity compared to 40 percent in urban areas).

The AAID plan established targets that by 2029, local seeds production will increase by 30%, import of food crops will be decreased by 30%, imports of agricultural processed products will be decreased by 30% and 100 farmers cooperatives will be formalized and capacitated with climate resilient and ecological practices in agriculture, energy and alternative livelihood.

In the country, at least a third of farming households have some acreage of permanent/cash crop farms. Agricultural productivity is low due to limited application of modern technology, size of landholdings, aging agricultural workforce, and limited skilled workforce and resources for Agriculture and advisory services.

Competition from imported food products has been intense because of a long-standing policy favouring imports over locally produced rice, coupled with a range of systemic challenges within Liberia's agricultural sector that hinder domestic production and market competitiveness. Net returns have been low due to the high costs of imported inputs, which in part reflect weak infrastructure and limited support for agriculture in general, as well as agricultural research and development. Infrastructure deficits, including inadequate feeder roads, storage, processing plants, analytical labs, and energy, limit the sector's potential for industrialization and job creation. The agricultural value chains remain largely underdeveloped.

In the CPF consultations and based on the Strategic Plan of the Republic of Liberia Central Agricultural Research Institute (CARI) 2023–2030, it was suggested that the area of priority where cooperation with the IAEA could make a significant contribution in the medium term is related to quality seeds and improved animal breeds. There is an urgent need to ensure that CARI revives and enhances its capacity to produce improved crop (e.g. rice and cassava) varieties and can produce/maintain breeder, foundation/certified seeds for farmers.

The use of mutation breeding techniques coupled with relevant speed breeding and other biotechnologies in the CARI's breeding programme will play a vital role in this respect. The programme will start with rice. Further, improved management of soil, water, and crop nutrients would contribute to increased productivity of selected crops, especially Roota & Tubers, Cereal, vegetables, and soil conservation practices to reduce land degradation, as well as reducing the environmental footprint.

To boost food security, tackle hunger and address growing challenges in the Agricultural sector, Liberia joined the IAEA Atoms4Food initiative in February 2025.

The *planned outcome* of the proposed technical cooperation programme in the thematic area of Food and Agriculture is:

- Improved national capacity for sustainable agricultural productivity and food security through nuclear technologies for enhanced crop and livestock production, soil and water management, and food safety in Liberia

The planned outcome will contribute to the attainment of SDG 2 - Zero Hunger.

2.3.1 CROP PRODUCTION AND IMPROVEMENT

Liberia's primary food staples are rice and cassava. These crops are essential for food security, with rice alone accounting for half of all calories consumed in the country. The main cash crops and foreign exchange earners in Liberia are rubber, oil palm, cocoa, and coffee.

In collaboration with the CARI, support has been provided to enhance crop productivity of rice and vegetables through the application of a mutagenesis approach and the selection of improved or novel phenotypes and genotypes in conjunction with conventional and molecular breeding programmes. A molecular biology laboratory has been equipped at CARI, and in vitro culture lab is expected to be constructed at CARI. This collaboration has resulted in the generation of rice mutant lines obtained by the application of gamma irradiation (induced mutation). In the next years, the TC cooperation activities will focus on further strengthening national capacities to improve the control of transboundary plant diseases and prevent the spread of and early management of plant diseases in the country. During the period of this CPF support will continue with the objective of identifying and recommending fixed and advanced mutagenized populations of rice to the national varietal release committee for seed multiplication and release to farmers. Capacities acquired during previous projects will be used to develop advanced mutagenized populations of vegetable crops, primarily driven by the need to enhance food security and agricultural resilience in the face of environmental challenges.

The *sub- thematic* area of Crop Production and Management will contribute to the attainment of SDG 2 - Zero Hunger.

2.3.2 ANIMAL PRODUCTION AND HEALTH

Transboundary animal diseases can threaten the global food supply, reduce the availability of non-food animal products, or cause the loss of human productivity or life. This also results in socio-economic consequences, including the costs of controlling preventive measures and trade restrictions.

Animal health in Liberia is improving, particularly with initiatives to address antimicrobial resistance and strengthen surveillance. Significant progress has been made in establishing a national surveillance program, training community animal health workers, and developing biosafety guidelines. However, challenges remain, including a lack of a comprehensive livestock development policy and the need to adequately invest in human capacities development in diagnostic capabilities and technology.

Shortage of veterinary infrastructure, equipment, reagents and consumables and trained manpower (E.g. veterinarians and animal health professionals) pose challenges for Liberia's capacity to effectively prevent, detect and respond to zoonotic disease threats.

Although partners such as the Food and Agriculture Organization of the United Nations (FAO) in Liberia and United States Agency for International Development (USAID) provided some veterinary diagnostic supplies to the Government in 2023, there remains a need to build human capacity especially in early and rapid diagnosis and control of transboundary animal and zoonotic diseases of public health concern.

There are four areas of interest of Liberia in animal production and health, as follows:

i) Animal health: Development and upgrade of capacities in the use of nuclear and nuclear-related technologies for the detection, characterization, and monitoring of animal diseases, zoonotic diseases, and antibiotic resistance. This component should cover the use of serological and molecular tools for disease detection, support advanced methods for pathogen detection and characterization, application of irradiation techniques to produce safe and effective vaccines against animal pathogens, as well as support the implementation and maintenance of international standards in the relevant field (primarily ISO 17025). Targets are priority transboundary animal diseases of the Member State as well as those with zoonotic impact.

ii) Animal reproduction: Support in the programs for the establishment or upgrade of nuclear and nuclear-related technologies for the improvement of animal production through improved animal genetics and animal breeding (priority on artificial insemination of animals).

iii) Animal nutrition: The use of nuclear and nuclear-related technologies for the improvement of utilisation of locally available resources for sustainable animal nutrition and production. The priority is focused on the evaluation of alternative and non-conventional non-human edible feed resources for sustainable livestock feeding strategies with reduced greenhouse gas emission potential.

iv) Animal genetics: Use molecular techniques to improve the productive performances of the local livestock and, where feasible, the genetic resistance towards some livestock diseases.

(ii) and (iii) could be approached in the context of sustainable livestock breeding and feeding strategies that optimize production, maintain biodiversity, and mitigate the impact of livestock rearing on climate change. Use nuclear-related and molecular techniques to investigate the locally available animal feeds for improvement and inclusion for animal nutrition.

