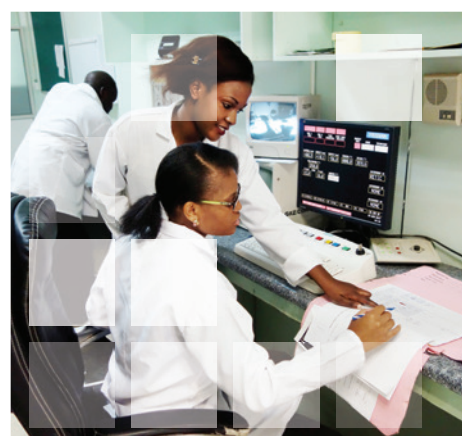


Regional Programme Framework (RPF) for Africa 2019–2023

**Department of Technical Cooperation
Division for Africa**

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Technical
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1. Introduction

Article II of the Statute of the International Atomic Energy Agency (IAEA) states that *“The Agency shall seek to accelerate and enlarge the contribution of atomic energy for peace, health and prosperity throughout the world. ...”*. The strategic goal of the IAEA’s technical cooperation (TC) programme is *“To increasingly promote tangible socio-economic impact by contributing directly in a cost-effective manner to the achievement of the major sustainable development priorities of each country”* which is reflected in the IAEA’s motto, *“Atoms for Peace and Development”*.

The TC programme provides needs-driven support to individual developing Member States and regions. These needs are identified through Country Programme Frameworks (CPFs), national development plans, regional profiles and strategic frameworks. IAEA-supported projects deliver TC support across national and regional boundaries and address the common needs of several Member States in different regions.

The TC programme in Africa is active in 45 Member States of which 26 are classified as Least Developed Countries (LDCs). The TC activities are aligned with national and regional priorities to ensure country ownership and sustainability and are driven by a vision shared by Member States and IAEA Secretariat to harness the peaceful applications of nuclear sciences and technology to foster enhanced human development and promote socioeconomic benefits in the region. The funding is mainly derived from the Technical Cooperation Fund (TCF) – a unique mechanism within the United Nations system to which all IAEA Member States are expected to contribute. The resources are supplemented by extra-budgetary contributions from donor countries and organisations, and through government cost-sharing.

Programme planning and project design, implementation and monitoring are carried out by Member States’ personnel in close collaboration with the active managerial support of IAEA Programme Management Officers (PMOs, within the Department of Technical Cooperation) and the technical and scientific backstopping of Technical Officers (TOs, within Technical Departments).

The Regional Programme Framework of the IAEA Technical Cooperation Department’s Division for Africa (TCAF) for the period 2019–2023 has been formulated to provide the frame of reference and the direction for TCAF’s strategic planning, programme development, management and monitoring during that period. The Framework is guided by the Agency’s Statute, the IAEA Medium Term Strategy 2019–2023, the IAEA Technical Cooperation Strategy (1997) and its 2002 Review, the Revised Guiding Principles and General Operating Rules to Govern the Provision of Technical Assistance by the Agency (INFCIRC-267, March 1979) and the Delivery of Technical Assistance through the Technical Cooperation (TC) Mechanism (SEC/DIR/37/Rev1, 5 December 2007). Furthermore, the Regional Programme Framework seeks to achieve a greater alignment of the delivery of the TC programme in Africa with the Global Development Agenda – especially the UN Sustainable Development Goals (SDGs) and enhanced UN system-wide coherence through the United Nations Development Assistance Framework (UNDAF). It also takes into consideration the African Union’s (AU) Agenda 2063, the African Development Bank ‘High-Five’ and the African Regional Cooperative Agreement for Research Development and Training Related to Nuclear Science and Technology (AFRA) Regional Strategic Framework (2019–2023).

The development of the Regional Programme Framework is intended to promote the concerted efforts of TCAF's staff, national role players in Member States, and counterparts involved in AFRA and other regional activities to support the effective delivery of the IAEA TC programme in the region. As such, the document presents a clear vision with strategic steps focusing on key objectives, supported by an implementable action plan that defines the attributions and expected contributions of the different stakeholders.

The Regional Programme Framework was formulated through a consultative process between TCAF and the IAEA's Technical Departments and through extensive consultations with the Member States through the National Liaison Officers (NLOs) and AFRA National Coordinators. The Framework is a living document, which will be reviewed at mid-term to evaluate progress and adjust for lessons learned, emerging good practices and evolving regional priorities.

TCAF looks forward to the support of the Member States and other relevant international and regional partners in implementing the Regional Programme Framework.

2. Regional context: Challenges and opportunities

Africa continues to face a range of development challenges, as can be seen in the following sample of development indicators:

- 26 out of the 35 IAEA Member States classified as LDCs are in Africa (76%);
- One person in four in sub-Saharan Africa is undernourished. 23% of children in Africa attend classes hungry;
- 80% of people in Africa do not have access to radiotherapy, while new cancer cases in Africa will increase by 1.4 million each year;
- 30% of the population in sub-Saharan Africa do not have access to clean and safe water;
- 64 transboundary river basins are in Africa, highlighting the need to manage shared resources in a sustainable manner;
- More than 60% of the African population does not have access to electricity.

The AU Agenda 2063 sets the vision and action plan for the development of the continent over the next 50 years. The first ten-year implementation plan (2014–2023) underpinning the Agenda (AU, 2015a) was adopted in 2014 and covers seven priority areas aligned with the SDGs.

The TC programme is the main mechanism through which the IAEA assists its Member States to harness the peaceful uses of nuclear science and technology and to build and sustain human and institutional capacities for the safe, peaceful and secure use of nuclear technology in support of sustainable development goals. In recent years, the largest TC support in financial terms has been provided in the thematic areas of Food and Agriculture, Human Health and Radiation Safety. Other important Fields of Activity (FoAs) supported relate to Water and the Environment, Industrial Applications, and Human Resources Capacity Building and Nuclear Knowledge Management.

The following sections provide a situational analysis highlighting the challenges and issues

in areas of socioeconomic significance and of scientific and technical interest relevant to the IAEA TC programme in Africa, which forms the basis for formulating the Regional Programme Framework for the period 2019–2023.

2.1 Human health

In several African Member States, health services are inadequate and health sector indicators are far below the corresponding world average values. Existing healthcare infrastructure is poor, particularly with regard to tertiary health care. Africa faces important challenges and issues that countries are attempting to solve both individually and collectively, including the highest rate of maternal and child mortality, the highest level of under nutrition, and the highest prevalence of communicable diseases among the regions.

The cancer pandemic is of particular importance to the IAEA TC programme. This pandemic has become one of the world's greatest health concerns, not just in developed countries, but also in low and middle-income countries. Africa will soon be one of the worst affected developing regions, because rates of cancer continue to rise and most people have no access to appropriate cancer treatment, management and care services. Statistics from the International Agency for Research on Cancer (IARC) show that in 2018, cancer killed over 310,000 men and 370,000 women in Africa. More resources and efforts are therefore needed to expand cancer care and management programmes throughout Africa.

There are wide disparities in the status of radiation oncology in the region, ranging from good in a few countries to poor in many other countries. Here, the situation is aggravated by inadequate diagnostic and therapeutic capacities which often lead to significant delays in delivering the necessary care to cancer patients. Most countries face severe resource limitations in relation to the purchase of equipment and maintenance, quality control and training. It is a matter of great concern that 28 countries in Africa still have no radiotherapy facilities.

The inadequacy of radiotherapy treatment capacity in the region should not only be addressed by procuring and installing radiotherapy equipment, but more importantly by training to ensure the availability of well-trained and experienced personnel, including radiation oncologists, nuclear physicians and medical physicists, to operate the equipment efficiently and implement medical diagnostic and radiotherapy procedures in accordance with the required quality and safety standards. Retention of qualified personnel in this regard is a major issue. Despite this dire situation, it is expected that the use of radiation therapy will be more and more visible in the treatment of cancer through the whole continent during the next decade.

2.2 Food and agriculture

Agriculture is a vital economic sector in the region in terms of contribution to GDP and employment. More than half of the people living on the continent depend on agriculture for all or part of their income.

Ensuring food security and adequate nutrition is a key focus for the continent's development agenda. Achieving improved agricultural productivity is essential for reducing food insecurity. The 2014 Malabo commitment – calling for ending hunger and reducing stunting to below 10 percent and underweight to below 5 percent by 2025 – embodies the goals driving the continent's policy agenda with respect to these two sectors.

There is a significant variability across the continent in terms of agricultural production systems. In most agro-ecological zones of the region, the productivity of food crops important for food security is constrained by several endogenous and exogenous factors, notably environmental challenges. Surveys by the UN's Food and Agriculture Organization show that while agricultural yields have increased overall in other continents over the past few decades, yields of the main agricultural commodities in Africa remain generally low. In order to increase production yields, better crop varieties are required with desirable traits such as disease resistance, higher yields, salt and drought tolerance. In addition, appropriate

farm management practices that make optimal use of soil nutrient and water inputs are needed. The challenge in the coming years is on how to boost agricultural production and productivity and foster the adaptability of farming systems to climate change.

Livestock production in Africa has considerable potential, but faces challenges, mainly due to diseases that include trans-boundary diseases (TADs), and issues related to production. Ensuring animal health by tackling major TADs that have a high socioeconomic impact in terms of morbidity and mortality is an important goal to promote improved livestock production and increased trade opportunities of livestock and animal products.

Over the past few decades, the application of isotopic and nuclear techniques in food and agriculture has consistently been a major component of the IAEA TC programme in Africa. In most African countries, significant efforts were deployed with IAEA support to integrate isotopic and nuclear techniques in national agricultural systems, and to promote their contributions in the areas of crop improvement, water use and soil management, animal health, animal production, insect and pest control, and food safety.

Developing improved varieties of staple food crops through the application of mutation breeding techniques and associated biotechnologies is an important area of cooperation between the IAEA and its African Member States. Applied research capabilities and basic infrastructure for laboratory work and field experiments have been put in place.

To support national and regional efforts to achieve improved animal health, cooperation between the IAEA and its Member States in Africa have focussed on upgrading diagnostic capacity through training and technology transfer. Another important part of the IAEA's TC programme in the region in food and agriculture is insect and pest control. Several countries have benefitted from IAEA support to develop technical capacity to apply the Sterile Insect Technique (SIT) in the context of area-wide integrated pest management (IPM) as part of their plans to create tsetse-free zones in selected areas.

Food safety is a key aspect of food security and is a regional public health priority. Food control systems rely on the availability and capacity of national food control laboratories to verify food safety and quality by analysing chemical and microbiological hazards. Several countries in the region have established, mainly with the support of the IAEA TC programme, some capacities in using nuclear and related techniques for the control of food contaminants.

2.3 Radiation safety infrastructure and regulatory framework

Nuclear applications using sources of ionizing radiation and radioactive materials are widespread in Africa, ranging from the health and agriculture sectors to industrial activities, scientific research and other areas. In particular, the use of ionising radiation has been steadily increasing in the medical field.

The IAEA has devoted considerable efforts and allotted substantial financial resources through the TC programme to help Member States in Africa build a robust national infrastructure for the enforcement of radiation safety standards. Several initiatives have been launched and implemented, mainly through regional and interregional projects. Over the past few TC programme cycles, the bulk of Agency assistance has been delivered under regional projects and implemented in the form of training courses, technical workshops, meetings, expert advisory services, and peer review services. National projects were also implemented with various levels of success. The IAEA support covered mainly the following thematic safety areas: strengthening regulatory infrastructure; protection of health and safety of workers occupationally exposed to ionizing radiation; radiological protection of patients; improving national capabilities in radioactive waste management; preparedness and response to a radiological/nuclear emergency; and education and training.

The Radiation Safety Information Management System (RASIMS) has been established by the IAEA as an analytical tool to monitor the status of national radiation safety infrastructures. A preliminary

assessment shows that several countries have enacted legislation governing the peaceful uses of nuclear energy. However, Radiation Safety Infrastructure (RSI) is still limited in many countries of the region. Amongst the core issues and root causes that hamper progress in several African Member States towards improving national RSIs is the inadequacy of competencies and expertise as well as budgetary constraints in building the physical infrastructure. Many African countries need to bring their national framework into line with IAEA international safety standards. Adherence to these standards is a key enabler and an essential condition for the sustainability of the peaceful application of nuclear science and technology.