Liberia is to leverage its participation in the ZODIAC and Atoms4Food Initiatives to address identified gaps under this sub-thematic area.

The *sub-thematic area* of Animal Production and Health will contribute to the attainment of SDG 2 - Zero Hunger and SDG 3 – Good Health and Well-Being.

2.3.3 FOOD SAFETY AND QUALITY

Liberia could benefit through the Technical Cooperation Programme in building and strengthening institutional capabilities, including laboratory infrastructure and human resources needed to ensure a safe and quality food supply. Consequently, chemical and biological hazards as well as aspects of fraud can then be better controlled for consumer safety and protection as well as trade-facilitation. The country can also explore the feasibility of applying ionizing radiation for sanitary and phytosanitary applications.

Beneficiary institutions would be under the Ministries of Health, Commerce and Industry as well as Agriculture.

The *sub-thematic area* of Food Safety and Quality will contribute to the attainment of SDG 2 - Zero Hunger and SDG 3 – Good Health and Well-Being.

2.3.4 SOIL AND WATER MANAGEMENT AND CROP NUTRITION

The continuous cultivation of land in Liberia without adequate replenishment of essential nutrients has degraded the soil's fertility to a point where it can no longer support sufficient crop yields to feed the population reliably. Given the prevalence of relevant activities in Liberia, there is a heightened need to prioritize and intensify the study of nutrient cycles within the country. This information in turn will contribute to the nation's ability to develop and implement strategies for soil fertility management or replenishment. The re-establishment of soil health within agricultural systems necessitates the implementation of various soil fertility management techniques. These practices are crucial for restoring degraded soils, enhancing nutrient cycling, and improving overall soil structure and biological activity. The use of Nitrogen Fixation and organic manure could play tremendous roles in nutrient availability. The country will need to opt for many ways for Integrated Soil Fertility Management (ISFM) to increase crop production and productivity to ensure that land erosion is well-managed. Through a technical cooperation project, Liberia could build human and technical capacity to develop "climate-smart agricultural" (CSA) practices to increase productivity of rice, cassava, palm oil, conservation of natural resources, including land and water, and enhance nutrient use efficiency using isotopic and related techniques. Nuclear techniques provide critical information on strategically important issues of soil/land, including nutrient and water management, improving soil fertility, and conservation issues in the agroecosystems.

The *sub-thematic area* of soil and water management and crop nutrition will contribute to SDG 2 – Zero Hunger and SDG 15 -Life on Land.

2.4 HEALTH AND NUTRITION

The Government of Liberia recognizes that access to basic health is a fundamental contributor to the evolution of human capital that will drive the country's socio-economic development agenda. One of the objectives outlined in the AAID is to create a robust and improved health system that addresses immediate health needs while ensuring sustainable financing, affordability, and health security.

Generally, a strong health system is foundational for achieving broader development goals, improving quality of life, and fostering economic and social progress. Healthier individuals are more productive, contributing to economic growth. Reduced healthcare costs and increased workforce productivity positively impact on the economy.

The number of health facilities increased by 22 percent between 2015 and 2020, from 656 to 806, resulting in a ratio of health facilities to a population of 1 to 5,000 people. Liberia has a three-tier health system comprising health facilities at the primary, secondary, and tertiary levels of healthcare. About 49.6 percent of the health facilities are owned and managed by the government, while the remaining 50.3 percent are owned by private individuals and organizations.

Despite improvements in several health and nutrition outcomes, more efforts are required to achieve health and nutrition-related SDG commitments. Between 2007 and 2019, Liberia's under-5 mortality rate (U5MR) reduced from 110 to 93 deaths per 1,000 live births, while the maternal mortality ratio (MMR) reduced from 1,072 to 742 deaths per 100,000 live births. Over the same period, the prevalence of stunting among children under-5 declined from 39 percent to 30 percent. Data from the Global Nutrition Report show that the target of exclusive breastfeeding for children under 5 years of age is yet to be achieved. Further, micronutrient deficiencies persist, especially iron deficiency anemia; more than 4 in 10 of all women of reproductive age (15-49 years) are anemic. Similarly, infant mortality dropped from 71 to 63. The prevalence of malaria, the leading cause of morbidity and mortality, also decreased from 32 percent in 2009 to 10 percent in 2022, so the prevalence of HIV/AIDS has fallen from a peak of 2.1 percent in 2000 to 1 percent in 2022.

Currently, the John F. Kennedy Hospital in Monrovia is the only hospital in Liberia that provides tertiary-level healthcare.

Another challenge identified by the AAID plan is the country's inability to provide thorough healthcare services for cancer treatment. Although figures for the nation's cancer burden are not available, the International Agency for Research on Cancer's (IARC's) GLOBOCAN estimated that in 2018, there were approximately 2,808 new cancer cases and 2,223 cancer deaths. IARC estimates the risk of developing cancer before the age of 75 years in Liberia is one out of every nine persons. Incidence is to 3,144 and deaths to 2,566 cases by 2040. The disease control strategies should be designed to address the leading cancers, cervix, breast, liver and prostate, which constitute nearly two thirds of all cancers in Liberia.

Only two public and one private facility are currently screening for cancer. Molecular diagnostic and microbiology techniques are used at the National Reference Laboratory (NRL), and at Phebe and Tappita hospitals. However, capacity for diagnosis is very much limited due to a combination of infrastructure deficits, inadequate human resource and technical capacities, and inadequate or lack of modern diagnostic equipment. Diagnosis of cancer in Liberia is limited to some basic investigations (haematology, biochemistry) in public and private

facilities. Facilities for diagnostic imaging are limited to conventional X ray and ultrasonography. There is little or no access to chemotherapy and radiotherapy, thus rendering cancer treatment services very inadequate.

Following a formal request from the Ministry of Health in January 2022, the IAEA, WHO and IARC are providing technical support for the development of a new NCCP. A national drafting team and international expert team have been nominated. The request from the Ministry of Health cited the importance of establishing the first radiotherapy facility in the country in the context of a comprehensive, costed NCCP.

The development of radiation therapy facilities when established will contribute toward ensuring healthy lives for all, thereby promoting the attainment of Sustainable Development Goal (SDG) 3.

In December 2022, The Minister of Health submitted a formal request for Liberia to participate in the Rays of Hope initiative. IAEA support towards the planned radiotherapy facility for Liberia will be provided under this initiative.