2.4 Human Resource Development and Nuclear Knowledge Management

Human resource development and nuclear knowledge management are crucial cross-cutting factors in consolidating national institutional capacities to apply Nuclear Science and Technology (NST) for socioeconomic development. They are also key elements for sustainability. The success and sustainability of NST programmes and TC activities supported by the Agency in Africa depend to a large extent on the quality of human resources and the technical capabilities of the national Member State institutions involved.

Human capacity building, however, is a significant challenge for the TC programme in the region. The lack of skilled staff and well-trained human resources remains a common constraint. Sustainability in the field of training and education in NST has not been achieved and the region still strongly depends on educational institutions and training provided in other regions. The African Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology (AFRA¹) provides, through the establishment of the AFRA Regional Designated Centres, an appropriate framework for fostering enhanced regional cooperation in human resource development.

¹ As of January 2018, AFRA enjoys a membership of 39 African countries

The need for training in some key areas of nuclear applications in the region is increasing, as is the growing demand by Member States to train more staff to a higher standard of quality. Project review and monitoring missions have revealed important capacity gaps in some Member States in key areas. These gaps generally include both an inadequate number of personnel with the required level of competency/aptitude, and the deployment of personnel with insufficient skill sets which need strengthening or upgrading.

TCAF pays particular attention to promoting appropriate measures to guide Member State efforts to effectively manage and preserve nuclear knowledge, skills acquisition and retention, in order to contribute to building up the scientific and technical human capital required. This is an important enabling condition for consolidating national institutional capacities in nuclear science and technology and achieving higher impact of IAEA TC supported activities.

TCAF will seek to focus on the regional challenges of capacity building at the programme and organizational levels, human resource development, education and training, and nuclear knowledge management.

2.5 Regional cooperation

The TC programme builds on the capacities of Member States. The programme seeks to take advantage of commonalities in needs and complementarities in physical infrastructure and technical expertise, in order to contribute directly to the achievement of national and regional development goals.

Promoting regional cooperation and TCDC is therefore a key feature of the TC programme in the Africa region. TCAF gives special attention to the potential for regional cooperation, particularly under the auspices of AFRA. To foster greater regional ownership, effectiveness and long-term sustainability of the AFRA programme, AFRA has developed a Regional Strategic Framework (RSF), which states the strategic directions for the AFRA programme and set the programmatic objectives to be achieved for the period 2019–2023.

Regional cooperation through the TC programme in Africa offers great opportunities, but also faces challenges, including significant differences among countries with regard to available human resource and physical infrastructure capacity in a given thematic area. In addition, different working languages (mainly English and French) are used in the continent.

The IAEA places special emphasis on promoting coherence, synergies and complementarities between national TC programmes and regional programmes, including those implemented under AFRA. Reinforcing the coherence of overall TC programme planning, development and implementation is an important objective pursued by TCAF. Efforts focus on closing the gap between AFRA and other regional programming modalities, and on increasing synergies between programmes at the regional and national levels to maximise continent-wide the potential of utilisation of technical, scientific and managerial capabilities. Furthermore, it is necessary to promote more effective partnerships in delivering the TC programme in Africa.

2.6 Management of the IAEA's TC programme in Africa

The IAEA assists African Member States in building capacity in the application of nuclear science and technology (NST) and in establishing infrastructure. However, growth has not been systematic across Africa. In addition, scarce resources must be utilised with greater effectiveness and efficiency in order to ensure that the TC programme provides maximum benefits to Member States.

Special efforts at the managerial and operational levels must be made to promote enhanced delivery of the TC programme, as well as sustainability and increased ownership by Member States throughout every stage of programme development and implementation: from upstream planning work, to project conceptual design and formulation, to implementation, monitoring and evaluation, resource mobilization and partnership building. TCAF aims to

reinforce results based management and to achieve continuously enhanced quality and excellence in the management of the TC programme in Africa through the dissemination of good management practices.

Furthermore, important issues such as promoting the participation of women and youth in NST must be addressed. This can be supported by promoting increased participation of women and youth in the implementation of TC activities, in particular through increased project management

responsibilities and participation in policy-making, meetings and training events.

TCAF will continue to accelerate efficiency gains through effective programming, realistic budgeting, forward planning, timely implementation and broader operational harmonization. These changes will be tracked through indicators including, but not limited, to the quality and rate of implementation of the programme.

3. TCAF vision, mission and core values

TCAF strives to support the efforts of African Member States to develop institutional and human capacity in nuclear science and technology, with the aim of harnessing peaceful nuclear applications to address national and regional socioeconomic development needs and to respond to global challenges.

The implementation of the present Regional Programme Framework over the next six years are guided by the vision, mission and core values of TCAF, which are formulated as follows:

3.1 Vision

TCAF to be recognized as a major partner of IAEA Member States in Africa for the building up of viable institutional and human capacities in nuclear science and technology, and as a catalyst for fostering effective collaborative networking and synergies in the region for the promotion of safe, secure and sustainable peaceful nuclear applications that address the priorities, needs and challenges of Member States.

3.2 Mission

TCAF provides leadership on strategic policy matters pertaining to the IAEA TC programme in Africa and shares with the region's Member States and the IAEA technical Departments the responsibility for developing, managing, monitoring and reviewing IAEA-supported national and regional TC programme activities. This encompasses support to national projects through the provision of services, materials and equipment, and facilitating strategic collaborative efforts among Member States and other partners with a view to fostering knowledge exchange, experience sharing and the enhanced utilization of the capabilities of the region in the peaceful uses of atomic energy.

3.3 Core values

TCAF is committed to applying the highest ethical standards in carrying out its mission. To ensure the highest levels of quality, impact and visibility of the programmes and activities supported by the IAEA in Africa, TCAF's staff subscribes to the following core values: integrity; excellence, professionalism, solidarity, and respect for diversity.

4. Purpose and scope of the Regional Programme Framework 2019–2023

To support its vision and goals, TCAF seeks to implement appropriate approaches during the period 2019–2023, reinforced by clearly defined actions within a framework built around the following three Key Strategic Objectives:

Key Strategic Objective 1:	To enhance human resource capacity building for transfer of nuclear technology
Key Strategic Objective 2:	To enhance the systematic and phase-based contribution of nuclear science and technology applications for peace, health and prosperity in Africa
Key Strategic Objective 3:	To enhance cooperation and strategic partnership

The Key Strategic Objectives of the Regional Programme Framework for the period 2019–2023 were identified through a participatory and consultative process conducted, inter alia, at NLO meetings.