Under nutrition, development of technical capacity to apply stable isotopes and related nuclear techniques to assess nutrition outcomes associated with maternal and child nutrition would be relevant to attaining both SDG 2 Zero Hunger and SDG 3 Good Health and wellbeing goals.

The *planned outcome* in the thematic area of Health and Nutrition is:

- Strengthened national capacity to deliver quality radiation medicine services for cancer diagnosis and treatment and to apply nuclear techniques for nutrition assessment for the population of Liberia.

The outcomes will contribute to the attainment of SDGs 2 and 3 – Zero Hunger and Good Health and Well-Being.

2.5 ENERGY AND INDUSTRY

Adequate and affordable energy supply is fundamental for economic growth, higher living standards and social equity. The delivery of modern energy services helps to improve the quality of life of all citizens of any given country, expands opportunities for business - and ultimately creates jobs. Ensuring access to affordable, reliable, sustainable and modern energy for all (SDG 7) is considered as central to achieving the SDGs.

The government of Liberia has aligned its National Energy Policy objectives toward supporting international and regional development goals as reflected in Liberia's Sustainable Energy for All (SE4All) Action Agenda to achieve SDG 7 - Access to Affordable Energy for All and energy policy objectives of the Economic Community of Western African States (ECOWAS) by 2030.

Liberia has one of the lowest electrification rates in the world and given the disperse settlements, grid electrification is not a feasible option in the short-term for many in the remote counties. About one-third of Liberian population of 5.493 million lives within an 80-km radius of the capital Monrovia, while the rest of the population is scattered within 14,000 settlements throughout the country. In 2024, The Liberia Electricity Corporation (LEC), Liberia's National Utility reached about 300,000 household connections contributing access to electricity of 33% nationally (of which 50% is urban and 8% is rural population).. Although this signals an increase in access to electricity from 3% in 2012, there is still much to do to ensure equitable access to electricity across the country.

In 2018, Liberia received the first energy planning support from the IAEA to develop its National Energy Balance as part of efforts to strengthen its energy planning capacity through the national project LIR/2001. The project which lasted until 2020, led to the preparation of Liberia's National Energy Balance (showing the flow of energy from import, production/generation and on to final consumption across sectors including residential, transport, mining & industry, agriculture & forestry, commercial, and government services. The initiative also helped build national capacity by training Liberian professionals in energy statistics and modelling, contributing to evidence-based decision-making and laying the groundwork for future energy planning tools like MAED (Model for Analysis of Energy Demand) and MESSAGE (Model for Energy Supply Strategy Alternatives and their General Environmental Impact).

There was a growing need to ensure the full involvement of all stakeholders in making decisions on energy demand and supply infrastructures considering all possible energy supply and demand options.

Despite the development of the National Energy Balance, there remains a need to grow sector capacities on the development of National Energy Master Plan for Liberia toward building a resilient energy sector and increase access to electricity while ensuring environmental sustainability

The *planned outcome* of the proposed technical cooperation programme in the thematic area of energy is thus:

Strengthened national capacity for integrated energy planning through the development of a National Energy Master Plan and use of energy modelling tools.

The outcome will contribute to the attainment of SDG 7 – Clean and Affordable Energy and National Energy Policy Objectives of affordable and quality access in an environmentally friendly manner.

2.6 WATER RESOURCES AND ENVIRONMENT

Liberia's abundant freshwater systems and biodiversity-rich forests represent vital environmental assets and livelihoods for many communities. However, these resources are increasingly threatened by the compounded effects of climate change, deforestation and unsustainable land use. Climate-induced disruptions include erratic rainfall, prolonged dry seasons, rising sea levels. They pose serious risks to water availability, agricultural productivity and public health. The National Adaptation Programme of Action (2008) and subsequent climate strategies highlight water resource stress and ecosystem degradation as priority concerns.

To address these, Liberia has adopted the National Integrated Water Resources Management (IWRM) Policy, which aims to improve governance of water use, promote equitable access and enhance resilience. The ARREST Agenda for Inclusive Development (AAID, 2025-2029) also includes environmental sustainability and climate resilience as core pillars.

These frameworks align with SDG 6 (Clean Water and Sanitation), SDG 13 (Climate Action), SDG 15 (Life on Land) and with the UNSDCF Outcome 3, which focuses on improved natural resource governance and climate adaptation.

Despite these commitments, Liberia's technical capacity to monitor, assess and sustainably manage water resources remains limited. National expertise in hydrological assessment is constrained, and the use of advanced tools such as isotopic techniques is largely absent. No national laboratory currently applies isotope hydrology for water source mapping, recharge analysis or contamination tracing, despite the relevance of such data for effective water allocation and planning.

Liberia's growing interest in environmental monitoring and climate-resilient agriculture offers strong potential for introducing nuclear techniques in the sector. Institutions such as the Liberia Hydrological Service, Environmental Protection Agency (EPA), Ministry of Mines and Energy could be engaged as primary counterparts, in coordination with academic institutions and rural water providers.

Given the intensifying impacts of climate change on Liberia's hydrological systems, nuclear science and technology (particularly isotope hydrology) can offer precise and cost-effective tools to inform long-term policy and investment decisions.

The *planned outcome* of the proposed technical cooperation programme in the thematic area of Water Resource and Environment is thus:

Enhanced national capacity of technical institutions in the application of isotopic techniques for the sustainable management of water resources in Liberia.

The outcome will contribute to the attainment of SDG 6 – Clean Water and Sanitation, SDG 13 – Climate Action, and SDG 15 – Life on Land.

3. RESULTS MATRIX

TABLE 1: RESULT MATRIX

3.1 Radiation Safety and Nuclear Security

Outcome(s)	Baseline	Indicators	Means of Verification	Assumptions/Risks
Outcome 1				
Strengthened national regulatory infrastructure for radiation safety through the establishment of an independent authority with adequate legal, institutional and human resource capacity in Liberia.	No independent regulatory body legally established or operational as of 2025. No formal system in place for authorization, licensing, inspection or enforcement of radiation safety provisions. Incomplete national data in RASIMS; no EPRIMS profile developed. Technical capacities within EPA remain limited to a few trained officers; women are underrepresented in radiation safety functions.	Number of national legal instruments enacted for radiation safety and security by 2030. Status of independent regulatory body for radiation safety and security by 2030 (established and operational). Status of Liberia's RASIMS and EPRIMS profiles by 2030. Percentage of female staff in radiation safety roles within the regulatory authority by 2030	Government records. Foundational documents of the regulatory body (such as statute, organogram, annual reports etc.). IAEA RASIMS and EPRIMS portals. Human resources records of the regulatory authority / EPA staffing reports.	Assumptions: The Government of Liberia allocates adequate financial and human resources to establish and sustain the regulatory authority. Radiation safety legislation is enacted and enforced within the CPF cycle timeframe. Trained personnel remain in place and continue to operate regulatory systems. Liberia maintains commitment to international safety and security standards (IAEA instruments, RASIMS, EPRIMS). RISK: Delays in the passage of national radiation safety legislation. Insufficient inter-agency coordination between EPA, MOH, MME and MOJ. Limited national budget allocation to support regulatory operations. Incomplete or outdated data submission to RASIMS and EPRIMS platforms.

3.1 Radiation Safety and Nuclear Security

Indicative Outputs	Indicative Timeframe (Future TC cycle)	Relevant national counterpart(s)/ institute(s)	Approximate Cost in € (A)	Estimated resources* available in € (B)	Resources to be identified/mobilised in € (A-B)
Output 1.1 Radiation safety and security legislation, including provisions for authorization, inspection and enforcement, developed and submitted for adoption in alignment with IAEA safety standards.	2026-2028	EPA, MME, MOJ, Legislature & MoFA	100,000	20,000	80,000
Output 1.2 Radiation safety and security legislation, including provisions for authorization, inspection and enforcement, developed and submitted for adoption in alignment with IAEA safety standards.	2026-2030	EPA, MME, MOJ, Legislature & MoFA	300,000	50,000	250,000
Output 1.3 Institutional capacities of the regulatory authority and relevant institutions strengthened through training, expert support, and validated use of RASIMS and EPRIMS tools.	2026 - 2029	EPA, MME, MOJ, MoFA, Legislature	100,000	20,000	80,000
Nuclear and Radiation Safety and Nuclear Security Subtotals					
			Approximate Cost in € (A)	Estimated resources* available in € (B)	Resources to be identified/mobilised in € (A-B)
			500,000	90,000	410,000

(*)-The above stated figures are indicative. Signing of the CPF does not commit to funding of the CPF implementation by the Member State or the IAEA, nor does it suggest the expectation of continued levels of Agency funding. The main purpose is to assist planning and prioritization of the country programme framework.

3.2 Food and Agriculture

Outcome(s)	Baseline	Indicators	Means of Verification	Assumptions/Risks
Outcome Improved national capacity for sustainable agricultural productivity and food security through nuclear technologies for enhanced crop and livestock production, soil and water management, and food safety in Liberia.	Limited capacity of CARI and national institutions to develop and release improved crop varieties using mutation breeding and related biotechnologies. Lack of infrastructure, equipment and skilled personnel for early detection and control of transboundary animal and zoonotic diseases using nuclear-based diagnostics. Inadequate equipment, infrastructure and trained staff for food safety testing and low awareness of the feasibility and benefits of food irradiation technologies. Limited institutional and technical capacities to apply isotopic and nuclear techniques for climate-smart soil, water and nutrient management in agriculture.	# of improved crop varieties developed using nuclear techniques (for example, mutation breeding) and advanced to national varietal release stage by 2030. # of priority transboundary animal and zoonotic diseases for which nuclear-based diagnostic tools and protocols are routinely applied by 2030. % of food safety laboratories applying validated analytical methods (including those related to irradiation) in accordance with national or international standards by 2030. # of institutions applying isotopic or nuclear techniques for integrated soil-water-nutrient management by 2030.	National institutional reports from CARI, veterinary and food safety authorities. Varietal release documentation and research publications. Training records and certification logs. Laboratory and equipment inventories. Accreditation and audit reports. TC project progress and completion reports with identification of progress achieved.	Assumptions: Skilled personnel are available and retained. Government remains committed and allocates timely resources. Partner institutions like CARI remain active and engaged. Favourable weather allows field testing and implementation. Risks: Delays in infrastructure and procurement. High staff turnover and weak institutional continuity. Extreme weather events affecting effectiveness of technologies. Poor coordination among relevant institutions. Insufficient long-term funding for sustained operations.

Indicative Outputs	Indicative Timeframe (Future TC cycle)	Relevant national counterpart(s)/ institute(s)	Approximate Cost in € (A)	Estimated resources* available in € (B)	Resources to be identified/mobilised in € (A-B)
Output 1 Institutional and human capacity for crop improvement enhanced through application of radiation mutation breeding and related biotechnologies at CARI.	2026-2027	MOA, EPA	300,000	250,000	50,000

Output 2	2027 - 2030	MOA			
Laboratory and human capacity for early detection and control of transboundary plant and animal diseases strengthened using nuclear and related techniques.			100,000	0	100,000
Output 3	2026-2030	MOA	600,000	50,000	550,000
Technical and institutional capacities improved for food safety monitoring, including testing infrastructure and awareness of food irradiation.					
Output 4	2026 - 2030	MOA			
National capacity strengthened to apply climate-smart soil, water and nutrient management practices using nuclear and related techniques.			500,000	50,000	450,000
Food and Agriculture Subtotals					
			Approximate Cost in € (A)	Estimated resources* available in € (B)	Resources to be identified/mobilised in € (A-B)
			1,500,000	350,000	1,150,000