5. Key Strategic Objective 1: To enhance human resource capacity building for transfer of nuclear technology

The TC programme creates a body of knowledge in Member States in various areas of nuclear science and applications. This is an important asset for Member States, as it enables knowledge transfer which can be leveraged through conducive approaches to knowledge sharing within the region. Capacity building, a core function of the IAEA's TC programme, comprises of three essential elements: Human Resource Development; Education and Training; and Knowledge Management. Capacity building is essential to ensure a sustainable supply of suitably qualified human resources that are ready to assume their responsibility for the safe, responsible and sustainable transfer of nuclear technology.

TCAF recognizes the importance of capitalizing on experience and drawing on lessons learned to respond more effectively to the increasing needs of Member States for training in prioritised areas. In this regard, TCAF views knowledge management as a source of organisational learning which helps on one hand to strengthen the managerial capacity of TCAF staff and stakeholders in Member States who are involved in the management of the TC programme for increased effectiveness. On the other hand, the sharing of specific scientific and technical knowledge among Member States in key areas of nuclear applications is an important enabler for increased effectiveness, improved TC programme quality and enhanced impact.

TCAF aims to make every counterpart institution benefiting from the IAEA's TC programme into a learning organisation that facilitates its staff efforts to acquire, share with others and apply the knowledge and skills necessary for achieving its programmatic goals. Further increasing the efficiency and effectiveness of human resource development activities in Africa and promoting Member State adoption of nuclear knowledge management appropriate approaches contributes to optimizing the delivery of the TC programme and maximizing benefits to Member States in the region.

The strategic objective is to be achieved through the following approaches:

- I. Greater ability to work together in synergy:**
The Regional Programme Framework stresses the importance of working together more

effectively at all levels and reflects a change in how TC-related work is conducted both within TCAF and in Member States. It recognizes there is no 'one size fits all' when it comes to the delivery of TC support, and fully affirms the primary responsibility of Member States for their TC programmes and for coordinating, on the basis of their CPFs, national development plans, and the AFRA Strategic Framework.

- II. Fostering enhanced planning by Member States:** As part of the shared responsibility for the management of the TC programme, TCAF will support Member States and counterparts to further strengthen their planning function to drive stronger efficiency and effectiveness, to achieve tangible results under the TC programme, and to report on them through the established processes based on common indicators. In a significant step forward, these efforts will be reinforced by the formulation and implementation of Flagship Projects in Food and Agriculture that will focus on scaling up proven agricultural technologies, innovations and practices and from which theories of change, results and achievements can be drawn and visible.

- III. Implementing programmes together with enhanced efficiency.** TCAF will continue to support Member States in developing programmes with implementable workplans in support of Member States' priorities. On financing, TCAF commits to ensuring the highest level of integrity and ethics in the operational management of the TC programme. TCAF will work to leverage the TC Fund, as well as Government cost-sharing and donors' extrabudgetary contributions, and will increase partnership building efforts for the benefit of the TC programme. Integrated programming will be promoted in support of *Atoms for Peace and Development* and the UN Sustainable Development Goals (SDGs).

Outcome statement: Strengthened capacity of TCAF staff and national counterparts in the formulation, design, implementation, monitoring and evaluation of the TC programme and projects.

6. Key Strategic Objective 2: To enhance the systematic and phase-based contribution of nuclear science and technology applications for peace, health and prosperity in Africa

TCAF will seek to maximise the impact and sustainability of NST in Member States through a comprehensive and systematic phase-based approach in the technical cooperation mechanism. Such an approach has already been effectively used in areas such as the use of the Sterile Insect Technique within Area Wide Integrated Pest Management programmes, introduction of Nuclear Power (drawing on the 'Milestone Approach'), water resource management (IWAVE approach), radiation safety, nuclear medicine, and cancer therapy and management. TCAF will seek to engage with the Technical Departments to promote this approach in more areas. TCAF and the Division of Nuclear Fuel Cycle and Waste Technology (NEFW) have explored developing such an approach for radioactive waste management, uranium mining and research reactors (where a milestones approach already exists)

Since a large proportion of the TCF in Africa is dedicated to Human Health and Food and Agriculture, relevant Technical Divisions will be engaged to explore the possibility of adopting a phased-based approach in responding to the needs of Member States. Progress will be conditional on the completion of successive phases. The aim of this approach is to assist African Member States to understand the required commitments and obligations associated with developing a programme in a nuclear thematic area. For every thematic area, the goal is to identify and split the activities necessary to establish the infrastructure into successive phases of development, with the duration of each dependent on the degree of commitment and resources applied in the country.

The completion of each phase is marked by a specific 'Milestone' at which progress can be assessed and a decision made regarding readiness to move on to the next phase.

The strategic objective is to be delivered through the following four steps:

I. Categorization of the nuclear application in phases: The Regional Programme Framework envisages a situation in which all nuclear applications are clustered and categorized

in phases. This will entail the development of analysis and assessment tools for the systematic categorization of nuclear applications. The tools will contain descriptions of the progressive phases with verifiable indicators, including requirements for policies, infrastructure and human resources. Out of the assessment tools, growth model stages in nuclear applications would be developed that would assist in the identification of countries' needs in the selected thematic areas.

II. The clustering of the growth model stages in nuclear applications into phases of development in all African Member States will provide an assessment of Member States' status. This will require the compilation of an inventory of existing national and regional nuclear technology capacity that can be harnessed for quick impact to address Member State and regional priorities. The feasibility for the adoption and up-scaling of such capacities in Member States will also be assessed and shared with all internal and external stakeholders to support informed decision-making to improve the effectiveness of the programme, hence providing a basis for systematic guidance, interaction and cooperation between the Agency, Member States and other development partners.

III. Promoting a demand-driven and phase-based country-owned programme: Given the growing number of Member States and their increasing demands on the TC programme, it is necessary that Governments should commit adequate resources to their programmes. TCAF will assist each Member State to undertake an assessment of its NST programmes and to develop roadmaps for the sustainable acquisition and utilization of relevant NST applications. These findings should be shared at the national level or within a regional forum such as AFRA. The output of these consultations will better inform Member States about strategies and approaches needed to replicate successful models, favouring the promotion of demand-driven and evidence-based programming.

IV. Fostering increased coherence and complementarity between national TC programming and regional programming, including AFRA: TCAF aims to achieve gradually increased coherence and complementarity between national TC programming and regional programming, including AFRA, as well as an increased coherence between regional programming under AFRA and outside AFRA. Cohesion between the goals of the different TC programming mechanisms in response to

the needs and priorities of Member States will enable TCAF to deliver the support expected more effectively and at the most appropriate and viable level through clearly focused actions at regional and national levels.

Outcome statement: Enhanced sustainability of nuclear science and technology applications in Member States through the increasing adoption of a phased-based approach in the delivery of the TCP.

7. Key Strategic Objective 3: To enhance cooperation and strategic partnerships

TCAF aims to enhance cooperation among the main role-players of the TC programme at the country level, foster active collaboration among Member States under AFRA and within the framework of other cooperative modalities, and forge appropriate partnerships, with a view to supporting the relevance, effectiveness and sustainability of the IAEA's TC activities in Africa. Special attention will be given to leveraging national expertise in Member States in the region and to sharing successful experiences and lessons learned.

Partnership building efforts will be considered in terms of their potential contribution to the achievement of the three Key Strategic Objectives defined in the Regional Programme Framework . Special emphasis will be placed on developing partnerships with relevant bilateral and multilateral partners, particularly through the UN assistance mechanisms engaging national stakeholders, to achieve programmatic synergies and mobilise additional resources in key areas of NST applications in order to reinforce locally the implementation of national and regional TC programmes. This approach would enable TCAF to enhance partners' perceptions of the relevance of the TC programme, improve field settings for higher efficiency and effectiveness, and widen and further consolidate the constituency within the region for TCAF's strategic goals, thereby raising the visibility of the TC programme and contributing to promoting favourable conditions to increase the impact of the IAEA's TC work in Africa.

An assessment of programming versus budgeting of the overall TC programme in Africa has revealed that in spite of special considerations accorded to the continent in the distribution of TCF funds among the regions, there has been a continuous track record of insufficient funding over many years, with significant shortfalls in programme funds.

The advent of the UN Sustainable Development Goals (SDGs) has created new prospects for partnerships and the possibility for different international cooperation actors to join their programmatic efforts

and resources to address development agendas of common interest. In particular, SDG 17, *Sustainable development through global partnerships*, underscores the importance of inclusive partnerships to advance the main targets, notably those related to capacity building and technology. This dedicated context provides an impetus to TCAF to work closely with national stakeholders in Member States with a view to looking for partnership opportunities that can expand the programmatic framework and increase resources for the IAEA's TC programme in Africa, in key areas such as Human Health and Food and Agriculture. Such partnerships will contribute to increasing programme effectiveness and strengthening further its relevance, value and benefits for African Member States.

The increasing needs of African Member States, the growing number of Member States, and the steady-state financial resources of the TC programme, make partnership building and mobilization of additional financial resources an increasingly pressing need. Partnerships and resource mobilisation are needed to complement the IAEA technical cooperation programme, more effectively address the broad range of development priorities, and ensure the sustainability of achievements.

TCAF is committed to partnerships and resource mobilization as a means of supporting its ability to implement effectively its mandate.² TCAF will therefore increase its efforts to identify and develop of partnerships and mobilize resources.

As enhancing cooperation and strategic partnerships is a shared responsibility between TCAF and Member States, it is expected that the Member States concerned will similarly increase their efforts to identify and build partnerships to support their national TC programmes. For partnership building, TCAF will particularly promote:

- I. Increased cooperation at the national level** (e.g. ensure that all concerned national stakeholders are part of the TC project team and share available resources and expertise);

² Partnership building should increase effectiveness in pursuing TCAF's mission by expanding the scale and scope of its programmes, while strengthening its image and visibility. Partnerships should be made concrete in joint activities that allow the combining of know-how, human resources, technical and material assets, as well as in common advocacy and communication activities. Successful partnerships are based on compatibilities, complementarities and commonality of goals. Mutual expectations, contributions and the expected results of partnership must be clearly defined.

- II. Increased regional cooperation through technical cooperation among developing countries (TCDC):** building on the earlier TC projects in support of triangular partnership, leading to streamlined processes at the institutional level;
- III. Increased national ownership of the TC programme** (e.g. by strengthening the application of the TC Central Criterion and ensuring that TC projects are owned and supported by the Ministries concerned);
- IV. Increased cooperation with UN Country Teams and sister UN Organizations** (e.g. systematic inclusion of IAEA TC programme in UNDAF or UNSAF);
- V. Increased collaboration with the IAEA's TCPC Partnership and Resource Mobilization Section and with the Technical Divisions** to maximise the sustainability and impact of NST in Member States (e.g. by developing comprehensive and systematic phase-based approaches in the TC programme);
- VI. Strengthening existing RDCs and identification and establishment of new RDCs,** especially in priority fields of activities (Food and Agriculture, Human Health, and Radiation Protection) and in those where there are no or insufficient RDCs, in order to better support the implementation of the AFRA cooperative programme.

Outcome statement: Enhanced networking, partnership building and advocacy, promoting increased delivery of a sustainable and needs-driven TC programme to Member States

8. Results framework

The expected outcomes and the specific results that TCAF aims to achieve under each of the aforementioned Key Strategic Objectives are summarised in the Results Framework, which is the core of the Regional Programme Framework (Annex).

The Results Framework translates the TCAF's Regional Programme Framework into action, setting out the priority actions that will be undertaken by TCAF during the period 2019–2023 to enhance delivery of the TC programme to African Member States in line with TCAF's vision and in pursuance of its mandate. It provides a set of programmatic results for each of the three Key Strategic Objectives of the Regional Programme Framework in the form of defined Outcomes and corresponding Outputs that allow TCAF Management and stakeholders in African Member States to monitor and assess key achievements during the period covered by the Plan, and to draw lessons for further improvements beyond the year 2023.