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3.3 Health and Nutrition

Outcome(s)	Baseline	Indicators	Means of Verification	Assumptions/Risks	
Outcome Strengthened national capacity to deliver quality radiation medicine services for cancer diagnosis and treatment and to apply nuclear techniques for nutrition assessment for the population of Liberia.	No radiotherapy services or equipment in place. Only basic diagnostic imaging (X-ray, ultrasound) available. No nuclear medicine services (such as image-guided biopsy, ablation). Roadmap for radiation medicine centre developed in 2024. No trained personnel in radiation medicine (oncologists, physicists etc.). No infrastructure for nutrition-related nuclear techniques. No trained staff for isotope-based nutrition assessment. No national protocols or data on nutrition using nuclear techniques.	Radiation medicine facility for cancer diagnosis and treatment established and functional by 2030. Number of trained medical professionals (such as radiation oncologists, medical physicists, radiographers) working in radiation medicine by 2030. National protocols for applying nuclear techniques for nutrition assessment developed and approved by 2030. Number of national staff trained in isotope-based nutrition assessment techniques by 2030. Number of patients receiving radiation medicine services per year starting from operationalization of the facility. No national protocols or data on nutrition using nuclear techniques.	Commissioning reports and facility service data. Training records and staffing rosters. Approved national protocols and guidelines. IAEA and national training reports. Official health and nutrition statistics	Assumptions: Government remains committed to cancer and nutrition programmes and cooperation with IAEA. Required funds and infrastructure are made available on time. Trained staff are retained and deployed effectively. Key facilities remain functional and suitable for implementation. Risks: Delays in infrastructure or equipment procurement. High turnover among trained personnel. Weak coordination among key institutions. Insufficient long-term funding for operations.	
Indicative Outputs	Indicative Timeframe (Future TC cycle)	Relevant national counterpart(s)/ institute(s)	Approximate Cost in € (A)	Estimated resources* available in € (B)	Resources to be identified/mobilised in € (A-B)
Output 1.1 Radiotherapy facility established and equipped in line with national cancer control priorities.	2026-2030	MOH, JFK, NPHIL, MOF, EPA	2,500,000	100,000	2,400,000
Output 1.2: National human resource capacity enhanced in radiation medicine and nuclear-based nutrition techniques.	2026-2030	MOH, JFK, NPHIL, MFD	500,000	100,000	400,000

Output 1.3: Laboratory capacity for nutrition assessment using stable isotope techniques established.	2026 – 2030	MoA	300,000	50,000	250,000
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Health and Nutrition Subtotals					
Approximate Cost in € (A)	Estimated resources* available in € (B)	Resources to be identified/mobilised in € (A-B)			
3,300,000	250,000	3,050,000			

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3.4 Energy and Industry

Outcome(s)	Baseline	Indicators	Means of Verification	Assumptions/Risks
Outcome Strengthened national capacity for integrated energy planning through the development of a National Energy Master Plan and use of energy modelling tools.				Assumptions: Government remains committed to integrated energy planning and endorses the use of modelling tools and scenario-based planning. Trained staff in key institutions remain in post to ensure continuity in energy planning. Technical support and data inputs from national utilities and sector stakeholders are consistently available for energy modelling work. Funding is allocated for follow-up activities beyond the Master Plan development (for example, dissemination, stakeholder consultations, policy integration).
	Liberia has no National Energy Master Plan.	National Energy Master Plan developed and officially adopted by 2029.	Approved National Energy Master Plan document.	
	Limited national capacity in energy demand/supply modelling and planning.	Number of national institutions with in-house capacity to apply energy modelling tools for long-term energy planning by 2029.	Technical documentation of adopted energy modelling tools.	
	MAED and MESSAGE tools not yet fully integrated into national energy decision-making.	Number of national experts trained and actively using IAEA-supported energy modelling tools (such as MAED, MESSAGE) by 2030.	Training certificates and completion reports from relevant institutions.	
	Limited trained personnel in integrated energy planning and modelling.		Official reports from MME, LERC, RREA and LEC detailing progress and implementation.	
	Fragmented coordination among national institutions involved in energy policy and planning.	Formal coordination mechanism established to integrate nuclear energy considerations into national energy policy by 2030	Workshop and meeting reports on modelling tool adoption and validation. Inventory or registry confirming institutional adoption of modelling tools.	Risks: Limited institutional coordination between energy, environment and planning bodies may hinder integration of modelling results into policy. Trained personnel may leave or be re-assigned, leading to loss of modelling expertise. Insufficient or unreliable data may delay the modelling process or reduce its accuracy. Political or economic shifts may deprioritize the Master Plan implementation or lead to delays in formal adoption.
Indicative Outputs	Indicative Timeframe (Future TC cycle)	Relevant national counterpart(s)/ institute(s)	Approximate Cost in € (A)	Resources to be identified/mobilised in € (A-B)

3.4 Energy and Industry

	2026-2030	MME, LERC, RREA & LEC	Energy and Industry Subtotals		
			Approximate Cost in € (A)	Estimated resources* available in € (B)	Resources to be identified/mobilised in € (A-B)
Output 1.1 National staff from MME, LERC, RREA and LEC trained in energy statistics, energy demand and supply modelling (MAED and MESSAGE).	2026-2030	MME, LERC, RREA & LEC	100,000	20,000	80,000
Output 1.2 Feasibility study on the potential establishment of a Small Modular Reactor (SMR) developed and submitted to national authorities.	2026-2030	MME, LERC, RREA, LEC	100,000	20,000	80,000
Output 1.3 Preliminary assessment on infrastructure, regulatory readiness and safeguards considerations for nuclear energy compiled and shared with key energy stakeholders.		MME, LERC, RREA, LEC	50,000	10,000	40,000
			250,000	50,000	200,000

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3.5 Water Resources and Environment

Outcome(s)	Baseline	Indicators	Means of Verification	Assumptions/Risks
Outcome Enhanced national capacity of technical institutions in the application of isotopic techniques for the sustainable management of water resources in Liberia.	No personnel trained in isotope hydrology; no sex-disaggregated data available. No national institutions applying isotopic techniques; no operational capacity exists. No laboratory infrastructure or equipment for isotope hydrology available or functional.	Number of personnel (female and male) trained in isotope hydrology techniques. Number of national institutions applying isotopic techniques for water resource management Status of national laboratory infrastructure established and operational for isotope hydrology.	Training certificates. Official training reports from national counterparts and implementing partners. Institutional HR and staffing records. Technical reports from EPA, LHS or project teams demonstrating application of isotopic techniques. Commissioning reports of laboratory infrastructure. Inventory of procured equipment and supplies. Physical verification or photographic documentation of laboratory installation. Progress reports submitted to IAEA.	Assumptions: Sustained government commitment to improving water governance and environmental sustainability. Continued political stability and policy alignment with the ARREST Agenda and IWRM Policy. Active participation of key technical institutions (LHS, EPA, MME, academic partners) in implementation. Availability of relevant baseline hydrological data and complementary field data. Increasing national demand for decision-support tools for climate-resilient water resource planning. Risks: Limited financial resources to establish and maintain isotope hydrology infrastructure. High turnover or reassignment of trained personnel in national agencies. Delays in procurement and administrative procedures affecting timely implementation. Insufficient coordination between key institutions in water, energy and environment sectors. Climate-related shocks that may disrupt planned activities.

3.5 Water Resources and Environment

Indicative Outputs	Indicative Timeframe (Future TC cycle)	Relevant national counterpart(s)/ institute(s)	Approximate Cost in € (A)	Estimated resources* available in € (B)	Resources to be identified/mobilised in € (A-B)
Output 1.1 Human resource capacity on isotopic techniques for water resource management enhanced through training and technical mentoring.	2026-2030	LHS, EPA, LWSC, NWaSH	100,000	30,000	70,000
Output 1.2 Functional laboratory infrastructure and equipment for isotope hydrology established at designated institutions.	2026-2030	LHS, EPA, LWSC, NWaSH	200,000	40,000	160,000
Output 1.3 Standard operating procedures and inter-institutional coordination frameworks for isotope-based water monitoring developed and institutionalized.	2026-2030	UL, MOA, EPA	300,000	100,000	200,000
Energy and Industry Subtotals					
			Approximate Cost in € (A)	Estimated resources* available in € (B)	Resources to be identified/mobilised in € (A-B)
			600,000	170,000	430,000

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3.7 Resources Summary

TABLE 2: RESOURCE SUMMARY TABLE

Thematic Area	Approximate Cost in € (A)	Estimated resources* available in € (B)	Resources to be identified/mobilised in € (A-B)
Nuclear and Radiation Safety and Nuclear Security	500,000	90,000	410,000
Food and Agriculture	1,500,000	350,000	1,150,000
Health and Nutrition	3,300,000	250,000	3,050,000
Energy and Industry	250,000	50,000	200,000
Water Resources and Environment	600,000	170,000	430,000
	Total estimated overall cost for CPF	Total estimated resources* available for CPF	Total resources to be identified/mobilised
	6,150,000	910,000	5,240,000
	Estimated government cost sharing (included in the above total of resources* available -B)		0
	Other estimated extrabudgetary contributions from donors/partners who have expressed interest (included in the above total of resources* available - B)		300,000
	Estimated in-kind contributions from the Government and other partners/donors that have expressed interest (included in the above total of resources** available - B)		500,000

(*)-The above stated figures are indicative. Signing of the CPF does not commit to funding of the CPF implementation by the Member State or the IAEA, nor does it suggest the expectation of continued levels of Agency funding. The main purpose is to assist planning and prioritization of the Country Programme Framework.

(**)-This estimate should reflect the total estimated value (in Euros) of in-kind contributions provided by the Member State to carry out the planned programme (in-kind examples: time of staff, infrastructure, materials, equipment, repairs, construction work, sampling costs, shipment costs, etc.)

4. PROGRAMME IMPLEMENTATION AND SUPPORT

4.1 CPF COORDINATION

The Country Programme Framework (CPF) serves as a strategic guide for planning technical cooperation between Liberia and the IAEA from 2026 to 2030. Its main aim is to identify sectoral priorities for socioeconomic development and establish a basis for designing projects aligned with Liberia's goals and IAEA support criteria.

Led by the National Liaison Officer (NLO), the CPF was developed through consultations with key ministries, including Foreign Affairs, Health, Mines and Energy, Agriculture, and the Environmental protection Agency.

The Programme Management Officer (PMO) coordinated inputs from IAEA Technical Departments, the Programme of Action for Cancer Therapy (PACT), and the Division of Programme Support and Coordination.

4.2 FUTURE REVIEW OF CPF

The CPF will be subject to a mid-term review in June 2028 to examine significant changes in the country's situation, national priorities or circumstances. The mid-term review will also be used to assess progress made towards the thematic areas and to ensure that any change in national context and/or strategic priorities are adequately integrated in the CPF.

A final review of the implementation of this CPF will be carried out at the end of each TC Programme Cycle and after the expiry of the current National Development Plan in 2029 and the development of the new UNSDCF (2025-2029). The reviews will be carried out jointly by Liberia and the IAEA, led by the CPF National Coordinator, in close cooperation with the National Liaison Officer for Liberia, the Project Management Officer for Liberia at the IAEA and the Division of Programme Support and Coordination at the Department of Technical Cooperation of the IAEA, closely engaging end-users, project counterpart institutions, beneficiaries, government authorities and other partners and donors.

The CPF review team will meet and decide on the scope, methodology and planned activities of the review process ensuring a best best-fit scenario that aligns with national priorities and/or the progress towards achieving expected outcomes.

The results of the reviews will inform better formulation of projects for the following TC programme cycle from lessons learned. The review may also result in a decision to revise the CPF document if considered necessary by Liberia and the IAEA. The final review of this CPF will be conducted in December 2029.

Extension review: This will be to confirm that the thematic priorities remain relevant and valid; in this case it will result in Chad requesting an extension of the CPF. An extension of the CPF can only be granted once and the extension period cannot exceed 3 years.

4.3 PARTNER COORDINATION

Liberia became a member of the United Nations in 1945. As a member of the UN, Liberia adopted the 2030 Agenda for Sustainable Development with the SDGs at its core.

Seventeen UN entities and international organisations have field representations in Liberia. These include FAO, UNDP, UNICEF, UNESCO, WHO, UNODC, the World Bank which are of relevance to the work of the IAEA's TC programme.

Although not resident in Liberia, the IAEA works closely with the UN Country Team, especially UNDP, FAO and WHO.

The partnership between Liberia and the UN is guided by the United Nations Sustainable Development Cooperation Framework (UNSDCF) 2020-2024 which supports the Government of Liberia's Arrest Agenda for Inclusive Development (AAID, 2025-2029). The Cooperation Framework focuses on the following four strategic results areas that will guide the work and collaboration between the Government of Liberia and the UN:

- 1) Basic Social Services: Improved rights-based, gender sensitive quality life with inclusive, equitable access and utilization of essential social services.
- 2) Sustainable Economic Development: Diversified and inclusive economic growth; sustainable agriculture, food security, job creation; and resilience to climate change and natural disasters.
- 3) Sustaining Peace and Security: Consolidated and sustainable peace; enhanced social cohesion, rule of law and human rights.
- 4) Governance and Transparency: Good governance; transparent and strengthened institutions to the delivery essential services targeting the most marginalized vulnerable

UNDP led the contribution of the UN system in the preparation of the national development plan (AAID) and FAO and WHO were involved in the development of agendas for the agriculture and health sectors respectively. This CPF has been developed based on the Liberia AAID 2025-2029 and the SDGs. The proposed programme under the CPF will contribute to the attainment of SDG 2, SDG 3, SDG 6, SDG 7, SDG 8, SDG 9, SDG 12, SDG 15 and SDG 17. Liberia is a least developed country that relies heavily on foreign assistance through UN organisations/agencies and other international organisation, as well as from donor countries. In all areas of priority identified in the CPF, there are other external stakeholders other than the IAEA. Close coordination, especially at the country level, is crucial to ensure necessary synergies. Development of the CPF involved exchange of information and consultations with relevant partners. This will be continued during implementation and review of the CPF. The National Liaison Office (Bureau for International Organisations Affairs, Ministry of Foreign Affairs) by its nature is well placed to foster partnership coordination.