Outcomes represent the medium-term improvements in regional and national situations with regard to the peaceful applications of NST that TCAF, working with national stakeholders and cooperation partners, will bring about on the continent as a result of the implementation of the Regional Programme Framework. They are framed according to the three Strategic Objectives underlying the Regional Programme Framework.

The Results Framework focuses on two categories of outcomes: Strategic Programmatic Outcomes and Enabling Outcomes:

- The *Strategic Programmatic Outcomes* reflect the achievements in the programme that TCAF aims for during the six-year period covered by the Regional Programme Framework.
- The *Enabling Outcomes* underpin the delivery of the Strategic Programmatic Outcomes. The goal of achieving the Strategic Programmatic Outcomes will be supported by a managerial effort to strengthen the capacity of role-players at the IAEA's Secretariat (Programme Management Officers, Technical

Officers, implementation staff) and in the Member States in results-based management (RBM), and to leverage to the fullest extent possible the expertise, core competencies and resources available at TCAF and in the Member States at different levels.

Quantitative and qualitative indicators have been embedded in the Results Framework to track progress in the implementation of the Framework, and to assess at mid-term and the end of that period the extent of achievement of these outcomes. It is expected that the directions, outcomes and their respective indicators set out in the Regional Programme Framework will guide the development of the whole TC programme in Africa to ensure that the delivery is on target and results-based.

The Results Framework is a flexible and dynamic framework that needs to be regularly reviewed and its content can be subject to change in response to changing circumstances. Tracking progress and measuring the extent of success achieved in producing the key deliverables under each Strategic Objective of the Regional Programme Framework will be based on continuous monitoring against the respective indicators defined for the Indicative Outputs.

TCAF will draw up triennial Action Plans to implement the Regional Programme Framework in two phases: the first phase from 2019–2020 and the second phase covering the period 2021–2023. The Action Plan is expected to lead to the achievement of the outcomes under each of the three defined Key Strategic Objectives through concerted efforts led by TCAF and involving different actors within the IAEA Secretariat and stakeholders in Member States at various levels of management, including but not limited to National Liaison Officers (NLOs), AFRA National Representatives and project counterparts. Furthermore, modalities and tools will be developed by TCAF to monitor the implementation of the Regional Programme Framework and to report on progress accomplished against the planned outcomes, and on issues, challenges and lessons learned.

ANNEX

Results framework

Strategic Objective 1 To enhance the human resource capacity building for transfer of nuclear technology	
Outcome	Strengthened capacity of TCAF staff and national counterparts in the formulation, design, implementation, monitoring and evaluation of the programme and projects
Outputs	i. National counterpart institutions enabled to perform core functions for improved alignment of TC strategic planning with national priorities, enhanced programme development and quality project design
	ii. Skills of professionals and technical staff strengthened to enable them implement successfully national TC projects within the wide range of applications of nuclear science and technology
	iii. Programme effectiveness enhanced for achieving results at all levels through quality criteria and quality assurance processes
	iv. Mechanisms in place for promoting nuclear knowledge acquisition and sharing among Member States
	v. Strategic approaches and enhanced operational modalities for training promoted in order to enhance further training relevance, efficiency and effectiveness under the TC programme in Africa
	vi. Women participation in IAEA policy/management/technical meetings and training events related to the TC programme promoted and their involvement with accrued responsibility in project management fostered
	vii. TCAF equipped with talented and resourceful workforce to provide effective managerial support to Member States

Strategic Objective 2

To enhance the systematic and phase-based contribution of nuclear science and technology applications for peace, health and prosperity in Africa

Outcome	Enhanced sustainability of nuclear science and technology applications in Member States through the increasing adoption of a phased-conditional approach in the delivery of the TC programme
Outputs	<ol style="list-style-type: none">i. Comparative advantages in the context of Africa of nuclear technologies in Human Health and Food & Agriculture assessed from TCAF's perspective to support enhanced national TC programme planning by Member Statesii. Increased coherence and complementarity between national TC programming and regional programming, including AFRA, and increased coherence between regional programming under AFRA and outside AFRAiii. Application of quality standards to TC project design by national counterparts improved by the systematic use of SMART performance indicators, fostering efficient project implementation and effectiveness of project impactiv. Member States are encouraged and guided through piloting to design Flagship Projects in Food and Agriculture aligned with the SDGs and with Member States national food security priority agendas, with the TCAF's aim to showcase models of projects with great potential for tangible impact and sustainabilityv. Overall situation in Africa improved with regard to national Radiation Safety Infrastructures (RSI) focussing on TSA1 – National Regulatory Infrastructure, TSA2 –Radiological Protection in Occupational Exposure, and TSA3 – Radiological Protection in Medical Exposure

Strategic Objective 3

To enhance cooperation and strategic partnership

Outcome	Advanced strategic, technical and financial partnerships to support the relevance, effectiveness and sustainability of TC programme
Outputs	i. Triangular cooperation partnerships established and/or strengthened for enhanced TCDC
	ii. Relations with cooperation strategic stakeholders enhanced, fostering complementarity and taking greater advantage of the potential and the technical and financial resources, they can contribute to the TC programme
	iii. Increased outreach activities to raise the visibility of TC efforts and showcase success stories and spin-off of peaceful nuclear applications in Africa and to improve further the understanding of the contribution and benefits of nuclear applications to a wider audience of potential partners
	iv. Member States are encouraged and guided through piloting to design Flagship Projects in Food and Agriculture aligned with the SDGs and with Member States national food security priority agendas, with the TCAF's aim to showcase models of projects with great potential for tangible impact and sustainability
	v. Working relationships with the IAEA's Technical Departments are reinforced and collaboration is more streamlined with the other relevant organisational units of the TC Department

Expected actions and key deliverables Performance indicators/qualitative evidence

Strategic Objective 1

To enhance the human resource capacity building for transfer of nuclear technology