The major development partners and donors assisting the development activities of Liberia include UNDP, FAO, WHO, the African Union, the World Bank, African Development Bank, Sweden, USA, Germany, Japan, UK, Norway, the European Union.

The planned projects will be implemented at the following facilities: Environmental Research and Radiation Safety Laboratory at the EPA, John F. Kennedy Medical Hospital, University of Liberia Soil Laboratory, Central Agriculture Research Institute, Ministry of Mines and Energy, Liberia Hydrological Services and National Veterinary Laboratory.

ANNEX 1: PARTNERSHIP MATRIX

Thematic Area	Outcome in National Plan or Sector Strategy	CPF Outcomes	Links with SDGs	Links with UNSDCF 2026 – 2030 Outcomes	Relevant Partners
Radiation Safety and Nuclear Security	AAID Pillar 6 Section 6.6.2 Program 45 – Health security:	Strengthened national regulatory infrastructure for radiation safety through the establishment of an independent authority with adequate legal, institutional and human resource capacity in Liberia.	SDG 3		National Environmental Protection Agency
	Environmental Protection and Management Law (EPML) Section 44		SDG 9		National NPHIL, MOH, MOJ, UL
			SDG 16		International WHO, UNEP, COMENA, EC
Food and Agriculture	AAID Pillar 1: Section 6.1.4: Increased Agriculture and fisheries Production and Productivity.	Improved national capacity for sustainable agricultural productivity and food security through nuclear technologies for enhanced crop and livestock production, soil and water management, and food safety in Liberia	SDG 2	Under development at the time of CPF's draft	National CARL, UL, MOA, EPA, NPHIL, MoH
	Program 9: Increased Local Livestock and poultry production and veterinary service delivery.		SDG 3		
			SDG 8		International FAO, UNDP, IFAD, AUC, CGIAR, Harvest Plus, EU, WB, SIDA, WOA, VWB
			SDG 9		
			SDG 12		

Thematic Area	Outcome in National Plan or Sector Strategy	CPF Outcomes	Links with SDGs	Links with UNSDCF 2026 – 2030 Outcomes	Relevant Partners
Health and Nutrition	AAID Pillar 6 Section 6.6.2: <i>Enhanced and robust health system that addresses health needs.</i> AAID Pillar 2 Section 6.2.5: Technology driven improved Health Service Delivery and Infrastructure	Strengthened national capacity to deliver quality radiation medicine services for cancer diagnosis and treatment and to apply nuclear techniques for nutrition assessment for the population of Liberia.	SDG 2 SDG 3 SDG 17	Under development at the time of CPF's draft	National EPA, LMDC, LCS, LBNM, International WHO-AFRO, UNICEF, US CDC, CHAI, AUC.
Energy	AAID Pillar 2 Section 6.2.4: Sustainable energy access and energy security	Strengthened national capacity for integrated energy planning through the development of a National Energy Master Plan and use of energy modelling tools.	SDG 7	Under development at the time of CPF's draft	National : MME, LERC, LISGIS, RREA, LEC, MFDP International UNDP, IRENA, AfDB, EU, World bank
Water Resources and Environment	AAID Pillar 5 Section 6.5.1 Program 16: Increased access to clean, safe, and	Enhanced national capacity of technical institutions in the	SDG 6	Under development at the time of CPF's draft	National EPA, MME (LHS), MoA, International

Thematic Area	Outcome in National Plan or Sector Strategy	CPF Outcomes	Links with SDGs	Links with UNSDCF 2026 – 2030 Outcomes	Relevant Partners
	reliable water supply and adequate sewage facilities.	application of isotopic techniques for the sustainable management of water resources in Liberia			UNDP, MRU, IDA, GIZ, UNEP

ANNEX 2: LIST OF PARTICIPATING INSTITUTIONS

Ministry of Foreign Affairs (MoFA): The Bureau of International Organisations Affairs of the Ministry of Foreign Affairs serves as the IAEA TC National Liaison Office in Liberia.

Environment Protection Agency (EPA): The Environmental Protection Agency (EPA) is the regulatory institution of the Government of Liberia for the sustainable management of the environment and its natural resources. The Agency was established by an act of the Legislature November 26, 2002, and published into hand bill on April 30, 2003. The EPA operates on three basic legal instruments: National Environmental Policy (NEP), Environmental Protection and Management Law of Liberia (EPML), and the Act Creating the Environmental Protection Agency. Section 44 of the EPML gives EPA the regulatory function for ionizing and other radiation.

Ministry of Agriculture (MOA): The Ministry of Agriculture (MOA) is the government ministry responsible for the governance, management and promotion of agriculture in Liberia. The Ministry is responsible for the oversight of agronomy, animal husbandry and other agriculture industries, the economic organization of the agriculture and food industries, and national food security. The work of the Ministry is divided into sectors of Livestock Production, Agricultural Chemicals and Crop Production.

Ministry of Health (MOH): The Ministry of Health is responsible for managing the health sector effectively and efficiently to deliver comprehensive, quality health services that are equitable, accessible and sustainable for all the people in Liberia. A healthy population and social protection for all.

National Public Health Institute of Liberia (NPHIL): The act creating the National Public Health Institute of Liberia mandate them to strengthens existing infection prevention and control efforts, laboratories, surveillance, infectious disease control, public health capacity building, response to outbreaks, and monitoring of diseases with epidemic potential.

John F Kennedy Memorial Hospital (JFK): This is the biggest tertiary-care hospital in the country and serves as a national referral centre for specialized treatment of patients. It also serves as a teaching hospital for the medical college of the University of Liberia and for the residency training programme of Liberia postgraduate college of physicians and surgeons. The total estimated area of the whole medical complex is about 27 acres. When inaugurated, JFKMC comprised of four institutions.

Ministry of Mines and Energy (MME): The Ministry of Mines and Energy in addition to administering mineral and water resources of Liberia has the mandate to formulate energy policies, preparation of energy master plan and other sector strategies related to energy and works in collaboration with other sector related agencies for the delivery of efficient services to the public from mineral, water and energy sectors.

Liberia Water and Sewer Corporation (LWSC): The Liberia Water and Sewer Corporation is empowered to construct, install, establish, operate and manage and supply to all parts of Liberia safe drinking water and perform all sewage services as well as to maintain such water and sewage facilities.

National Water, Sanitation and Hygiene Commission (NWaSH): The National WASH Commission is responsible to increase access to safe water supply and sanitation and improved hygiene practices thereby contributing to improved human welfare, development and Liberia's long term sustainable growth

Liberian Hydrological Services (LHS): The Liberian Hydrological Services is responsible for providing hydrological services in Liberia such as provision of information for assessing water resources, including their sources, extent, quality and dependability.

University of Liberia (UL): The university of Liberia is the nation's premier institution for higher learning, with the mission of preparing well-qualified men and women for teaching, research, public and private service, and to contribute to the achievement of the Sustainable Development Goals through human resource development.

Ministry of Justice (MoJ): The Ministry of Justice is responsible for providing effective, efficient and excellent public safety and legal services which promotes the rule of law, ensure the safety and security of the public and uphold the interest of the government and the people of Liberia.

Ministry of Finance and Development Planning (MFDP): The Ministry of Finance and Development Planning is responsible to formulate, institutionalize and administer economic development, fiscal and tax policies for the promotion of sound and efficient management of financial resources of the government.

Rural and Renewable Energy Agency (RREA): The Rural and Renewable Energy Agency is responsible to facilitate and accelerate the economic transformation of rural Liberia by promoting the commercial development and supply of modern energy products and services to rural areas through the private sector and community initiatives with an emphasis but not necessarily exclusive reliance on locally available renewable resources.

Liberia Electricity Regulatory Commission (LERC): The Liberia Electricity Regulatory Commission is responsible for maintaining a conducive regulatory environment, for accelerating universal access to affordable, reliable and safe electricity services for consumers in a competitive market, ensuring adequate supply of electricity for sustainable economic growth and enhanced quality of life.

ANNEX 3: LEGAL FRAMEWORK AND IAEA RELEVANT TREATIES

No.	Title	Status/ Signed	In Force
National Legal framework			
1	Environmental Protection and Management Law (EPML)	Enacted in 2003	2003
2	Radiation Safety Regulations	issued in December 2024	NA
Organizational			
1	Agreement on the Privileges and Immunities of the International Atomic Energy Agency	Party Accepted on September 18, 2024	18 September 2024
2	Revised Supplementary Agreement concerning the Provision of Technical Assistance by the International Atomic Energy Agency	Signed in 2018	08 November 2018
Nuclear Safety			
3	The Convention on Early Notification of a Nuclear Accident	Party Acceded on September 18, 2024	18 October 2024
4	The Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency	Party Acceded on September 18, 2024	18 October, 2024
5	The Convention on Nuclear Safety	Party Acceded on September 18, 2024	17 December, 2024
6	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	Non-Party	NA

Nuclear Security			
7	The Convention on the Physical Protection of Nuclear Material (CPPNM)	Party Acceded on September 18, 2024	18 October, 2024
8	Amendment to the Convention on the Physical Protection of Nuclear Material (ACPPNM)	Party Accepted on September 18, 2024	18 October 2024
Nuclear Liability			
9	Vienna Convention on Civil Liability for Nuclear Damage	Non-Party	NA
10	Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage	Non-Party	NA
11	Convention on Supplementary Compensation for Nuclear Damage	Non-Party	NA
12	Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention	Non-Party	NA
Non-Proliferation and Safeguards			
14	Comprehensive Safeguards Agreement	Signed 08 September 2017	10 December, 2018
15	Additional Protocol to Safeguards Agreement	Signed 08 September 2017	10 December, 2018
Intergovernmental			
17	African Regional Cooperative Agreement for Research, Development and Training related to Nuclear Science and Technology (AFRA)	Acceded on June 7, 2024	07 June 2024

ANNEX 4: DETAILS OF PAST TC PROGRAMME ACHIEVEMENTS

Liberia's engagement with the IAEA technical Cooperation (TC) programme began with the signing of the Revised Supplementary Agreement in 2018, enabling the country to fully benefit from the programme. Since then, two (2) national TC projects have been concluded (LIR 9001 and LIR /2/001) whereas two other national TC projects (LIR 5004 and LIR 6004) are continuing and reflected in the Country Programme Note (CPN) as LIR 5004 and LIR2024001) under the auspices of the TC Programme. Additionally, Liberia has been involved in two regional projects (RAF 9065 and RAF 9070 which is ongoing). The country is yet to participate in an interregional project.

Thematic area	Project Code	Results of past technical cooperation	Key counterparts, institute and partners
Radiation Safety and Nuclear Security	LIR 9001	The project was key to enhancing Liberia's capacity to manage and control radiation sources, contributing to the country's overall development goals. Main results included establishment of Radiation Safety Department at the EPA, training for staff through NTC and FE and provision of basic radiation detection and measurement equipment.	EPA
Energy Planning	LIR/2/001	The project led to the development of an energy masterplan. Staff capacity was built in energy inventory.	MME
Health and Nutrition	LIR6004	The project was key in initiating the establishment of radiotherapy services to improve the quality of lives of cancer patients.	MOH
Food and Agriculture	LIR5004	LIR5004: Enhancing Rice and Vegetable Crops' Productivity using Mutation by Speed Breeding for Food Self-Sufficiency and Income Generation.	MOA
Crop production	LIR5003	Enhancing Rice Productivity Using Induced Mutation and Speed Breeding for Food Self-Sufficiency and Income Generation. Through this project, Researchers in Liberia have enhanced their capacity in the application of mutation breeding to boost rice crop production in the country. Further research is expected to be conducted to enhance the genetic base of the improved rice crops by incorporating important agronomic traits (i.e. submergence/salinity/iron toxicity tolerance).	MOA