Outcome		Strengthened capacity of TCAF staff and national counterparts in the formulation, design, implementation, monitoring and evaluation of the programme and projects	
Outputs		Expected key actions and deliverables	Performance indicators/ qualitative evidence
1.1	National counterpart institutions enabled to perform core functions for improved alignment of TC strategic planning with national priorities, enhanced programme development and quality project design	<ul style="list-style-type: none"> TCAF to organise and support regional and national workshops focussing on providing training and guidance on strategic planning using mainly the CPF, programme development approaches, and the utilisation of project design criteria and tools. 	<ul style="list-style-type: none"> Number of events organised Number of attendees in IAEA organised/ supported events Improved capacity building- TC project developmental impact nexus
1.2	Skills of professionals and technical staff strengthened to enable them implement successfully national TC projects within the wide range of applications of nuclear science and technology	<ul style="list-style-type: none"> TCAF to develop guidelines for assisting Member States to develop their national strategy for human resource development. TCAF to systematically gather and analyse information on core capacities and provide feedback on performance and progress towards achieving results, including documenting lessons learned and innovative approaches. 	<ul style="list-style-type: none"> Number of Member States who have developed their national strategy for human resource development Number of people who report increased skills upon completion of training received through the TC programme Number of events organised and implemented at Regional Resource Centers (RRCs) Number of attendees in IAEA organised/ supported trained events hosted by RRCs
1.3	Programme effectiveness enhanced for achieving results at all levels through quality criteria and quality assurance processes	<ul style="list-style-type: none"> TCAF to promote through all means of interaction with national counterparts, including meetings and TCAF field missions, a learning culture for continued quality improvement with a view of increasing over time project effectiveness in key thematic areas in terms of lasting impact and sustainability. 	<ul style="list-style-type: none"> Good practices, innovative initiatives and lessons learned are documented and disseminated among TCAF staff and the different role-players involved in the TC programme in Member States

<p>1.4</p>	<p>Mechanisms in place for promoting nuclear knowledge acquisition and sharing among Member States</p>	<ul style="list-style-type: none"> • TCAF to develop an Advocacy Paper to be used to advocate in Member States the value of nuclear knowledge management. • TCAF to draw Terms of reference for establishing Communities of Practice and develop under AFRA an organised framework for operationalising Communities of Practice in up to three main thematic Areas (Human Health, Food and Agriculture, Radiation Safety) connecting TCAF staff to stakeholders in Member States with a view to promoting and expanding nuclear knowledge sharing, learning, and dissemination through networking. 	<ul style="list-style-type: none"> • Scientific and technical knowledge is enhanced and more effective in supporting achieving development objectives under TC projects • Extent to which the Communities of Practice are recognized in the region and are functioning • Knowledge generated and coordinated through robust partnerships and knowledge networks • Number of good practices in programme/project management shared among Member States • Number of countries where local knowledge initiatives are developed and scaled up
<p>1.5</p>	<p>Strategic approaches and enhanced operational modalities for training promoted in order to enhance further training relevance, efficiency and effectiveness under the TC programme in Africa</p>	<ul style="list-style-type: none"> • TCAF to assess the regional capacity for group fellowship training in key areas of nuclear science and technology and conduct an Institutional Capacity Profiling as an essential step towards planning and implementing efficient and cost-effective training approaches in the region. • TCAF to carry out a Piloting Phase for the implementation of the Institutional Capacity Profiling scheme. • TCAF to comprehensively streamline both the process, operational procedures and work flow for the efficient implementation of fellowships and scientific visits in the region. 	<ul style="list-style-type: none"> • Number of Institutional Profiles developed • Document on Operational Guidance for Increased Efficiency in the Implementation of Fellowships and Scientific Visits prepared and distributed by TCAF to the Technical Divisions and main TC stakeholders and role-players in Member States (NLO, Project Counterparts)

1.6	<p>Women participation in IAEA policy/management/technical meetings and training events related to the TC programme promoted and their involvement with accrued responsibility in project management fostered</p>	<ul style="list-style-type: none"> • TCAF to undertake a comprehensive review of gender mainstreaming in relation to the TC programme in Africa. • TCAF to monitor regularly by Member State and within AFRA IAEA policy/management/technical meetings and training events related to the TC programme. 	<ul style="list-style-type: none"> • Number of women who attended IAEA policy/management/technical meetings and training events related to the TC programme • Extend to which women are involved in strategic planning, mainly through CPF development • Extent to which women are engaged in TC project management
1.7	<p>TCAF equipped with talented and resourceful workforce to provide effective managerial support to Member States</p>	<ul style="list-style-type: none"> • TCAF Management to foster a working environment in which staff are engaged, leading to improved performance and setting favourable conditions for the smooth implementation of the Regional Programme Framework. • TCAF to organise regular internal management meetings and topical seminars. • TCAF Management to establish processes for enhanced ways of promoting sharing of knowledge and experience among the staff of the Division. • TCAF Management to periodically review and assess staff performance, competencies and skills and provide feedback to the staff with the aim of fostering continuous improvement of core capacities. • TCAF to arrange systematic exit interviews for departing staff to capture and retain critical knowledge to drive continuous management performance improvement 	<ul style="list-style-type: none"> • Evidence of changes in capacity, thinking, practice, and working approaches is available in individual Personal Performance Appraisal reports • Number of good practices in programme/project management shared among the TCAF's staff members • Staff learning and development reflected in TCAF's annual performance and staff development plan reviews. • The tacit knowledge of departing staff is captured through exit interview records.

Expected actions and key deliverables Performance indicators/qualitative evidence

Strategic Objective 2

To enhance the systematic and phase-based contribution of nuclear science and technology applications for peace, health and prosperity in

Outcome		Enhanced sustainability of nuclear science and technology applications in Member States through the increasing adoption of a phased-conditional approach in the delivery of the TC programme	
Outputs		Expected key actions and deliverables	Performance indicators/ qualitative evidence
2.1	Comparative advantages in the context of Africa of nuclear technologies in Human Health and Food & Agriculture assessed from TCAF's perspective to support enhanced national TC programme planning by Member States	<ul style="list-style-type: none"> • TCAF to carry out a desk review of relevant technical documents and to organize consultation meetings with Technical Divisions as well as thematic seminars involving international and regional experts with a view to carry out a comprehensive review of the comparative advantages of nuclear technologies in Human Health and Food & Agriculture in the context of the Africa region. • TCAF to prepare and issue to Member States guidance documents validated by Technical Divisions to provide technical advice and recommendations based on the results of the review of the comparative advantages of nuclear technologies in Human Health and Food & Agriculture. 	<ul style="list-style-type: none"> • Number of guidance documents with recommendations prepared by TCAF validated by Technical Divisions, and issued to Member States compiling inventories of existing nuclear applications that can be harnessed and prioritized within the Member States and the region • Number of Member States having implemented IAEA recommendations
2.2	Increased coherence and complementarity between national TC programming and regional programming, including AFRA, and increased coherence between regional programming under AFRA and outside AFRA	<ul style="list-style-type: none"> • TCAF to organise regular regional participatory and consultative forums for reviewing specific thematic areas under the TC programme with a view to identifying and documenting programmatic duplications for informed decision making and input into the iterative and evolving TC planning process. 	<ul style="list-style-type: none"> • Evidence on the synergies achieved between regional and national programmes, as reported by Member State • Evidence of the improved quality in regional programming, with increased coherence between AFRA programme and non-AFRA regional programme • Evidence of better utilisation of the limited available financial resources for regional programming

<p>2.3</p>	<p>Application of quality standards to TC project design by national counterparts improved by the systematic use of SMART performance indicators, fostering efficient project implementation and effectiveness of project impact</p>	<ul style="list-style-type: none"> • TCAF to develop a coherent results-based M&E framework and baseline. 	<ul style="list-style-type: none"> • Number of projects demonstrating improved member country engagement in programme design, implementation & evaluation • Number of success stories under the TC programme
<p>2.4</p>	<p>Member States are encouraged and guided through piloting to design Flagship Projects in Food and Agriculture aligned with the SDGs and with Member States national food security priority agendas, with the TCAF's aim to showcase models of projects with great potential for tangible impact and sustainability</p>	<ul style="list-style-type: none"> • TCAF to carry out the of launching a phased piloting process for promoting the formulation of national and regional Flagship Projects, through the organisation of topical seminars, workshops and expert advisory missions. 	<ul style="list-style-type: none"> • Number of Member States with at least one Flagship Project addressing in a sustainable manner a major problem/ key issue in Human Health or in Food and Agriculture • Extent to which the overall TC programme is effective in addressing Member States' priorities and is aligned to the core national development objectives in the Human Health and Food and Agriculture • Extent to which the designed flagship projects are linked to the SDGs and attract extrabudgetary funds • At least, two regional cooperative Flagship Projects planned, designed and implemented under AFRA

<p>2.5</p>	<p>Overall situation in Africa improved with regard to national Radiation Safety Infrastructures (RSI) focussing on TSA1 – National Regulatory Infrastructure, TSA2 – Radiological Protection in Occupational Exposure, and TSA3 – Radiological Protection in Medical Exposure</p>	<ul style="list-style-type: none"> • TCAF to develop and implement a time bound regional Action Plan for addressing the most noticeable gaps and urgent issues in national Radiation Safety Infrastructures (RSI) in Africa, focussing on TSAs 1, 2 and 3 and on the Member States in the ‘Low Category’ as they strive to develop an adequate and sustainable national RSI and gradually meet international standards. 	<ul style="list-style-type: none"> • Number of Member States who moved from the ‘Low Category’ to the ‘Medium Category’ and/or from the ‘Medium Category’ to the ‘High Category’
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Expected actions and key deliverables Performance indicators/qualitative evidence

Strategic Objective 3

To enhance cooperation and strategic partnership

Outcome		Advanced strategic, technical and financial partnerships to support the relevance, effectiveness and sustainability of TC programme	
Outputs		Expected key actions and deliverables	Performance indicators/ qualitative evidence
3.1	Triangular cooperation partnerships established and/or strengthened for enhanced TCDC	<ul style="list-style-type: none"> • TCAF to formalize the triangular cooperation framework by preparing and issuing to Member States a policy paper and operational guidelines on triangular cooperation's principles, scope and modalities, including a draft model agreement that could be considered as a basis for signature by the two prospective partners while concluding with the IAEA a triangular cooperation arrangement. • TCAF to launch under the 2018–2019 TC programme a Piloting Phase for preparing 2–3 'triangular cooperation' pilot projects 	<ul style="list-style-type: none"> • Number of triangular cooperation agreements concluded under the auspices of the IAEA, spelling out the scope and modalities of the cooperation and timelines

3.2

Relations with cooperation strategic stakeholders enhanced, fostering complementarity and taking greater advantage of the potential and the technical and financial resources, they can contribute to the TC programme

- TCAF to map and assess the international and regional partnership landscape within its strategic planning and programme development processes and identify potential partners according to their relevant comparative advantages and their potential contribution to TCAF programmatic goals (advocacy programme implementation, transfer of knowledge, and resource mobilization).
- TCAF to develop a pluriannual plan for fund raising with annual financial and programmatic targets to mobilise extrabudgetary funding in support of the TC programme.
- Improved partnerships with the across-sector players, regional and multilateral organizations
- Number of Collaboration Agreements signed with relevant international and regional organisations and institutions for the development and implementation of joint activities are used to leverage the comparative advantages of the IAEA's TC programme in Africa
- Level of extrabudgetary funding secured in support of the TC programme in Africa
- Number of new major joint collaboration activities undertaken under each TC programming cycle with an international/ regional partner organization, with a balanced participation in joint studies and activities.

<p>3.3</p>	<p>Increased outreach activities to raise the visibility of TC efforts and showcase success stories and spin-off of peaceful nuclear applications in Africa and to improve further the understanding of the contribution and benefits of nuclear applications to a wider audience of potential partners</p>	<ul style="list-style-type: none"> • TCAF to develop and implement on an annual basis a Regional Outreach and Communication Plan relying on the proactive contributions and assignments of TCAF's staff 	<ul style="list-style-type: none"> • Expanded use by TCAF staff and counterparts in Member States of information and communication technologies and social media for advocacy and virtual collaboration • Number of presentations by TCAF staff at external events: (i) Policy briefings; (ii) Management Meetings; (iii) Seminars • Number of articles published and stories reported by TCAF staff and Member States' stakeholders and counterparts in IAEA website
<p>3.4</p>	<p>Working relationships with the IAEA's Technical Departments are reinforced and collaboration is more streamlined with the other relevant organisational units of the TC Department</p>	<ul style="list-style-type: none"> • TCAF staff to entertain on a continuous basis excellent working relationship with the colleagues of Technical Departments and the other relevant organisational units of the TC Department 	<ul style="list-style-type: none"> • Good practices, initiatives and lessons learned are documented and disseminated among TCAF staff by TCAF Management



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